

Compilation of Changes to the CPC Scheme Between 2014.12 and 2015.01

Presentation Details

Entries for new symbols and headings:	<i>Black text in italics</i>
Entries for existing symbols and headings	
—text insertions:	<i>Green text in italics with yellow background</i>
—text deletions:	Red strikethrough text with grey background
Entries for deleted symbols and headings:	Black strikethrough text

- In cases when the originating project cannot be found, "N/A" is given for the Project information (e.g. the change could be due to an Editorial Correction).
- Projects ending in "-F" indicate finalisation after reclassification was completed.

Project: N/A (A01B)

A01B

SOIL WORKING IN AGRICULTURE OR FORESTRY; PARTS, DETAILS, OR ACCESSORIES OF AGRICULTURAL MACHINES OR IMPLEMENTS, IN GENERAL (-making or covering furrows or holes for sowing, planting, or manuring [A01C 5/00](#) ; soil working for engineering purposes [E01](#) , [E02](#) , [E21](#) ; { measuring areas for agricultural purposes [G01B](#) })

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

A01B 69/04	covered by	A01B 69/008
A01B 69/06	covered by	A01B 69/005
A01B 69/08	covered by	A01B 69/006

A01B 1/00

Hand tools (-edge trimmers for lawns [A01G 3/06](#) ; { machines for working soil [A01B 35/00](#) ; making hand tools [B21D](#) })

- A01B 1/02 • Spades; Shovels{ hand-operated dredgers [E02F 3/02](#)-}
- A01B 1/06 • Hoes; Hand cultivators{ rakes [A01D 7/00](#) ; forks [A01D 9/00](#) ; picks [B25D](#)-}
- A01B 1/22 • Attaching the blades or the like to handles (-handles for tools, or their attachment, in general [B25G](#)-); Interchangeable or adjustable blades

U A01B 3/00

Ploughs with fixed plough-shares

- A01B 3/24 • Tractor-drawn ploughs (-[A01B 3/04](#) takes precedence-)
- A01B 3/64 • Cable ploughs; Indicating or signalling devices for cable plough systems{(-vehicles towed by cable [B60D](#)-)}
- A01B 3/74 • Use of electric power for propelling ploughs {for rotary cultivators or the like (-electric current collectors [B60L 5/00](#)-)}

A01B 5/00

Ploughs with rolling non-driven tools, e.g. discs (-with rotary driven tools [A01B 9/00](#)-)

A01B 9/00

Ploughs with rotary driven tools (-tilling implements with rotary driven tools [A01B 33/00](#)-)

A01B 11/00

Ploughs with oscillating, digging or piercing tools {driven or not}

A01B 13/00

Ploughs or like machines for special purposes (-for drainage [E02B 11/02](#)-); {Ditch diggers, trench ploughs, forestry ploughs, ploughs for land or marsh reclamation} (-machines for aerating meadows [A01B 45/02](#) ; making furrows [A01C 5/00](#) ; dredging machines in general [E02F](#)-)}

U A01B 13/04

- for working in vineyards, orchards, or the like

A01B 13/06

- • Arrangements for preventing damage to the vines, or the like,{e.g. hydraulic} (-machines specially adapted for working in vineyards [A01B 39/16](#)-)}

- U A01B 15/00 Elements, tools, or details of ploughs**
- U A01B 15/02 · Plough blades; Fixing the blades
- A01B 15/04 · · Shares{(=making ploughshares by rolling [B21H](#)-)}
- A01B 15/12 · Beams; Handles (=handles for tools or their attachment in general [B25G](#)-)
- A01B 15/14 · Frames{(=means or arrangements to facilitate transportation [A01B 73/00](#)-)}
- A01B 15/16 · Discs (=bearings therefor [A01B 71/04](#)-); Scrapers for cleaning discs; Sharpening attachments (=sharpening in general [B24](#)-)
- A01B 17/00 Ploughs with special additional arrangements, e.g. means for putting manure under the soil, clod-crushers (-A01B 49/00 takes precedence); {Means for breaking the subsoil}**
- A01B 17/002 · {Means for putting manure, debris, straw or the like under the soil (=to plough-in weeds [A01B 39/18](#)-)}
- A01B 19/00 Harrows with non-rotating tools{(=harrows for working in vineyards [A01B 39/16](#)-)}**
- A01B 21/00 Harrows with rotary non-driven tools{(=tilling implements with rotary driven tools [A01B 33/00](#)-)}**
- U A01B 23/00 Elements, tools, or details of harrows**
- A01B 23/04 · Frames{(=means or arrangements to facilitate transportation [A01B 73/00](#)-); Drawing-arrangements
- A01B 23/06 · Discs (=A01B 15/16 takes precedence; bearings therefor [A01B 71/04](#)-); Scrapers for cleaning discs; Sharpening attachments; {Lubrication of bearings} (sharpening in general [B24](#))
- A01B 25/00 Harrows with special additional arrangements, e.g. means for distributing fertilisers; Harrows for special purposes{(=A01B 39/00 takes precedence; { fertiliser distributors [A01C 15/00](#) })}**
- A01B 29/00 Rollers{(=rollers for roads [E01C](#)-)}**
- A01B 31/00 Drags {graders for field cultivators}(=graders in general [E02F](#)-)}**
- U A01B 33/00 Tilling implements with rotary driven tools,{e.g. in combination with fertiliser distributors or seeders, with grubbing chains, with sloping axles, with driven discs}**
- U A01B 33/02 · with tools on horizontal shaft transverse to direction of travel
- A01B 33/028 · · {of the walk-behind type (=walk-type tractors [B62D 51/04](#)-)}
- U A01B 33/08 · Tools; Details, e.g. adaptations of transmissions or gearings
- A01B 33/14 · · Attaching the tools to the rotating shaft, e.g. resiliently {or flexibly}-attached tools
- A01B 33/16 · with special additional arrangements (=A01B 49/00 takes precedence; for sowing or fertilising [A01B 49/06](#)-)
- A01B 35/00 Other machines for working soil {not specially adapted for working soil on which crops are growing}(=A01B 37/00 , A01B 39/00 , A01B 77/00 take precedence; { hand tools [A01B 1/00](#) })}**
- U A01B 35/02 · with non-rotating tools
- A01B 35/04 · · drawn by animal or tractor {or man-power}
- A01B 35/06 · · · with spring tools {or with resiliently- or flexibly-attached rigid tools}
- U A01B 35/10 · · mounted on tractors
- A01B 35/12 · · · with spring tools {or with resiliently-or flexibly-attached rigid tools}

- U A01B 35/20 · Tools; Details
- A01B 35/30 · · Undercarriages ~~(-A01B 23/04 takes precedence-)~~
- U A01B 39/00 Other machines specially adapted for working soil on which crops are growing**
- A01B 39/08 · with rotating tools {such as weeding machines}
- A01B 39/10 · with oscillating tools {driven or not}
- U A01B 39/12 · for special purposes, {e.g. for special culture}
- A01B 39/16 · · for working in vineyards, orchards, or the like; {Arrangements for preventing damage to vines ~~(-ploughs adapted for working in vineyards A01B 13/06-)~~}
- U A01B 39/20 · Tools; Details
- A01B 39/24 · · Undercarriages ~~(-A01B 23/04 takes precedence-)~~
- A01B 39/28 · with special additional arrangements ~~(-A01B 49/00 takes precedence-)~~
- A01B 43/00 Gatherers for removing stones, undesirable roots of the like from the soil, e.g. tractor-drawn rakes {for harvesting root crops A01D}**
- U A01B 45/00 Machines for treating meadows or lawns, {e.g. for sports grounds}**
- A01B 45/04 · for cutting sods or turves { machines for lifting and treating soil A01B 77/00-}
- A01B 49/00 Combined machines (auxiliary devices attached to machines of a different kind, e.g. harrows attached to ploughs, see the relevant groups for the machines)**
- A01B 49/04 · Combinations of soil-working tools with non-soil-working tools, e.g. planting tools { seeding machines A01C 7/00 ; harvesters combined with soil-working implements A01D 43/12-}
- A01B 51/00 - Parts, details or accessories of agricultural machines or implements, in general (- seat constructions A47C ; wheels B60B ; shelters for drivers B60J ; seats specially adapted for vehicles B60N 2/00 ; wheel scrapers B60S 1/68-)**
- A01B 51/00 Undercarriages specially adapted for mounting-on various kinds of agricultural tools or apparatus (- general vehicle aspects, see the relevant subclass of class B60 or B62-)**
- U A01B 51/02 · propelled by a motor
- A01B 51/026 · · {of the automotive vehicle type, e.g. including driver accomodation ~~(-A01B 51/023 takes precedence-)~~}
- A01B 59/00 Devices specially adapted for connection between animals or tractors and agricultural machines or implements (- A01B 63/00 takes precedence; vehicle connections in general B60D; draught assemblies for animal drawn vehicles, in general B62C 5/00-)**
- U A01B 59/04 · for machines pulled or pushed by a tractor
- A01B 59/041 · · preventing or limiting side-play of implements ~~(-preventing overstrain A01B 61/00-)~~
- U A01B 59/042 · · having pulling means arranged on the rear part of the tractor
- A01B 59/043 · · · supported at three points, e.g. by quick-release couplings ~~(-A01B 59/06 takes precedence-)~~
- U A01B 59/06 · for machines mounted on tractors
- A01B 59/061 · · {specially adapted for enabling connection or disconnection controlled from the driver`s seat (not used, see subgroups)}
- A01B 59/065 · · {for ploughs or like implements ~~(-A01B 59/061 and subgroups take precedence-)~~}

- A01B 61/00** Devices for, or parts of, agricultural machines or implements for preventing overstrain (preventing overstrain in vehicle connections, in general [B60D](#); preventing overstrain in couplings per se [F16D](#))
- A01B 63/00** Lifting or adjusting devices or arrangements for agricultural machines or implements (-lifting mechanisms for the cutter-bar of a mower [A01D 34/24](#) ; adjusting devices for the cutter-bar of a mower [A01D 34/28](#) ; constructional features of lifting devices per se [B66F](#)-)
- A01B 63/002
- {Devices for adjusting or regulating the position of tools or wheels (-preventing overstrain [A01B 61/00](#) ; wheels adjustable relatively to the frame for drawn implements [A01B 3/16](#) ; tools or tool holders adjustable relatively to the frame for drawn implements [A01B 63/24](#)-)}
- WARNING
- Documents of group [A01B 63/002](#) and subgroups are in the process of being reorganised to groups [A01B 63/111](#) , [A01B 63/16](#) , [A01B 63/24](#)
- A01B 63/008
- · {Vertical adjustment of tools (-[A01B 63/10](#) takes precedence-)}
- U A01B 63/02
- for implements mounted on tractors
- U A01B 63/10
- · operated by hydraulic or pneumatic means
- A01B 63/118
- · · Mounting implements on power-lift linkages (-[A01B 59/043](#) takes precedence; preventing or limiting side-play of implements [A01B 59/041](#) ; preventing overstrain [A01B 61/00](#)-)
- U A01B 63/14
- for implements drawn by animals or tractors
- U A01B 63/24
- · Tools or tool-holders adjustable relatively to the frame
- A01B 63/32
- · · operated by hydraulic or pneumatic means {without automatic control}
- A01B 67/00** Devices for controlling the tractor motor by resistance of tools (-preventing overstrain [A01B 61/00](#)-)
- A01B 69/00** Steering of agricultural machines or implements; Guiding agricultural machines or implements on a desired track (-vehicle course control in general [G05D 1/02](#)-)
- NOTE
- In this group it is obligatory to classify subject-matter in the first appropriate place. It is however allowed to apply multiple classification where considered useful for search
- A01B 69/001
- {Steering by means of optical assistance, e.g. television cameras (-steering devices for road marking vehicles [E01C 23/163](#)-)}
- A01B 71/00** Construction or arrangement of setting or adjusting mechanisms, of implement or tool drive or of power take-off; Means for protecting parts against dust, or the like; Adapting machine elements to or for agricultural purposes{(-adjusting mechanisms in general [G05G](#)-)}
- A01B 71/04
- Bearings of rotating parts, e.g. for soil-working discs ({{ discs [A01B 15/16](#) , [A01B 23/06](#) } ; bearings in general [F16C](#)-)
- A01B 71/06
- Special adaptations of coupling means between power take-off and transmission shaft to the implement or machine (-couplings for transmitting rotation [F16D](#)-)
- A01B 71/08
- Means for protecting against dust, or the like, or for cleaning agricultural implements (-[A01B 15/16](#) , [A01B 19/10](#) and [A01B 23/06](#) take precedence; screening of rotary driven tilling tools [A01B 33/12](#) ; screening of rotary parts in general [F16P 1/00](#)-)

- A01B 73/00** Means or arrangements to facilitate transportation of agricultural machines or implements, e.g. folding frames to reduce overall width (~~arrangements of lifting devices for soil working implements [A01B 63/00](#) ; { carriers for harvesters or mowers [A01D 75/002](#) ; arrangements or carriers for haymakers [A01D 78/1007](#) , [A01D 80/005](#) ; } vehicles adapted for load transportation or to transport, to carry or to comprise special loads or objects [B60P](#) ; motor vehicles, trailers [B62D](#))~~
- A01B 73/005 · {for endwise transportation, i.e. the direction of transport being substantially perpendicular to the direction of agricultural operation (~~[A01B 73/02](#) takes precedence~~)}
- U A01B 73/02 · Folding frames
- U A01B 73/04 · · foldable about a horizontal axis
- A01B 73/044 · · · {the axis being oriented in a longitudinal direction [A01B 73/042](#) takes precedence}
- A01B 73/048 · · · {the axis being oriented in transverse direction [A01B 73/042](#) takes precedence}
- A01B 76/00** Parts, details or accessories of agricultural machines or implements, not provided for in groups [A01B 51/00](#) to [A01B 75/00](#)
- A01B 77/00** Machines for lifting and treating soil (~~biocides, pest repellants or attractants, plant growth regulators [A01N 25/00](#) to [A01N 65/00](#) ; fertilisers [C05](#) ; soil-conditioning or soil-stabilising materials [C09K 17/00](#))~~
- A01B 79/00** Methods for working soil (essentially requiring the use of particular machines, see the relevant groups for the machines)

Project: N/A (A01C)

- U **A01C 1/00** Apparatus, or methods of use thereof, for testing or treating seed, roots, or the like, prior to sowing or planting (chemicals therefor [A01N 25/00](#) to [A01N 65/00](#) { irradiation in general [B01J 19/08](#))
- U A01C 1/02 · Germinating apparatus; Determining germination capacity of seeds or the like (germinating in preparation of malt [C12C 1/027](#))
- A01C 1/025 · · {Testing seeds for determining their viability or germination capacity}
- U **A01C 7/00** Sowing (~~{with centrifugal wheels [A01C 17/00](#) }~~ arrangements for driving working parts [A01C 19/00](#))
- U A01C 7/08 · Broadcast seeders; Seeders depositing seeds in rows {(machines for making furrows [A01C 5/06](#); combination of seed machines with other soil-working tools [A01B 49/06](#); foldable apparatus [A01B 73/00](#))}
- U A01C 7/081 · · {Seeders depositing seeds in rows using pneumatic means}
- A01C 7/082 · · · {Ducts, distribution pipes or details thereof for pneumatic seeders (non-pneumatic seed pipes [A01C 7/206](#))}
- A01C 7/084 · · · {Pneumatic distribution heads for seeders}
- U **A01C 15/00** Fertiliser distributors (~~[A01C 7/06](#) takes precedence~~; {combined with seeders [A01C 7/06](#)}; arrangements for driving working parts [A01C 19/00](#); {harrows with special additional arrangements [A01B 19/00](#)}; sand, gravel or salt spreaders for roads [E01C 19/20](#))
- U A01C 15/06 · with distributing slots, {i.e. for dosing, e.g. adjustable openings}
- U A01C 15/08 · · with pushers or stirrers in the slots
- A01C 15/10 · · · with reciprocating pushers {or stirrers in front of the slots (~~with endless chains [A01C 15/18](#) }~~}

- U A01C 21/00** **Methods of fertilizing, { sowing or planting}(fertilisers [C05](#); soil-conditioning or soil-stabilising materials [C09K 17/00](#))**
- A01C 21/005 · {Following a specific plan, e.g. pattern (precision agriculture in general [A01B 79/005](#); steering or guiding agricultural machines or implements [A01B 69/00](#))}
- A01C 21/007 · {Determining fertilization requirements}

Project: N/A (A01D)

- A01D** **HARVESTING; MOWING**{(-parts, details or accessories of agricultural machines or implements in general [A01B 51/00](#) to [A01B 75/00](#)-)}
- NOTES**
- This subclass covers the shredding or pulverising of stubble, e.g. for the purpose of producing mulch, but does not cover other mechanical destruction of unwanted vegetation, which is covered by group [A01M 21/02](#)
- In this subclass, in groups [A01D 34/00](#) , [A01D 42/00](#) , [A01D 43/00](#) , [A01D 57/00](#) , [A01D 67/00](#) , [A01D 69/00](#) and [A01D 75/00](#) , it is desirable to add the indexing code of group [A01D 2101/00](#)
- A01D 1/00 - A01D 11/00** **Hand implements** (-devices for picking apples or like fruit [A01D 46/24](#) ; soil-working implements not specially adapted for harvesting [A01B 1/00](#)-)
- A01D 1/00** **Hand-cutting implements for harvesting** (-hedge trimming means [A01G 3/04](#) ; { hand-cutting in general [B26](#) ; making from sheet metal [B21D 53/72](#) ; making by rolling [B21H 7/10](#) })
- A01D 3/00** **Non-abrasive sharpening devices for scythes, sickles or the like** (-abrasive or similar sharpening devices [B24D 15/06](#)-)
- A01D 5/00** **Containers for whetstones for use during harvesting** (-whetting implements [B24D 15/00](#)-)
- A01D 7/00** **Rakes** (-mowers convertible to rakes or capable of raking [A01D 42/02](#) ; mowers combined with rakes [A01D 43/02](#) ; haymakers, crop conditioners [A01D 76/00](#) to [A01D 84/00](#) ; { making rakes from sheet metal [B21D 53/68](#) ; making rakes by rolling [B21H 7/08](#) })
- A01D 9/00** **Forks**{(-making forks from sheet metal [B21D 53/68](#) ; making forks by rolling [B21H 7/08](#)-)}
- A01D 11/00** **Other hand implements**{(-for maize [A01D 45/026](#) , for cotton [A01D 46/087](#)-)}
- A01D 11/06 · Combined implements, e.g. fork and rake
- U A01D 23/00** **Topping machines**
- U A01D 23/02** · cutting the tops before being lifted
- A01D 2023/022 · {Rotatable cleaning devices, e.g. brushes, for removing the rests of vegetal material on the root-crops not yet harvested}(-with cutters [A01D 2023/026](#)-)}
- A01D 23/04 · cutting the tops after being lifted}(-processing of harvested produce in bulk [A01F 29/00](#) , [A23N](#)-)
- A01D 31/00** **Other digging harvesters**{(-for harvesting asparagus [A01D 45/007](#)-)}
- U A01D 33/00** **Accessories for digging harvesters**
- A01D 33/14 · Lifting or lowering mechanisms for the tools

- A01D 34/00 -
A01D 51/00
A01D 34/00** **Harvesters or mowers for grass, cereals, or other crops (-component parts thereof [A01D 57/00](#) to [A01D 69/00](#) ; accessories therefor [A01D 75/00](#))**
- Mowers (-combined with apparatus performing additional operations while mowing [A01D 37/00](#) to [A01D 41/00](#) , [A01D 43/00](#) ; convertible to apparatus for purposes other than mowing or capable of performing operations other than mowing [A01D 42/00](#)); Mowing apparatus of harvesters**
- U A01D 34/01 . characterised by features relating to the type of cutting apparatus
 - U A01D 34/02 . . having reciprocating cutters
 - A01D 34/125 . . . with means for discharging mown material (-[A01D 57/26](#) to [A01D 57/30](#) take precedence; combined with means for gathering or loading mown material [A01D 43/06](#)-)
 - U A01D 34/24 . . . Lifting devices for the cutter-bar
 - A01D 34/243 {Mechanical lifting devices (-[A01D 34/26](#) takes precedence-)}
 - U A01D 34/412 . . having rotating cutters
 - U A01D 34/42 . . . having cutters rotating about a horizontal axis, e.g. cutting-cylinders
 - U A01D 34/43 mounted on a vehicle, e.g. a tractor, or drawn by an animal or a vehicle
 - A01D 34/435 {Flail harvesters or mowers (-cutting flails [A01D 34/535](#)-)}
 - A01D 34/46 hand-guided by a walking operator (-[A01D 34/43](#) takes precedence-)
 - U A01D 34/47 with motor driven cutters or wheels
 - A01D 34/475 {Driving mechanisms (-for the cutters [A01D 34/56](#)-)}
 - A01D 34/49 with means for discharging mown material (-[A01D 57/26](#) to [A01D 57/30](#) take precedence; combined with means for gathering or loading mown material [A01D 43/06](#)-)
 - U A01D 34/63 . . . having cutters rotating about a vertical axis
 - A01D 34/64 mounted on a vehicle, e.g. a tractor, or drawn by an animal or a vehicle (-[A01D 34/695](#) takes precedence-)
 - U A01D 34/67 hand-guided by a walking operator
 - U A01D 34/68 with motor driven cutters or wheels
 - A01D 34/6806 {Driving mechanisms (-for the cutters [A01D 34/76](#)-)}
 - A01D 34/71 with means for discharging mown material (-[A01D 57/26](#) to [A01D 57/30](#) take precedence; combined with means for gathering or loading mown material [A01D 43/06](#)-)
 - A01D 34/81 Casings; Housings (-[A01D 34/71](#) takes precedence-)
 - U A01D 34/835 . specially adapted for particular purposes
 - A01D 34/8355 . . {for cutting up or crushing remaining standing stalks, e.g. stubble (-mowers combined with means for cutting up, crushing or bruising, the mown crop [A01D 43/08](#) , [A01D 43/10](#) ; apparatus for crushing or bruising mown stalks [A01D 82/00](#) ; apparatus for cutting up the mown crop [A01F 29/00](#)-)}
 - A01D 34/84 . . for edges of lawns or fields, e.g. for mowing close to trees or walls ({ for embankments [A01D 34/86](#) takes precedence; })(-hand-held edge trimmers [A01G 3/06](#)-)
 - A01D 34/86 . . for use on sloping ground, e.g. on embankments {or in ditches} (-undercarriages or frames specially adapted for harvesters or mowers [A01D 67/00](#) ; control mechanisms for harvesters or mowers when moving on slopes [A01D 75/28](#)-)
 - A01D 34/863 . . . {and for mowing around obstacles, e.g. posts, trees, fences or the like (-[A01D 34/866](#) takes precedence-)}

- A01D 37/00** **Reaper-binders** ~~(-features relating to mowing only [A01D 34/00](#) , to binding only [A01D 39/00](#) ; equipment thereon for binding harvested produce, e.g. knotters, [A01D 59/00](#) ; { bundling articles [B65B 13/00](#) })~~
- A01D 37/02 · with receiving platform and binding apparatus but without elevating canvases~~{(-knotting [D04G](#)-)}~~
- A01D 37/04 · conveying the stalks in vertical position~~{(-delivering devices for standing stalks [A01D 57/22](#)-)}~~
- A01D 37/06 · binding with stalks or straw bands~~{(-implements for laying-out bands for sheaves [A01D 75/16](#)-)}~~
- A01D 39/00** **Independent binders, e.g. for hay; Binders attachable to mowers** ~~(-equipment thereon for binding harvested produce, e.g. knotters, [A01D 59/00](#) ; stationary apparatus or hand tools for forming or binding hay or straw into bundles [A01F 1/00](#) ; { bundling articles [B65B 13/00](#) ; knotting [D04G](#) })~~
- A01D 41/00** **Combines, i.e. harvesters or mowers combined with threshing devices** ~~(-threshing devices for combines [A01F 7/00](#) to [A01F 12/00](#)-)~~
- U A01D 41/12 · Details of combines
- A01D 41/1208 · {Tanks for grain or chaff ~~(-for threshing machines [A01F 12/60](#)-)}~~
- A01D 42/00** **Mowers convertible to apparatus for purposes other than mowing; Mowers capable of performing operations other than mowing** ~~(-mowers combined with apparatus performing additional operations while mowing [A01D 43/00](#)-)~~
- A01D 42/005 · {Mulching ~~(-shredders or like cutting implements for comminuting plant waste per se [A01G 3/002](#)-)}~~
- A01D 42/06 · Sweeping or cleaning lawns or other surfaces~~{(-sweeping apparatus for lawns per se [A01G 1/125](#)-)}~~
- A01D 43/00** **Mowers combined with apparatus performing additional operations while mowing** ~~(-[A01D 37/00](#) , [A01D 39/00](#) , [A01D 41/00](#) , take precedence-)~~
- A01D 43/06 · with means for collecting, gathering or loading mown material~~{(-[A01D 43/086](#) takes precedence; for hay or the like [A01D 87/00](#)-)}~~
- A01D 43/063 · · in or into a container carried by the mower; Containers therefor ~~(-[A01D 43/077](#) takes precedence-)~~
- A01D 43/07 · · in or into a trailer ~~(-[A01D 43/077](#) takes precedence-)~~
- A01D 43/08 · with means for cutting up the mown crop, {e.g. forage harvesters (threshing machines having chaff-cutters [A01F 12/40](#) ; cutting apparatus of chaff-cutters or of apparatus for cutting up mown crop [A01F 29/00](#)-)}
- A01D 43/10 · with means for crushing or bruising the mown crop~~{(-stalk crushers or bruisers per se for standing stalks or stubbles [A01D 34/8355](#) , for mown crop [A01D 82/00](#) , for straw [A01F 12/40](#)-)}~~
- A01D 45/00** **Harvesting of standing crops** ~~(-[A01D 44/00](#) takes precedence; threshing machines adapted for special crops, threshing devices for combines adapted for special crops [A01F 11/00](#)-)~~
- A01D 45/02 · of maize{, i.e. kernel harvesting~~(-for ensilage maize [A01D 43/081](#)-)}~~
- A01D 45/06 · of flax {or similar fibrous plants}
- A01D 45/10 · of sugar cane~~{(-for digging sugar cane [A01D 31/00](#)-)}~~

- U A01D 46/00 Picking of fruits, vegetables, hops, or the like; Devices for shaking trees or shrubs**
- NOTE
In this group, group [A01D 46/30](#) takes precedence over groups [A01D 46/02](#) to [A01D 46/28](#)
- A01D 46/005 · {picking or shaking pneumatically (-of cotton [A01D 46/10](#)-)}
 - U A01D 46/08 · of cotton
 - A01D 46/10 · · pneumatically{(-[A01D 46/081](#) to [A01D 46/088](#) take precedence-)}
 - A01D 46/24 · Devices for picking apples or like fruit (-[A01D 46/28](#) { and [A01D 46/005](#) }takes precedence)
 - A01D 46/247 · · Manually operated fruit-picking tools (-[A01D 46/26](#) takes precedence-)
 - A01D 46/26 · Devices for shaking trees or shrubs; Fruit catching devices to be used therewith (-[A01D 46/28](#) takes precedence-)
- A01D 47/00 Headers {for topping of plants, e.g. stalks with ears}**
- A01D 57/00 - A01D 75/00 Components of harvesters or mowers for grass or cereals (-mowing apparatus [A01D 34/00](#) ; wheels [B60B](#) ; wheel scrapers [B60S 1/68](#)-)**
- U A01D 57/01 · Devices for leading crops to the mowing apparatus
 - U A01D 57/02 · · using reels
 - A01D 57/03 · · · with supplementary controlled movement of the crop-engaging members, e.g. of the tines{(-[A01D 57/025](#) takes precedence-)}
- A01D 59/00 Equipment for binding harvested produce (-specially adapted for baling presses [A01F 15/14](#) ; bundling articles for packaging in general [B65B 13/00](#)-)**
- A01D 59/12 · Containers for the twine (-twine balls or their manufacture [B65H](#)-)
- A01D 61/00 Elevators or conveyers for binders or combines {conveying in general [B65G](#); hoisting, lifting in general [B66](#)}**
- A01D 67/00 Undercarriages or frames specially adapted for harvesters or mowers (-coupling arrangements between animal or tractor and harvester or mower [A01B 59/00](#)-); Mechanisms for adjusting the frame (-adjusting devices for the cutter-bar [A01D 34/28](#)-); Platforms**
- A01D 69/00 Driving mechanisms or parts thereof for harvesters or mowers (-driving mechanisms for the cutters of mowers or harvesters [A01D 34/00](#)-)**
- U A01D 75/00 Accessories for harvesters or mowers**
- A01D 75/08 · Sharpening apparatus fixed to the harvester or mower (-sharpening machines or devices per se [B24B](#) , [B24D](#)-)
 - A01D 75/18 · Safety devices for parts of the machines (-safety devices in general [F16P](#)-)
 - A01D 75/20 · Devices for protecting men or animals (-safety devices in general [F16P](#)-)
 - U A01D 75/28 · Control mechanisms for harvesters or mowers when moving on slopes; Devices preventing lateral pull
 - A01D 75/282 · · {acting on the grain cleaning and separating device (-grain cleaners, separators per se [A01F 12/44](#)-)}
 - A01D 75/287 · · {acting on the mowing table (-[A01D 75/285](#) takes precedence-)}
- A01D 76/00 - A01D 93/00 Haymakers (-combined with mowers [A01D 43/04](#)-); Crop Conditioners**
- NOTE
In groups [A01D 76/00](#) to [A01D 87/00](#) , the following terms are used with the meanings indicated:

- "hay" includes all mowed forage crop in a dry or partially dry state;
- "haymakers" covers all apparatus working on mowed forage croplying on the ground with the intention to make hay, with the exception of "rakes" which are covered by group [A01D 7/00](#)

- A01D 76/003 • {Hand-operated wheeled rakes (-hand-operated rakes [A01D 7/00](#)-)}
- A01D 76/006 • {Hay-sweeps (-rakes for making stacks [A01D 85/001](#) ; sweep rakes [A01D 87/08](#)-)}
- U A01D 78/00 Haymakers with tines moving with respect to the machine**
- A01D 78/001 • {Side-delivery rakes (-[A01D 78/04](#) takes precedence-)}
- U A01D 78/08 • with tine-carrying rotary heads or wheels
- U A01D 78/10 • • the tines rotating about a substantially vertical axis
- A01D 78/1007 • • • {Arrangements to facilitate transportation specially adapted therefor (-[A01D 78/1021](#) takes precedence; for other agricultural machines or implements [A01B 73/00](#) ; carriers [A01D 80/005](#)-)}
- A01D 78/1028 • • • {Pivotable rotor support arms (-[A01D 78/1007](#) takes precedence-)}
- A01D 78/1064 • • • {Arrangements of tines (-[A01D 78/1007](#) takes precedence-)}
- A01D 80/00 Parts or details of{, or accessories for,}haymakers (parts or details specific for one type of machine, see the relevant groups for these machines)**
- A01D 80/005 • {Carriers for the transport of haymakers (~~Arrangements of the haymaker to facilitate transportation A01D 78/1007~~ *Arrangements of the haymaker to facilitate transportation A01D 78/1007*)}
- A01D 82/00 Crop conditioners, i.e. machines for crushing or bruising stalks (-combined with harvesters [A01D 43/10](#)-)**
- A01D 84/00 Haymakers not provided for in a single one of groups [A01D 76/00](#) to [A01D 82/00](#)**
- A01D 84/02 • with flexible tools
- U A01D 85/00 Arrangements for making or setting stacks**
- A01D 85/001 • {making or setting stacks of cereals or grass, e.g. rack formers, fixed haystacks (-rakes for making windrows, haysweeps [A01D 76/006](#) ; drying racks [A01F 25/12](#)-)}
- A01D 85/005 • {Forming groups of bales, e.g. bale sledges (-loaders for bales [A01D 87/12](#) ; vehicles for loading bales [A01D 90/08](#)-)}
- A01D 87/00 Loaders for hay or like field crops (-combined with mowers [A01D 43/06](#) ; { loading in forage silos [A01F 25/18](#) ; } ; loading in general [B65G](#) , [B66](#)-)**
- A01D 87/0007 • {with chopping devices (-harvesters with loaders [A01D 43/06](#) ; forage harvesters [A01D 43/08](#) ; special adaptations of cutting machines for hay, straw or fodder [A01F 29/00](#)-)}
- A01D 87/0015 • {Arrangements for making a strand (-forming round bales [A01F 15/07](#)-)}
- A01D 87/0023 • {Coupling arrangements between tractors, loaders or vehicles (-for harvesters [A01D 67/005](#)-)}
- A01D 87/003 • {with gripping or clamping devices (-manure loaders [A01C 3/04](#)-)}
- A01D 87/0053 • {Tractor-mounted loaders (-buck-rakes, transporting rakes [A01D 87/08](#) ; manure loaders [A01C 3/04](#) ; fork loaders, fork lifts [B66F](#) ; earth-moving machines [E02F](#)-)}
- A01D 87/02 • with conveyer belts {or conveyor chains, with or without pick-up means}

- A01D 87/08
 - with sweep rakes,{i.e. buck-rakes, e.g. transporting rakes(-gripping or clamping devices [A01D 87/003](#) ; fork loaders [A01D 87/0053](#)-)}
- A01D 87/10
 - with blowers{(-blowing and conveying [B65G 53/00](#) ; loading or distributing arrangements in forage silos [A01F 25/18](#)-)}
- U A01D 87/12
 - Loaders for sheaves, stacks or bales
- A01D 87/122
 - · {for bales on the ground (-vehicles for loading [A01D 90/08](#)-)}
- A01D 89/00**

Pick-ups for loaders, chaff-cutters, balers, field-threshers, or the like {i.e. attachments for picking-up hay or the like field crops(-field threshers with windrow pick-up apparatus [A01D 41/10](#)-)}
- A01D 89/006
 - {Accessories (-feeding devices for baling presses [A01F 15/10](#) ; for cutting machines [A01F 29/10](#)-)}
- A01D 90/00**

Vehicles for carrying harvested crops with means for self-loading or unloading (-combined with mowers [A01D 43/06](#) ; load transporting vehicles modified to facilitate loading in general [B60P](#) ; bucket cars, i.e having scraper bowls [E02F 3/64](#)-)
- A01D 90/02
 - Loading means{(-loaders [A01D 87/00](#) ; pick-ups [A01D 89/00](#)-)}
- U A01D 90/04
 - · with additional cutting means
- A01D 90/06
 - · · with chaff cutters,{i.e. choppers}used as loading and cutting means (-[A01D 43/08](#) takes precedence-)
- U A01D 90/08
 - · with bale-forming means additionally used for loading; with means for picking-up bales and transporting them into the vehicle
- A01D 90/083
 - · · {Round-bale trailers (-trailers in general [B62D](#)-)}
- A01D 90/10
 - Unloading means{(-manure distributors [A01C 3/06](#)-)}
- A01D 90/12
 - with additional devices or implements (-arrangements of coupling devices [A01B 59/00](#)-)
- A01D 91/00**

Methods for harvesting agricultural products (essentially requiring the use of particular machines, see the relevant groups for the machines)
- A01D 91/04
 - Products growing above the soil (-fruit, hops [A01D 46/00](#)-)

Project: N/A (A01F)

- U **A01F 7/00**

Threshing apparatus
- U A01F 7/02
 - with rotating tools (threshing cylinders or concaves [A01F 12/18](#))
- U A01F 7/06
 - · with axles in line with the feeding direction; { Axial threshing machines}
- A01F 7/062
 - · · {-with a rotating cage}
- A01F 7/065
 - · · {-with cage sweep mechanisms}
- A01F 7/067
 - · · {-with material-flow influencing means}
- U **A01F 29/00**

Cutting apparatus specially adapted for cutting hay, straw or the like (mowers combined with means for cutting up the mown crop [A01D 43/08](#))
- U A01F 29/09
 - Details
- A01F 29/095
 - {-Mounting or adjusting of knives}

Project: N/A (A01G)

- U **A01G 1/00**

Horticulture; Cultivation of vegetables (labels or name-plates [G09F 3/00](#), [G09F 7/00](#))
- A01G 1/001
 - {-Horticultural methods}
- U A01G 1/002
 - {Growing turf}
- A01G 1/004
 - · {-Pre-cultivated sod; Machines for laying it down}

- A01G 1/005
 - • {-Planted mats, e.g. for covering roofs}
- A01G 1/007
 - • {-Flat containers, e.g. for covering roofs}
- A01G 3/00**
 - Cutting implements specially adapted for horticultural purposes;**
 - ~~Delimiting standing trees (-felling trees [A01G 23/08](#); hand-held cutting tools suitable for other use [B26B](#))~~**
- U A01G 3/02
 - Secateurs; Flower or fruit shears
- A01G 3/021
 - • {-characterized by the arrangement of pivots}
- U A01G 3/025
 - • having elongated or extended handles
- A01G 3/0251
 - • • {-Loppers, i.e. branch cutters with two handles (hedge shears [A01G 3/0475](#))}
- D A01G 3/0253
 - • • • {-characterized by the arrangement of pivots}
- A01G 3/0255
 - • • {-Tree pruners, i.e. pruning shears carried at the end of a pole}
- D A01G 3/0256
 - • • • {-actuated by pulling a rope or the like}
- D A01G 3/0258
 - • • • {-actuated by a shaft transmission, e.g. inside the pole}
- U A01G 3/033
 - • having motor-driven blades
- A01G 3/0335
 - • • {-having elongated or extended handles}
- U A01G 3/04
 - Apparatus for trimming hedges, e.g. hedge shears
- A01G 3/0408
 - • {-specially adapted for trellis work, e.g. machines for pruning vine or the like (preliminary pruning vines [A01G 17/023](#); defoliating machines [A01G 17/026](#))}
- A01G 3/0417
 - • {-Guiding frames for trimming hedges}
- A01G 3/0426
 - • {-Machines for pruning vegetation on embankments and road-sides}
- A01G 3/0435
 - • {-Machines specially adapted for shaping plants, e.g. topiaries}
- U A01G 3/047
 - • portable
- A01G 3/0475
 - • • {-Hedge shears}
- U A01G 3/08
 - Other tools for pruning, branching or delimiting standing trees
- A01G 3/081
 - • {-Manual cutting tools not otherwise provided for, e.g. pruning hooks}
- A01G 3/083
 - • {-Manual pruning saws (saws in general [B27B](#))}
- A01G 3/085
 - • {-Motor-driven saws for pruning or branching (saws in general [B27B](#))}
- A01G 3/086
 - • • {-Chain saws (chain saws in general [B27B 17/00](#))}
- A01G 3/088
 - • • {-Circular saws (circular saws in general [B27B 5/00](#))}
- U A01G 9/00**
 - Cultivation of flowers, vegetables or rice in receptacles, forcing-frames, or greenhouses (cultivation without soil [A01G 31/00](#); {turfing of roofs [E04D 11/002](#)})**
- A01G 9/006
 - {-Labels or label holders for flower pots}
- U A01G 9/02
 - Receptacles, e.g. flower-pots or boxes (hanging flower baskets, holders or containers for flower-pots [A47G 7/00](#)); Glasses for cultivating flowers
- A01G 9/022
 - • {-Pots for vertical horticulture}
- A01G 9/023
 - • • {-Multi-tiered planters}
- A01G 9/024
 - • • {-Hanging flower pots and baskets}
- A01G 9/025
 - • • {-Containers and elements for greening walls (for covering roofs [A01G 1/007](#))}
- U A01G 9/04
 - Flower-pot saucers
- A01G 9/042
 - • {-Combinations of a saucer and a flower pot attached together}
- A01G 9/045
 - • {-Trays for receiving multiple pots}
- A01G 9/047
 - • {-Channels or gutters, e.g. for hydroponics}

- A01G 9/08
 - Devices for filling-up flower-pots { or pots for seedlings}; Devices for setting plants { or seeds} in pots
- A01G 9/081
 - • {-Devices for filling-up pots}
- A01G 9/083
 - • {-Devices for setting plants in pots}
- A01G 9/085
 - • {-Devices for setting seeds in pots}
- A01G 9/086
 - • {-Devices for repotting}
- A01G 9/088
 - • {-Handling or transferring pots}
- U A01G 9/10
 - Pots {(or other receptacles)} for seedlings, { saplings, cuttings or other young plants (foldable pots)}; Soil {(or like)} blocks for seedlings; { Plant substrate bodies}; Means for forming soil-blocks
- A01G 9/1006
 - • {-Tools, machines and methods for forming soil blocks or compressed pots, e.g. from peat}
- A01G 9/1013
 - • {-soil blocks or compressed pots}
- A01G 9/102
 - • {-Planting receptacles specially adapted for remaining in the soil after planting}
- A01G 9/1026
 - • {-Seed or shoot receptacles}
- A01G 9/1033
 - • {-Sterile receptacles, e.g. for tissue culture}
- A01G 9/104
 - • {-Units comprising two or more connected receptacles}
- A01G 9/1066
 - • {-Grids for supporting several receptacles}
- A01G 9/1073
 - • {-Receptacles specially adapted for air layering}
- A01G 9/108
 - • {-Handling or transporting of soil blocks or seedlings}
- A01G 9/1086
 - • {-Composition of plant substrate bodies (plant growth regulators [A01N](#); fertilizers [C05](#); soil conditioning or soil stabilizing materials [C09K 17/00](#))}
- U A01G 9/14
 - Greenhouses (cloches [A01G 13/04](#); {glazing bars, glazing clips therefor [E04D 3/06](#)})
- A01G 9/1438
 - • {-Covering materials therefor; Materials for protective coverings used for soil and plants, e.g. films, canopies, tunnels or cloches}
- U A01G 13/00**
 - Protecting plants (apparatus for the destruction of vermin or noxious animals [A01M](#); use of chemical materials therefor, composition of protective materials, e.g. grafting wax, [A01N](#); {coverings around trees forming part of a road [E01C 9/005](#)})**
- U A01G 13/02
 - Protective coverings for plants; { Coverings for the ground;} Devices for laying-out { or removing} coverings {(covering materials [A01G 9/1438](#))}
- A01G 13/0206
 - • {-Canopies, i.e. devices providing a roof above the plants}
- A01G 13/0212
 - • • {-for individual plants, e.g. for plants in pots}
- A01G 13/0225
 - • {-Wind breakers, i.e. devices providing lateral protection of the plants}
- A01G 13/0231
 - • {-Tunnels, i.e. protective full coverings for rows of plants (dismountable or portable greenhouses [A01G 9/16](#))}
- A01G 13/0237
 - • {-Devices for protecting a specific part of a plant, e.g. roots, trunk or fruits}
- A01G 13/0243
 - • {-Protective shelters for young plants, e.g. tubular sleeves}
- A01G 13/025
 - • {-Devices for laying-out or removing plant coverings (for ground coverings [A01G 13/0287](#))}
- A01G 13/0256
 - • {-Ground coverings}
- A01G 13/0262
 - • • {-Mulches, i.e. covering material not-pre-formed in mats or sheets ([A01G 13/0281](#) takes precedence; composition of mulches [C09K 17/52](#))}
- A01G 13/0268
 - • • {-Mats or sheets, e.g. nets or fabrics ([A01G 13/0281](#) takes precedence)}
- A01G 13/0275
 - • • • {-Films}

- A01G 13/0281
 - • • {-Protective ground coverings for individual plants, e.g. for plants in pots (coverings around trees forming part of a road [E01C 9/005](#))}
- A01G 13/0287
 - • • {-Devices for laying-out or removing ground coverings}
- A01G 13/0293
 - • • {-Anchoring means for ground coverings}
- A01G 13/04
 - • Cloches { i.e. protective full coverings for individual plants-(dismountable or portable greenhouses [A01G 9/16](#); individual canopies [A01G 13/0212](#))}
- U A01G 17/00** **Cultivation of hops, vines, fruit trees, or like trees**
- A01G 17/005
 - {-Cultivation methods}
- U A01G 17/02
 - Cultivation of hops or vines
- A01G 17/023
 - • {-Machines for priming and/or preliminary pruning of vines, i.e. removing shoots and/or buds (trimming apparatus for trellis work [A01G 3/0408](#))}
- A01G 17/026
 - • {-Machines for removing leaves of vines}
- A01G 21/00** **Devices for hanging-up harvested fruit**
- U A01G 25/00** **Watering gardens, fields, sports grounds, or the like (special apparatus or adaptations for fertilising-liquids [A01C 23/00](#); nozzles or outlets, spraying apparatus [B05B](#); gravity flow, open channel irrigation ditch systems [E02B 13/00](#))**
- U A01G 25/02
 - Watering arrangements located above the soil which make use of perforated pipe-lines or pipe-lines with dispensing fittings, e.g. for drip irrigation (perforated pipes per se [B05B 1/20](#))
- A01G 25/023
 - • {-Dispensing fittings for drip irrigation, e.g. drippers}
- A01G 25/026
 - • {-Machines and methods for fixing the drippers in the pipe}
- U A01G 31/00** **Hydroponics; Cultivation without soil ([A01G 33/00](#) takes precedence)**
- U A01G 31/02
 - Special apparatus therefor (apparatus for cultivation in receptacles or greenhouses in general [A01G 9/00](#); self-acting watering devices [A01G 27/00](#))
- U A01G 31/04
 - • Hydroponic culture on conveyers
- A01G 31/042
 - • • {-with containers travelling on a conveyor belt or the like}
- A01G 31/045
 - • • {-with hanging containers travelling along a rail}
- A01G 31/047
 - • • {-using a rotating drum or the like}

Project: N/A (A01H)

- U A01H 4/00** **Plant reproduction by tissue culture techniques; {Tissue culture techniques therefor}**
- A01H 4/008
 - {-Methods for regeneration to complete plants}

Project: N/A (A01J)

- U A01J 5/00** **Milking machines or devices ([A01J 1/00](#), [A01J 3/00](#) take precedence)**
- U A01J 5/013
 - On-site detection of mastitis in milk
- A01J 5/0137
 - • {-by using sound, e.g. ultrasonic detection}

Project: N/A (A01K)

- U A01K 1/00** **Housing animals; Equipment therefor (building construction, features of buildings [E04](#); ventilating buildings [F24F](#))**
- A01K 1/0035
 - {-Transportable or mobile animal shelters}
- A01K 1/0041
 - {-Rotary, round or circular animal barns}
- A01K 1/0088
 - {-Animal shelters especially adapted for keeping young cattle, i.e. calves}

- A01K 1/0094 · {-Animal shelters or barns especially adapted for keeping horses}
- U A01K 1/02 · Pigsties; Dog-kennels; Rabbit-hutches or the like
- A01K 1/0236 · {-Transport boxes, bags, cages, baskets, harnesses for animals; Fittings therefor (for poultry [A01K 31/002](#); for pigeons [A01K 31/07](#))}
- A01K 1/0245 · . . . {-Boxes or cages}
- A01K 1/0254 · . . . {-Bags or baskets}
- A01K 1/0263 · . . . {-Harnesses}
- A01K 1/0272 · . . . {-Boxes, bags, cages, baskets, harnesses especially adapted for transport in or on automobiles}
- A01K 1/0281 · . . . {-Boxes, bags, cages, baskets, harnesses especially adapted for transport in or on bicycles or motorcycles}
- A01K 1/029 · . . . {-Boxes, bags, cages, baskets, harnesses especially adapted for carrying the animal on the body of a person (baby carriers [A47D 13/02](#))}
- U A01K 5/00** **Feeding devices for stock or game ([A01K 1/10](#) takes precedence; for poultry [A01K 39/00](#)){Feeding wagons; Feeding stacks}**
- U A01K 5/01 · Feed troughs; Feed pails {([A01K 1/10](#) takes precedence)}
- U A01K 5/0114 · . {-Pet food dispensers; Pet food trays (time-controlled [A01K 5/0291](#))}
- A01K 5/0121 · . . . {-Disposable pet feeders}
- A01K 5/0128 · . . . {-Pet feeders with liners}
- A01K 5/0135 · . . . {-with means for preventing or catching spillage}
- A01K 5/0142 · . . . {-with means for preventing other animals or insects from eating}
- U A01K 7/00** **Watering equipment for stock or game**
- A01K 7/005 · {-Drinking bowls with anti-splash or anti-spilling features}
- U A01K 7/02 · Automatic devices, {e.g. actuated by weight of water; Medication dispensers} (construction of valves [F16K](#))
- A01K 7/025 · . {-Water tanks}
- A01K 7/027 · . {-Drinking equipment with water heaters, coolers or means for preventing freezing}
- U A01K 11/00** **Marking of animals (of poultry [A01K 35/00](#); {of fish [A01K 61/001](#)}; lead-sealing pliers [B25B](#))**
- U A01K 11/001 · {Ear-tags}
- A01K 11/003 · . {-with means for taking tissue samples, e.g. for DNA analysis}
- A01K 11/004 · . {-with electronic identification means, e.g. transponders}
- A01K 11/006 · {-Automatic identification systems for animals, e.g. electronic devices, transponders for animals (identification systems for access to feeding pens [A01K 1/0209](#); ear tags with electronic identification means [A01K 11/004](#))}
- A01K 11/008 · . {-incorporating GPS}
- U A01K 15/00** **Devices for taming animals, e.g. nose-rings, hobbles; Devices for overturning animals in general; Training equipment; Covering boxes ({animal holding devices [A01K 1/0613](#)}; devices for veterinary purposes [A61D 3/00](#))**
- U A01K 15/02 · Training or exercise equipment ([A01K 15/04](#) takes precedence); {Electric shock devices (circuits therefor [H03K 3/537](#)); Toys, e.g. for pets}
- U A01K 15/025 · . {Toys, e.g. for chewing}
- A01K 15/026 · . . . {-Chewable toys, e.g. for dental care of pets}
- A01K 15/029 · . {-Electric or similar shock devices, e.g. prods (circuits therefor [H03K 3/537](#))}

- U A01K 27/00** **Leads or collars, e.g. for dogs (devices specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material [B65H 75/34](#))**
- A01K 27/001 · {-Collars}
 - A01K 27/002 · {-Harnesses}
 - A01K 27/003 · {-Leads, leashes}
 - A01K 27/004 · · {-Retractable leashes}
 - A01K 27/005 · {-Quick-couplings, safety-couplings or shock-absorbing devices between leash and collar}
 - A01K 27/006 · {-with light-emitting or ornamental devices}
 - A01K 27/007 · {-with insecticide-dispensing means}
 - A01K 27/008 · {-with pockets or similar for carrying accessories}
 - A01K 27/009 · {-with electric-shock, sound, magnetic- or radio-waves emitting devices}
- U A01K 39/00** **Feeding or drinking appliances for poultry or other birds {(A01K 31/005, [A01K 31/06](#), [A01K 31/17](#) take precedence)}**
- U A01K 39/02 · Drinking appliances ([A01K 39/04](#) takes precedence; construction of valves [F16K](#))
 - A01K 39/0206 · · {-Drinkers especially adapted for feeding hummingbirds}
- U A01K 67/00** **Rearing or breeding animals, not otherwise provided for; New breeds of animals (methods for reproduction or fertilisation [A61D 19/00](#); medicinal preparations containing sperm [A61K 35/52](#); tissue- or animal-cell cultivation apparatus [C12M 3/00](#); cultivation or maintenance of tissue or animal cells [C12N 5/00](#); mutation or genetic engineering [C12N 15/00](#))**
- NOTE
- In this group the following term is used with the meaning indicated:
- "breeding" means obtaining animals up to and including their birth or hatching.
- U A01K 67/027 · New breeds of vertebrates
- NOTE
- In group [A01K 67/027](#), it is desirable to add the indexing codes of [A01K 2227/00](#) and subgroups relating to animals characterised by species. In group [A01K 67/027](#) it is desirable to add the indexing codes of [A01K 2267/00](#) and subgroups relating to animals characterised by their purpose
- A01K 67/0275 · · {-Genetically modified vertebrates, e.g. transgenic}
- U A01K 2217/00** **Genetically modified animals**
- U A01K 2217/05 · Animals comprising random inserted nucleic acids (transgenic)
 - U A01K 2217/054 · · inducing loss of function
 - A01K 2217/056 · · · due to mutation of coding region of the transgene (*dominant negative*)(*dominant negative*)

Project: N/A (A01M)

- U A01M 1/00** **Stationary means for catching or killing insects {(for repelling [A01M 29/00](#))}**
- U A01M 1/10 · {Catching insects by using} Traps {(using suction effect [A01M 1/06](#))}
 - A01M 1/103 · · {-for crawling insects}
 - A01M 1/106 · · {-for flying insects}

- U A01M 1/20 · Poisoning, narcotising, or burning insects {(fumigation apparatus [A01M 13/00](#))}
- U A01M 1/2005 · · {Poisoning insects using bait stations ([A01M 1/10](#)) takes precedence}
- A01M 1/2011 · · · {-for crawling insects}
- A01M 1/2016 · · · {-for flying insects}
- U A01M 1/2022 · · {Poisoning or narcotising insects by vaporising an insecticide}
- U A01M 1/2027 · · · {-without heating}
- U A01M 1/2044 · · · · {-Holders or dispensers for liquid insecticide, e.g. using wicks}
- A01M 1/205 · · · · · {-using vibrations, e.g. ultrasonic or piezoelectric atomizers}
- A01M 1/2055 · · · · · {-Holders or dispensers for solid, gelified or impregnated insecticide, e.g. volatile blocks or impregnated pads}
- A01M 1/2094 · · {-killing insects by using temperature, e.g. flames, steam or freezing ([A01M 1/22](#) takes precedence)}

- U A01M 13/00** **Fumigators; Apparatus for distributing gases {(poisoning or narcotising insects by vaporising an insecticide [A01M 1/2022](#))}**
- A01M 13/003 · {-Enclosures for fumigation, e.g. containers, bags or housings}
- A01M 13/006 · {-Fumigators specially adapted for destruction of rats or similar animals in holes}

- U A01M 31/00** **Hunting appliances**
- U A01M 31/02 · Shooting stands (folding seats [A47C](#))
- A01M 31/025 · · {-Hunting blinds, i.e. camouflage}

Project: N/A (A01N)

- U A01N 1/00** **Preservation of bodies of humans or animals, or parts thereof (preservation of foodstuffs [A23](#); medicinal preparations containing materials from mammals or birds, e.g. blood, sperm, [A61K 35/12](#); cell or tissue culture [C12N 5/00](#))**
- U A01N 1/02 · Preservation of living parts
WARNING
Subgroups [A01N 1/0205](#)-[A01N 1/0294](#) are not complete, due to a reorganisation in progress
- A01N 1/0205 · · {-Chemical aspects}
WARNING
This group contains documents to be reclassified into subgroups [A01N 1/021](#)-[A01N/02P6](#)
- A01N 1/021 · · · {-Preservation or perfusion media, liquids, solids or gases used in the preservation of cells, tissue, organs or bodily fluids}
- A01N 1/0215 · · · · {-Disinfecting agents, e.g. antimicrobials for preserving living parts}
- A01N 1/0221 · · · · · {-Freeze-process protecting agents, i.e. substances protecting cells from effects of the physical process, e.g. cryoprotectants, osmolarity regulators like oncotic agents}
- A01N 1/0226 · · · · · {-Physiologically active agents, i.e. substances affecting physiological processes of cells and tissue to be preserved, e.g. anti-oxidants or nutrients}
- A01N 1/0231 · · · {-Chemically defined matrices, e.g. alginate gels, for immobilising, holding or storing cells, tissue or organs for preservation purposes; Chemically altering or fixing cells, tissue or organs, e.g. by cross-linking, for preservation purposes}

- A01N 1/0236
 - A01N 1/0242
 - A01N 1/0247
 - A01N 1/0252
 - A01N 1/0257
 - A01N 1/0263
 - A01N 1/0268
 - A01N 1/0273
 - A01N 1/0278
 - A01N 1/0284
 - A01N 1/0289
 - A01N 1/0294
- · {-Mechanical aspects}
 - · · {-Apparatuses, i.e. devices used in the process of preservation of living parts, such as pumps, refrigeration devices or any other devices featuring moving parts and/or temperature controlling components}
 - · · · {-for perfusion, i.e. for circulating fluid through organs, blood vessels or other living parts}
 - · · · {-Temperature controlling refrigerating apparatus, i.e. devices used to actively control the temperature of a designated internal volume, e.g. refrigerators, freeze-drying apparatus or liquid nitrogen baths}
 - · · · · {-Stationary or portable vessels generating cryogenic temperatures}
 - · · {-Non-refrigerated containers specially adapted for transporting or storing living parts whilst preserving, e.g. cool boxes, blood bags or "straws" for cryopreservation (containers for collecting, administering, analyzing and storing without specific measures for preservation, e.g. blood bags as such, [A61J 1/10](#))}
 - · · · {-Carriers for immersion in cryogenic fluid, both for slow-freezing and vitrification, e. g. open or closed "straws" for embryos, oocytes or semen}
 - · · · {-Transport containers ([A01N 1/0268](#) takes precedence)}
 - · {-Physical preservation processes}
 - · · {-Temperature processes, i.e. using a designated change in temperature over time}
 - · · {-Pressure processes, i.e. using a designated change in pressure over time}
 - · · {-Electromagnetic, i.e. using electromagnetic radiation or electromagnetic fields}
- U A01N 65/00** **Biocides, pest repellants or attractants, or plant growth regulators containing material from algae, lichens, bryophyta, multi-cellular fungi or plants, or extracts thereof (containing compounds of determined constitution [A01N 27/00](#) to [A01N 59/00](#))**
- WARNING
Groups [A01N 65/03](#) to [A01N 65/48](#), with the exception of [A01N 65/385](#), are incomplete. See also group [A01N 65/00](#).
- U A01N 65/08
 - U A01N 65/38
 - A01N 65/385
- Magnoliopsida [dicotyledons]
 - · Solanaceae [Potato family], e.g. nightshade, tomato, tobacco or chilli pepper
 - · · {-Tobacco}

Project: N/A (A21B)

- U A21B 1/00** **Bakers` ovens**
- U A21B 1/02
 - U A21B 1/24
 - A21B 1/245
- characterised by the heating arrangements
 - · Ovens heated by media flowing therethrough
 - · · {-with a plurality of air nozzles to obtain an impingement effect on the food}
- U A21B 3/00** **Parts or accessories of ovens**
- A21B 3/006
- {-Means for cleaning the baking cavity}
- WARNING
Group [A21B 3/006](#) is not complete, pending reorganisation, see also [A21B 3/00](#)
- U A21B 3/13
- Baking-tins; Baking forms

- A21B 3/136
- • {-with reinforcements}
- WARNING**
Groups [A21B 3/136-A21B 3/139](#) are not complete, pending reorganisation, see also [A21B 3/13](#)

- A21B 3/137
- • {-with detachable side and bottom parts, e.g. springform}
- A21B 3/138
- • {-flexible forms, e.g. made from silicone}
- A21B 3/139
- • {-with apertures to vent steam}

U A21B 5/00**Baking apparatus for special goods; Other baking apparatus**

- U A21B 5/02
- Apparatus for baking hollow articles, waffles, pastry, biscuits, or the like
- A21B 5/026
- • {-for baking waffle cups or cones}

Project: N/A (A21C)**U A21C 3/00****Machines or apparatus for shaping batches of dough before sub-division**

- U A21C 3/02
- Dough-sheeters; Rolling-machines; Rolling-pins {(mixing or kneading dough by rollers [A21C 1/08](#); non-manual rolling and working of discrete dough pieces [A21C 7/00](#))}
- A21C 3/025
- • {-with one or more rollers moving perpendicularly to its rotation axis, e.g. reciprocally ([A21C 3/024](#) takes precedence; hand-operated rollers [A21C 3/021](#)-)}
- A21C 3/06
- Machines for coiling sheets of dough, e.g. for producing rolls, {e.g. crescent-rolls-(as part of a machine for further moulding or forming [A21C 7/00](#); with filling [A21C 9/06](#))}
- A21C 3/065
- • {-the coil axis of the produced rolls being in parallel or oblique position relative to the transport direction; with coiling elements, e.g. rollers, being placed in parallel or oblique position relative to the transport direction}

U A21C 9/00**Other apparatus for handling dough or dough pieces**

- U A21C 9/06
- Apparatus for filling pieces of dough such as doughnuts {([A21C 11/163](#) takes precedence; apparatus for filling baked articles [A21C 15/007](#))}
- A21C 9/061
- • {-Making continuous filled tubular products, e.g. with subsequent cutting}
- U A21C 9/08
- Depositing, arranging and conveying apparatus for handling pieces, e.g. sheets of dough {(for handling liquid or semi-liquid dough, e.g. batter [A21C 5/006](#))}
- A21C 9/081
- • {-Charging of baking tins or forms with dough}

U A21C 15/00**Apparatus for handling baked articles**

- U A21C 15/02
- Apparatus for shaping or moulding baked wafers; Making multi-layer wafer sheets
- A21C 15/025
- • {-Apparatus for shaping or moulding baked wafers, e.g. to obtain cones for ice cream}

Project: N/A (A21D)**U A21D 10/00****Batters, dough or mixtures before baking**

- A21D 10/002
- {-Dough mixes; Baking or bread improvers; Premixes}
- A21D 10/005
- • {-Solid, dry or compact materials; Granules; Powders}
- A21D 10/007
- • {-Liquids or pumpable materials}
- U A21D 10/02
- Ready-for-oven doughs
- A21D 10/025
- • {-Packaged doughs (packaging bakery products [B65B](#), [B65D](#))}
- U A21D 10/04
- Batters
- A21D 10/045
- • {-Packaged batters (packaging bakery products [B65B](#), [B65D](#))}

U	A21D 13/00	Finished or partly finished { (par-baked)} bakery products
	A21D 13/0003	• {-Partially or completely coated bakery products (multi-layered bakery products with coating A21D 13/0051 , A21D 13/0061)}
	A21D 13/0006	• • {-Coated before baking the dough}
	A21D 13/0009	• • {-Coated after baking the dough}
	A21D 13/0012	• • {-comprising a barrier coating against migration}
	A21D 13/0016	• • {-Special coating composition (icing or frosting A23G 3/00)}
	A21D 13/0019	• {-Filled or stuffed bakery products (multi-layered bakery products with filling A21D 13/0054 , A21D 13/0064)}
	A21D 13/0022	• • {-Filled before baking of the dough}
	A21D 13/0025	• • {-Filled or to be filled after baking of the dough, e.g. sandwiches}
	A21D 13/0029	• • • {-Edible containers, e.g. cups or cones to be filled}
	A21D 13/0032	• • {-comprising a barrier against migration between filling and dough or bakery product}
	A21D 13/0035	• • {-Filled wafers}
	A21D 13/0038	• • {-Co-extruded product, i.e. obtained by co-extruding the dough and the filling}
	A21D 13/0041	• • {-Special filling composition}
U	A21D 13/0045	• {Multi-layered bakery products}
	A21D 13/0048	• • {-made of at least 2 different doughs, e.g. differing in composition, colour or structure}
	A21D 13/0051	• • • {-with coating}
	A21D 13/0054	• • • {-with filling}
	A21D 13/0058	• • {-multi-layered pastry, e.g. puff pastry, danish pastry, laminated dough}
	A21D 13/0061	• • • {-with coating}
	A21D 13/0064	• • • {-with filling}
	A21D 13/0067	• {-Special bakery products}
	A21D 13/007	• • {-Pizza}
	A21D 13/0074	• • {-Tortilla}
	A21D 13/0077	• • {-Pancakes; Crepes}
	A21D 13/008	• • {-Wafers (with filling A21D 13/0035)}
	A21D 13/0083	• • {-Croutons from bread or bakery products (farinaceous granules A23L 1/176)}
	A21D 13/0087	• • {-Decorated or decorative bakery products}
	A21D 13/009	• • {-Bakery products with first function other than for eating, e.g. toys, cutlery}
	A21D 13/0093	• {-Solidified foamed products, e.g. meringues}
	A21D 13/0096	• {-Fat fried bakery products, e.g. doughnuts, spring rolls}
U	A21D 13/06	• Bread with modified starch or protein content, { with modified nutritive value}
	A21D 13/062	• • {-with modified glucid content}
	A21D 13/064	• • {-with modified protein content}
	A21D 13/066	• • • {-Gluten-free products}
	A21D 13/068	• • {-with modified fat content or fat-free}
	A21D 15/00	Preserving finished { or partly finished (par-baked) bakery products (refreshing A21D 17/00, packaging or wrapping bakery products B65B, B65D)}
U	A21D 17/00	Refreshing bakery products { or recycling bakery products}

- A21D 17/002 · {-Recycling, e.g. for use in baking or for animal consumption}
- A21D 17/004 · {-refreshing by thawing or heating}
- A21D 17/006 · · {-with microwaves}
- A21D 17/008 · {-Refreshing by steam treatment}

Project: N/A (A22B)**A22B 3/00****Slaughtering or stunning ({ anaesthetising animals [A61D 7/04](#) }; cutting in general [B26](#))**

- A22B 3/02 · by means of bolts, e.g. slaughtering pistols, cartridges({-pistols [F41C-](#)})
- A22B 3/06 · Slaughtering or stunning by electric current({-electric circuits therefor [H05C-](#)})

U A22B 5/00**Accessories for use during or after slaughtering**

- A22B 5/0005 · {Eviscerating devices, e.g. removing rectum, anus, intestines, brain tissue, hypophysis (-for poultry [A22C 21/06](#) ; for fish [A22C 25/14-](#))}
- U A22B 5/0017 · {Apparatus for cutting, dividing or deboning carcasses}
- A22B 5/0029 · · {Cutting through or detaching portions of a carcass (-splitting carcasses [A22B 5/20-](#))}
- A22B 5/0035 · · {Deboning or obtaining boneless pieces of meat from a carcass (-devices for deboning meat [A22C 17/004-](#))}
- U A22B 5/0064 · {for classifying or grading carcasses; for measuring back fat}
- A22B 5/007 · · {Non-invasive scanning of carcasses, e.g. using image recognition, tomography, X-rays, ultrasound (-analysing meat e.g. search for foreign embedded objects [G01N 33/12](#) ; image analysis [G06T 7/00-](#))}
- A22B 5/0082 · {Cleaning, washing or disinfecting carcasses (-disinfecting poultry carcasses [A22C 21/0061-](#))}
- A22B 5/08 · Scalding; Scraping; Dehairing; Singeing ({-treatment of hides or skins [C14B-](#)})
- U A22B 5/16 · Skinning instruments or knives
- A22B 5/163 · · {Skinning knives with disc-shaped blades (-disc cutters [B26D 1/14](#) ; motor-driven hand tools with disc blades [B26B 25/00-](#))}
- A22B 5/165 · · {Ring knives specially adapted for skinning (-motor driven tools with annular blades [B26B 25/002-](#))}
- A22B 5/20 · Splitting instruments({-cutting operations on carcasses other than splitting [A22B 5/0017-](#)})
- A22B 5/203 · · {Meat or bone saws for splitting carcasses}; ~~Cutting meat [A22C 17/0006](#)~~ }([Cutting meat \[A22C 17/0006\]\(#\)](#))}
- A22B 5/206 · · · {Disc or circular saws (-motor-driven hand tools with disc blades [B26B 25/00](#) ; for skinning [A22B 5/163-](#))}
- U **A22B 7/00** **Slaughterhouse arrangements**
- U A22B 7/001 · {Conveying arrangements}
- A22B 7/003 · · {Positioning, orienting or supporting carcasses as they are being conveyed (-influencing the position of articles during transit by conveyers [B65G 47/22](#) ; during feeding [B65G 47/14-](#))}
- A22B 7/004 · · {Rails for conveying suspended carcasses, e.g. configurations, connections (-overhead conveyors [B65G 17/20-](#))}
- A22B 7/005 · · {Means for transferring carcasses from a conveying unit to a different one, e.g. hooking, unhooking (-transferring articles between conveyers [B65G 47/52-](#))}

Project: N/A (A22C)

- U A22C 7/00 Apparatus for pounding, forming, or pressing meat, sausage-meat, or meat products {(meat patty moulding devices for domestic use [A47J 43/20](#); ham boilers [A47J 27/20](#))}**
- U A22C 7/0023 · {Pressing means}
 - U A22C 7/003 · · {Meat-moulds}
 - A22C 7/0046 · · · {-Containers in which meat is pressed and moulded}
 - A22C 7/0053 · · · · {-Stackable containers}
 - A22C 7/0061 · · · · {-Containers for moulding and pressing ham}
 - A22C 7/0069 · · · {-Pressing and moulding by means of a drum}
 - A22C 7/0076 · · · {-Devices for making meat patties}
 - A22C 7/0084 · · · · {-comprising a reciprocating plate}
- U A22C 9/00 Apparatus for tenderising meat, e.g. ham {(tenderising chemically [A23L 1/31](#), [A23L 1/318](#))}**
- A22C 9/004 · {-by massaging}
 - A22C 9/005 · · {-Tumblers and rotating drums for massaging meat in their interior}
- U A22C 11/00 Sausage making {(chemical aspects [A23L 1/31](#)); Apparatus for handling or conveying sausage products during manufacture}**
- A22C 11/008 · {-Conveying sausages in horizontal position (conveying hanging sausages [A22C 15/001](#))}
 - U A22C 11/02 · Sausage filling or stuffing machines {(enclosing material in preformed tubular webs [B65B 9/10](#))}
 - U A22C 11/0209 · · {Stuffing horn assembly}
 - A22C 11/0218 · · · {-with multiple interchangeable stuffing horns, e.g. magazine arrangements}
 - U A22C 11/10 · Apparatus for twisting { or linking} sausages {(subdividing filled flexible tubes to form packages, involving displacement of contents [B65B 9/12](#), by applying pressure and heat successively [B65B 51/26](#))}
 - A22C 11/104 · · {-by means of shear or blade elements}
 - A22C 11/105 · · · {-The sheer or blade elements being displaceable parallel to the sausage string in order to create a narrow point free of meat}
 - A22C 11/107 · · {-A string passing between two rotary members comprising dividing elements cooperating with each other}
 - A22C 11/108 · · {-with dividing elements located on the surface of a single rotary member}
 - A22C 11/12 · Apparatus for tying sausage skins; { Clipping sausage skins-(applying clips or binding material to package folds or closures, e.g. to twisted bag necks [B65B 51/04](#), [B65B 51/08](#))}
- U A22C 13/00 Sausage casings {(made of animal intestines [A22C 17/14](#))}**
- A22C 13/0003 · {-Apparatus for making sausage casings, e.g. simultaneously with stuffing artificial casings (enclosing material webs being formed into tubes in situ around filling nozzles [B65B 9/20](#))}
- U A22C 17/00 Other devices for processing meat or bones**
- A22C 17/0006 · {-Cutting or shaping meat}
 - A22C 17/0013 · · {-Boards or blocks for cutting or chopping meat}
 - A22C 17/002 · · · {-Producing portions of meat with predetermined characteristics, e.g. weight or particular dimensions}
 - A22C 17/0026 · · {-Mincing and grinding meat (mincing machines [B02C 18/30](#))}
 - A22C 17/0033 · · {-Cutting slices out of a piece of meat (slicing machines [B26D 1/143](#))}

- A22C 17/004
 - {-Devices for deboning meat (deboning poultry [A22C 21/0069](#); deboning operations on carcasses [A22B 5/0035](#))}
- U A22C 17/006
 - {Putting meat on skewers}
- A22C 17/0066
 - · {-for "döner kebab", "shawarma", "gyros" or the like}
- A22C 17/0073
 - {-using visual recognition, X-rays, ultrasounds, or other contactless means to determine quality or size of portioned meat}
- A22C 17/008
 - · {-for measuring quality, e.g. to determine further processing}
- A22C 17/0086
 - · {-Calculating cutting patterns based on visual recognition}
- A22C 17/0093
 - {-Handling, transporting or packaging pieces of meat }
- A22C 17/14
 - Working-up animal intestines; { Treatment thereof for the manufacture of natural sausage casings-(making artificial casings [A22C 13/0003](#); chemical treatment of natural casings [A22C 13/0026](#)); -Apparatus for cutting intestines; -Machines for pulling intestines to pieces
- U A22C 21/00 Processing poultry**
- U A22C 21/0023
 - {Dividing poultry}
- A22C 21/003
 - · {-Filleting poultry, i.e. extracting, cutting or shaping poultry fillets}
- A22C 21/0053
 - {-Transferring or conveying devices for poultry}
- A22C 21/0061
 - {-Cleaning or disinfecting poultry}
- A22C 21/0069
 - {-Deboning poultry or parts of poultry}
- A22C 21/0076
 - · {-Deboning poultry legs and drumsticks}
- A22C 21/0084
 - · {-Deboning poultry wings}
- A22C 21/0092
 - {-Skinning poultry or parts of poultry}
- A22C 25/00 Processing fish; {Curing of fish; Stunning of fish by electric current; Investigating fish by optical means (slaughtering fish [A22B 3/08](#))}**
- A22C 25/003
 - {-Processing cephalopods}
- A22C 25/006
 - {-Hand tools for processing fish}
- A22C 25/08
 - Holding, guiding, or conveying fish before, during or after its preparation ([A22C 25/06](#) takes precedence); {Devices for sizing fish; Automatically adapting conveyers or processing machines to the measured size-(transport in general [B65G](#))}
- U A22C 25/14
 - Beheading, eviscerating, or cleaning fish {(combined with removing fish-bone, skinning and filleting [A22C 25/14](#); hand tools [A22C 25/006](#))}
- A22C 25/142
 - · {-Beheading fish}
- A22C 25/145
 - · {-Eviscerating fish}
- A22C 25/147
 - · · {-Eviscerating by means of vacuum or suction devices}
- U A22C 25/16
 - Removing fish-bones; Filleting fish {(combined with beheading, eviscerating [A22C 25/14](#); hand tools [A22C 25/006](#))}
- A22C 25/166
 - · {-Removing loose pin bones, e.g. from fish fillets}
- U A22C 29/00 Processing shellfish {or bivalves}, e.g. oysters, lobsters; {Devices therefor, e.g. claw locks, claw crushers, grading devices; Processing lines}**
- A22C 29/005
 - {-Grading or classifying shellfish or bivalves}
- U A22C 29/02
 - Processing shrimps, lobsters or the like; {Methods or machines for the shelling of shellfish}
- A22C 29/021
 - · {-Cleaning operations on shellfish, e.g. evisceration, brushing}
- A22C 29/022
 - · · {-Deveining shellfish}
- A22C 29/023
 - · {-Conveying, feeding or aligning shellfish}

- A22C 29/024
 - A22C 29/025
 - A22C 29/026
 - A22C 29/027
 - A22C 29/028
 - U A22C 29/04
 - A22C 29/043
 - A22C 29/046
- • {Opening, shelling or peeling shellfish}
 - • • {Mechanically opening and shelling crabs, lobsters or other hard-shelled crustaceans}
 - • • {Mechanically peeling and shelling shrimps, prawns or other soft-shelled crustaceans}
 - • • {Hand tools for shelling shellfish}
 - • {Beheading shellfish}
 - Processing bivalves, e.g. oysters (oyster knives with openers [A47G 21/06](#))
 - • {Cleaning operations on bivalves, e.g. evisceration, brushing, separation of meat and shell material}
 - • {Opening or shucking bivalves}

Project: N/A (A23B)

- U **A23B 4/00** **General methods for preserving meat, sausages, fish or fish products**
 - U A23B 4/044
 - A23B 4/052
- Smoking; Smoking devices
 - • Smoke generators; {Smoking apparatus-~~([A23B 4/056](#) takes precedence)~~}

Project: N/A (A23C)**A23C**

DAIRY PRODUCTS, e.g. MILK, BUTTER, CHEESE; MILK OR CHEESE SUBSTITUTES; MAKING THEREOF (obtaining protein compositions for foodstuffs,{e.g. from milk} , [A23J 1/00](#) ; preparation of peptides, e.g. of proteins, in general [C07K 1/00](#)-)

NOTE

This subclass covers:

- the chemical aspects of making dairy products
- the apparatus used for performing techniques provided for therein, e.g. for concentration, evaporation, drying, preservation, or sterilisation, unless such apparatus is specifically provided for in another subclass, e.g. [A01J](#) for treatment of milk or cream for manufacture of butter or cheese.

A23C 1/00

Concentration, evaporation or drying (-products obtained thereby [A23C 9/00](#) ; making butter powder [A23C 15/14](#) , cheese powder [A23C 19/086](#) ; evaporating in general [B01D 1/00](#)-)

- U A23C 1/04
 - A23C 1/05
 - A23C 1/10
 - A23C 1/14
- by spraying into a gas stream
 - • combined with agglomeration {granulation or coating}
 - Foam drying (~~-[A23C 1/04](#) , [A23C 1/08](#) take precedence-~~)
 - combined with other treatment (~~-[A23C 3/00](#) , [A23C 9/00](#) take precedence-~~)

A23C 3/00

Preservation of milk or milk preparations (-of cream [A23C 13/08](#) ; of butter [A23C 15/18](#) ; of cheese [A23C 19/097](#)-)

- A23C 3/005
 - A23C 3/02
 - A23C 3/08
- {Storing or packaging in a vacuum or in inert or sterile gaseous atmosphere (-impregnation with inert gases [A23C 9/1524](#)-)}
 - by heating (-~~[A23C 3/07](#) takes precedence-~~)
 - by addition of preservatives (-addition of micro-organisms or enzymes [A23C 9/12](#) , of other substances [A23C 9/152](#)-)

- U A23C 7/00 Other dairy technology**
- A23C 7/02 • Chemical cleaning of dairy apparatus (-cleaning in general [B08B](#) , e.g. [B08B 3/08](#)); Use of sterilisation methods therefor (-sterilisation methods per se [A61L](#)-)
- A23C 7/04 • Removing unwanted substances {other than lactose or milk proteins}from milk (-by filtering [A01J 9/02](#) , [A01J 11/06](#)-)
- A23C 7/043 • • {using chemicals in liquid or solid state, e.g. flocculating, adsorbing or extracting agents (-[A23C 9/146](#) and [A23C 9/148](#) take precedence-)}
- A23C 9/00 Milk preparations; Milk powder or milk powder preparations (-[A23C 21/06](#) takes precedence; preservation [A23C 3/00](#) ; chocolate milk [A23G 1/00](#) ; ice-cream, mixtures for preparation of ice-cream [A23G 9/00](#) ; puddings, dry powder puddings [A23L 1/187](#)-)**
- A23C 9/005 • {Condensed milk; Sugared condensed milk (-[A23C 1/06](#) and [A23C 1/12](#) take precedence-)}
- A23C 9/12 • Fermented milk preparations; Treatment using micro-organisms or enzymes (-whey preparations [A23C 21/00](#)-)
- A23C 9/123 • • using only micro-organisms of the genus lactobacteriaceae; Yoghurt (-[A23C 9/13](#) takes precedence-)
- A23C 9/1236 • • • {using Leuconostoc, Pediococcus or Streptococcus sp. other than Streptococcus Thermophilus; Artificial sour buttermilk in general (-[A23C 9/1234](#) and [A23C 17/02](#) take precedence-)}
- A23C 9/127 • • using micro-organisms of the genus lactobacteriaceae and other micro-organisms or enzymes e.g. kefir, koumiss (-[A23C 9/13](#) takes precedence-)
- U A23C 9/14** • in which the chemical composition of the milk is modified by non-chemical treatment
- NOTE**
When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned]
- A23C 9/142 • • by dialysis, reverse osmosis or ultrafiltration (-[A23C 9/144](#) takes precedence-)
- A23C 9/148 • • by molecular sieve or gel filtration {or chromatographic treatment (-[A23C 9/1465](#) takes precedence-)}
- A23C 9/15 • Reconstituted or recombined milk products containing neither non-milk fat nor non-milk proteins (-containing thickening substances [A23C 9/154](#) ; mixtures of whey, with milk products or milk components [A23C 21/06](#)-)
- A23C 9/1516 • • {~~Enrichment or recombination of milk(excepted whey)~~{*Enrichment or recombination of milk (excepted whey)* with milk fat, cream of butter without using isolated or concentrated milk proteins}
- A23C 9/152 • containing additives (-fermented milk preparations containing additives [A23C 9/13](#)-)
- U A23C 9/154** • • containing thickening substances, eggs or cereal preparations; Milk gels
- A23C 9/1542 • • • {Acidified milk products containing thickening agents or acidified milk gels, e.g. acidified by fruit juices (-fermentation [A23C 9/12](#)-)}
- A23C 9/156 • • Flavoured milk preparations; {Addition of fruits, vegetables, sugars, sugar alcohols, sweeteners} (-[A23C 9/154](#) takes precedence-)
- A23C 9/1565 • • • {Acidified milk products, e.g. milk flavoured with fruit juices (-[A23C 9/1542](#) takes precedence; fermentation [A23C 9/12](#)-)}
- A23C 9/16 • Agglomerating or granulating milk powder; Making instant milk powder; Products obtained thereby (-[A23C 1/05](#) , [A23C 9/18](#) take precedence-)
- A23C 9/20 • Dietetic milk products not covered by groups [A23C 9/12](#) to [A23C 9/18](#)

- A23C 11/00** **Milk substitutes, e.g. coffee whitener compositions (-cheese substitutes [A23C 20/00](#) ; butter substitutes [A23D](#) ; cream substitutes [A23L 1/19](#)-)**
- A23C 11/02 • containing at least one non-milk component as source of fats or proteins (-[A23C 19/055](#) , [A23C 21/04](#) take precedence-)
- A23C 11/04 • • containing non-milk fats but no non-milk proteins (-[A23C 11/08](#) , [A23C 11/10](#) take precedence-)
- A23C 11/06 • • containing non-milk proteins (-[A23C 11/08](#) , [A23C 11/10](#) take precedence-)
- U A23C 11/10 • • containing or not lactose but no other milk components as source of fats, carbohydrates or proteins, e.g. soy milk
- U A23C 11/103 • • • {containing only proteins from pulses, oilseeds or nuts, e.g. soy or nut milk}
- A23C 11/106 • • • • {Addition of, or treatment with, micro-organisms (-[A23C 20/025](#) and [A23L 1/2118](#) take precedence-)}
- A23C 13/00** **Cream; Cream preparations; Making thereof (-coffee whitener compositions [A23C 11/00](#) ; cream substitutes [A23L 1/19](#)-)**
- U A23C 13/08 • Preservation
- A23C 13/10 • • by addition of preservatives (-[A23C 13/14](#) , [A23C 13/16](#) take precedence-)
- A23C 13/12 • Cream preparations (-ice-cream [A23G 9/00](#)-)
- A23C 13/14 • • containing milk products or {non-fat}milk components
- A23C 15/00** **Butter; Butter preparations; Making thereof (-butter substitutes [A23D](#)-)**
- U A23C 15/02 • Making thereof
- A23C 15/06 • • Treating cream {or milk}prior to phase inversion
- U A23C 15/18 • Preservation
- A23C 15/20 • • by addition of preservatives {or antioxidants}
- A23C 17/00** **Buttermilk; Buttermilk preparations (-[A23C 9/14](#) takes precedence; preservation [A23C 3/00](#)-)**
- A23C 19/00** **Cheese; Cheese preparations; Making thereof (-cheese substitutes [A23C 20/00](#) ; casein [A23J 1/20](#)-)**
- U A23C 19/02 • Making cheese curd
- U A23C 19/032 • • characterised by the use of specific micro-organisms, or enzymes of microbial origin
- A23C 19/0323 • • • {using only lactic acid bacteria, e.g. *Pediococcus* and *Leuconostoc* species; *Bifidobacteria*; Microbial starters in general (-using moulds [A23C 19/0682](#)-)}
- A23C 19/04 • • characterised by the use of specific enzymes of vegetable or animal origin (-[A23C 19/032](#) takes precedence-)
- A23C 19/045 • • Coagulation of milk without rennet or rennet substitutes {followed by whey separation}
- A23C 19/05 • • Treating milk before coagulation; Separating whey from curd ([A23C 19/097](#), {[A23C 19/045](#) }take precedence)
- A23C 19/06 • Treating cheese curd after whey separation; Products obtained thereby (-[A23C 19/097](#) takes precedence-)
- A23C 19/061 • • {Addition of, or treatment with, micro-organisms (-[A23C 19/0682](#) takes precedence-)}
- U A23C 19/068 • • Particular types of cheese
- A23C 19/0688 • • • {Hard cheese or semi-hard cheese with or without eyes (-[A23C 19/072](#) takes precedence-)}
- A23C 19/072 • • • Cheddar type {or similar hard cheeses without eyes}

- U A23C 19/08
 - • • Process cheese preparations; Making thereof, e.g. melting, emulsifying, sterilizing
- A23C 19/084
 - • • • Treating the curd, or adding substances thereto, after melting (adding non-milk components [A23C 19/093](#))
- A23C 19/09
 - • Other cheese preparations; Mixtures of cheese with other foodstuffs (preservation [A23C 19/097](#))
- U A23C 19/097
 - Preservation
- A23C 19/10
 - • Addition of preservatives (enzymes or micro-organisms, see [A23C 19/032](#) , [A23C 19/04](#) , [A23C 19/061](#) and [A23C 19/063](#))
- A23C 19/11
 - • • of antibiotics (or bacteriocins)
- A23C 19/14
 - Treating cheese after having reached its definite form, e.g. ripening, smoking (preservation [A23C 19/097](#))
- U A23C 19/16
 - • Covering the cheese surface, e.g. with paraffin wax
- A23C 19/163
 - • • {with a non-edible liquid or semi-liquid coating, e.g. wax, polymer dispersions (in combination with an edible coating [A23C 19/16](#))}
- A23C 20/00** **Cheese substitutes** ([A23C 19/055](#) , [A23C 19/093](#) take precedence)
- A23C 21/00** **Whey; Whey preparations** ([A23C 1/00](#) , [A23C 3/00](#) , [A23C 9/14](#) take precedence)
- A23C 2210/00** **Physical treatment of dairy products** (not used, see subgroups)
- A23C 2210/10
 - General processes or apparatus not classified in [A23C 3/0375](#) for direct contact of a falling film of liquid with steam
- A23C 2210/20
 - Treatment using membranes, including sterile filtration (not used, see subgroups)
- A23C 2210/25
 - Separating and blending (not used, see subgroups)
- A23C 2220/00** **Biochemical treatment** (not used, see subgroups below)
- A23C 2220/10
 - Enzymatic treatment (not used, see subgroups below)
- A23C 2220/20
 - Treatment with micro-organisms (not used, see subgroups below)
- A23C 2230/00** **Aspects relating to animal feed or genotype** (not used, see subgroups below)
- A23C 2240/00** **Use or particular additives or ingredients** (not used, see subgroups below)
- A23C 2250/00** **Particular aspects related to cheese** (not used, see subgroups below)
- A23C 2250/05
 - Emulsifying cheese (not used, see subgroups below)
- A23C 2260/00** **Particular aspects or types of dairy products** (not used, see subgroups below)
- A23C 2260/10
 - Spreadable dairy products (not used, see subgroups below)
- A23C 2260/15
 - Frozen dairy products (not used, see subgroups below)
- A23C 2270/00** **Aspects relating to packaging** (not used, see subgroups below)

Project: N/A (A23G)

- A23G 1/00** **Cocoa; Cocoa products, e.g. chocolate; Substitutes therefor** (kitchen equipment for cocoa preparation [A47J](#) , e.g. apparatus for making beverages [A47J 31/00](#))

NOTE

Attention is drawn to the internal note after the subclass title

- U A23G 1/0003 • {Processes of manufacture not relating to composition or compounding ingredients}
- A23G 1/0006 • • {Processes specially adapted for manufacture or treatment of cocoa or cocoa products (-A23G 1/002 to A23G 1/005 take precedence-)}
- A23G 1/0009 • • • {Manufacture or treatment of liquid, cream, paste, granule, shred or powder}†
- A23G 1/005 • • {Moulding, shaping, cutting, or dispensing chocolate (-A23G 1/0076 to A23G 1/0096 take precedence-)}
- A23G 1/0053 • • • {Processes of shaping not covered elsewhere (Not used)}
- A23G 1/0079 • • {Chocolate moulds processing (-A23G 1/0076 takes precedence-)}
- A23G 1/0083 • • • {characterised by the material of the moulds (Not used)}
- A23G 1/0096 • • {Removing chocolate from the mould (-discharging baked goods from tins A21B 3/18-)}
- A23G 1/02 • Preliminary treatment, e.g. fermentation of cocoa (-machines for roasting cocoa A23N 12/00-)
- A23G 1/04 • Apparatus specially adapted for manufacture or treatment of cocoa or cocoa products (-machines for roasting cocoa A23N 12/00 ; crushing or grinding apparatus in general B02C-)
- A23G 1/08 • • Cocoa butter presses (-presses for squeezing out liquid from liquid-containing material in general B30B-)
- U A23G 1/20 • Apparatus for moulding, cutting, or dispensing chocolate
- A23G 1/201 • • • {-Apparatus not covered by groups A23G 1/21 to A23G 1/28-(not used)}
- A23G 1/22 • • • Chocolate moulds (-A23G 1/21 takes precedence-)
- A23G 1/223 • • • • {Mould materials (not used)}
- A23G 1/28 • • • Apparatus for removing chocolate from the moulds (-discharging baked goods from tins A21B 3/18-)
- U A23G 1/30 • Cocoa products, e.g. chocolate; Substitutes therefor
- A23G 1/32 • • characterised by the composition {containing organic or inorganic compounds}
- A23G 1/36 • • • characterised by the fats used (-containing dairy products A23G 1/46-)
- A23G 1/40 • • • characterised by the carbohydrates used, e.g. polysaccharides (-containing dairy products A23G 1/46-)
- A23G 1/42 • • • containing micro-organisms or enzymes; containing paramedical or dietetical agents, e.g. vitamins (-containing dairy products A23G 1/46-)
- A23G 1/44 • • • containing peptides or proteins (-containing dairy products A23G 1/46-)
- A23G 1/48 • • • containing plants or parts thereof, e.g. fruits, seeds, extracts (-containing gums A23G 1/40 , { vegetal cocoa substitutes A23G 1/34 or A23G 1/38 })
- A23G 1/50 • • characterised by shape, structure or physical form, e.g. products with an inedible support (-liquid products, solid products in the form of powders, flakes or granules for making liquid products A23G 1/56-)
- A23G 1/54 • • • Composite products, e.g. layered {laminated}, coated, filled
- A23G 1/56 • • making liquid products, e.g. for making chocolate milk {drinks and the products for their preparation, pastes for spreading, milk crumb,(-A23G 1/305 takes precedence-)}

NOTE

Attention is drawn to the internal note after the subclass title

A23G 3/00 Sweetmeats; Confectionery; Marzipan; Coated or filled products (chewing gum [A23G 4/00](#))NOTE

Attention is drawn to the internal note after the subclass title

- U A23G 3/0002 · {Processes of manufacture not relating to composition and compounding ingredients}
- A23G 3/0004 · · {Processes specially adapted for manufacture or treatment of sweetmeats or confectionery (~~-[A23G 3/0044](#) to [A23G 3/0063](#) take precedence-~~)}
- U A23G 3/0019 · · · {Shaping of liquid, paste, powder; Manufacture of moulded articles, e.g. modelling, moulding, calendering}
- U A23G 3/0025 · · · · {Processes in which the material is shaped at least partially in a mould in the hollows of a surface, a drum, an endless band, or by a drop-by-drop casting or dispensing of the material on a surface, e.g. injection moulding, transfer moulding}
- A23G 3/0031 · · · · · {Moulds processing (~~-[A23G 3/0029](#) takes precedence-~~)}
- A23G 3/0063 · · {Coating or filling sweetmeats or confectionery (~~-coating by casting [A23G 3/0091](#) , by dipping [A23G 3/0093](#) , by tumbling [A23G 3/0095](#)-~~)}
- U A23G 3/02 · Apparatus specially adapted for manufacture or treatment of sweetmeats or confectionery; Accessories therefor
- U A23G 3/0236 · · {Shaping of liquid, paste, powder; Manufacture of moulded articles, e.g. modelling, moulding, calendering}
- U A23G 3/0252 · · · {Apparatus in which the material is shaped at least partially in a mould, in the hollows of a surface, a drum, an endless band, or by a drop-by-drop casting or dispensing of the material on a surface, e.g. injection moulding, transfer moulding}
- A23G 3/0268 · · · · {Moulds (~~-[A23G 3/0263](#) takes precedence-~~)}
- U A23G 3/20 · · Apparatus for coating or filling sweetmeats or confectionery
- A23G 3/22 · · · Apparatus for coating by casting {of liquids}
- A23G 3/24 · · · · Apparatus for coating by dipping {in a liquid, at the surface of which another liquid or powder may be floating}
- A23G 3/26 · · · · Apparatus for coating by tumbling {with a liquid or powder, spraying device-associated, drum, rotating pan}
- A23G 3/28 · · Apparatus for decorating sweetmeats or confectionery (~~-applying liquids to surfaces in general [B05](#)-~~)
- A23G 3/32 · Processes for preparing caramel or sugar colours (~~-colouring or flavouring foodstuffs [A23L 1/27](#)-~~)

NOTE

Attention is drawn to the internal note after the subclass title

- U A23G 3/34 · Sweetmeats, confectionery or marzipan; Processes for the preparation thereof
- A23G 3/346 · · {Finished or semi-finished products in the form of powders, paste or liquids (~~-[A23G 3/343](#) takes precedence-~~)}

NOTE

Attention is drawn to the internal note after the subclass title

- A23G 3/36 · · characterised by the composition {containing organic or inorganic compounds}
- A23G 3/40 · · · characterised by the fats used (~~-containing dairy products [A23G 3/46](#)-~~)
- A23G 3/42 · · · characterised by the carbohydrates used, e.g. polysaccharides (~~-containing dairy products [A23G 3/46](#)-~~)

- A23G 3/44
- • • containing peptides or proteins (-containing dairy products [A23G 3/46-](#))
- A23G 3/48
- • • containing plants or parts thereof, e.g. fruits, seeds, extracts (-containing gums [A23G 3/42-](#))
- A23G 3/50
- • characterised by shape, structure or physical form, e.g. products with supported structure (-composite structures including chocolate, e.g. as layer, coating or filler [A23G 1/54-](#))
- A23G 4/00** **Chewing gum (medicinal preparations characterised by chewing gum form{ [A61K 9/0058](#) })**
- U A23G 4/02
- Apparatus specially adapted for manufacture or treatment of chewing gum
- U A23G 4/04
- • for moulding or shaping
- A23G 4/043
- • • {for composite chewing gum (-coating [A23G 4/025-](#))}
- A23G 4/06
- characterised by the composition {containing organic or inorganic compounds}
- A23G 4/068
- • {containing plants or parts thereof, e.g. fruits, seeds, extracts (-containing gums [A23G 4/10-](#))}
- A23G 4/10
- • characterised by the carbohydrates used, e.g. polysaccharides (-containing dairy products [A23G 4/16-](#))
- A23G 4/12
- • containing micro-organisms or enzymes; containing paramedical or dietetical agents, e.g. vitamins (-containing dairy products [A23G 4/16-](#))
- A23G 4/14
- • containing peptides or proteins (-containing dairy products [A23G 4/16-](#))
- A23G 7/00** **Other apparatus {or process} specially adapted for the chocolate or confectionery industry**
- A23G 7/0043
- {Other processes specially adapted for the chocolate or confectionery industry ([A23G 7/0006 to A23G 7/02](#) [A23G 7/0006 to A23G 7/02](#))}
- A23G 7/005
- • {General processes (Not used)}
- A23G 7/0093
- • {Cooling or drying (-[A23G 9/00](#) takes precedence)}
- U A23G 9/00** **Frozen sweets, e.g. ice confectionery, ice-cream; Mixtures therefor**
- A23G 9/04
- Production of frozen sweets, e.g. ice-cream (-packages [B65D 85/78-](#))
- A23G 9/06
- • characterised by using carbon dioxide or carbon dioxide snow {or other cryogenic agents} as cooling medium
- A23G 9/08
- • Batch production ({ [A23G 9/06](#) takes precedence } ; continuous production [A23G 9/14-](#))
- A23G 9/14
- • Continuous production ({ [A23G 9/06](#) } , [A23G 9/20](#) takes precedence-)
- U A23G 9/22
- • Details, component parts or accessories of apparatus insofar as not peculiar to a single one of the preceding groups
- U A23G 9/28
- • • for portioning or dispensing
- A23G 9/287
- • • • {for dispensing bulk ice-cream; (-ice cream scoops [A47J 43/282-](#))}
- A23G 9/32
- characterised by the composition {containing organic or inorganic compounds}
- A23G 9/327
- • {characterised by the fatty product used, e.g. fat, fatty acid, fatty alcohol, their esters, lecithin, glycerides (-butter, dairy cream or milkfat [A23G 9/40-](#))}
- A23G 9/34
- • characterised by carbohydrates used, e.g. polysaccharides (-characterised by the dairy products used [A23G 9/40-](#))
- A23G 9/36
- • containing micro-organisms or enzymes; containing paramedical or dietetical agents, e.g. vitamins (-characterised by the dairy products used [A23G 9/40-](#))
- A23G 9/38
- • containing peptides or proteins (-characterised by the dairy products used [A23G 9/40-](#))
- A23G 9/42
- • containing plants or parts thereof, e.g. fruits, seeds, extracts (-containing gums [A23G 9/34-](#))

A23G 9/44

- characterised by shape, structure or physical form (-liquid products, solid products in the form of powders, flakes or granules for making liquid products [A23G 9/52-](#))

U A23G 2200/00 containing organic compounds ,e.g. synthetic flavouring agents

A23G 2200/14

- containing fruits, nuts, e.g. almonds, seeds, plants, plant extracts, essential oils (-gums [A23G 2200/06-](#))

Project: N/A (A23K)

A23K 1/00 Animal feeding-stuffs (-detoxicating or removing bitter tastes from seeds, e.g. lupin seeds for fodder or food [A23L 1/211-](#))

U A23K 1/006

- {Animal feeding-stuffs obtained by microbiological or biochemical processes}

A23K 1/007

- • {by fermentation of natural products, or vegetable or animal offal materials, e.g. biomasses (-single cell proteins as additives [A23K 1/008](#) ; live micro-organisms as additives [A23K 1/009-](#))}

A23K 1/008

- • {Addition of micro-organisms to feeding-stuff compositions, e.g. single cell proteins (-biomasses [A23K 1/007](#) ; enzymes [A23K 1/165-](#))}

A23K 1/04

- from blood (-proteins from blood [A23J 1/06-](#))

U A23K 1/10

- from meat, fish, or bones; from kitchen waste

A23K 1/106

- • {from animal offal material, e.g. feathers, bones, skin (-from blood [A23K 1/04-](#))}

A23K 1/14

- from vegetable materials, e.g. potatoes or roots without ensilaging (-preserving food [A23B](#) , [A23L-](#))

A23K 1/146

- • {from vegetable offal material (-molasses [A23K 1/02](#) ; distillers` and brewers` waste [A23K 1/06](#) ; from wood or straw [A23K 1/12-](#))}

A23K 1/16

- supplemented with accessory food factors; Salt blocks{(-steroids, hormones or enzymes [A23K 1/165](#) ; antibiotics [A23K 1/17](#) ; inorganic additions [A23K 1/175-](#))}

A23K 1/18

- specially adapted for particular animals (-milk substitutes [A23C 11/00-](#))

U A23K 3/00 Preservation of materials to produce animal feeding-stuffs

A23K 3/02

- of green fodder (-processing and storing [A01F 25/00](#) ; silos [E04H-](#))

Project: N/A (A23L)

U A23L 1/00 Foods or foodstuffs; Their preparation or treatment (preservation thereof in general [A23L 3/00](#); {mechanical aspects [A23P](#)})

WARNING

Groups [A23L 1/0002](#)to [A23L 1/0097](#) might be incomplete as a number of documents presently classified in groups [A23P 1/00](#) to [A23P 1/16](#), still needs reclassification to groups [A23L 1/0002](#) to [A23L 1/0097](#)

U A23L 1/10

- containing cereal-derived products (treating or baking of doughs containing flour [A21D](#))

A23L 1/1025

- • {Treatment of whole grains not provided for in groups [A23L 1/164](#) to [A23L 1/182](#)-(preservation [A23B 9/00](#))}

U A23L 1/22

- Spices; Flavouring agents or condiments; Artificial sweetening agents; Table salts; Dietetic salt substitutes; { Other taste or flavour affecting agents}

A23L 1/22091

- • {-Taste or flavour enhancing agents}

U A23L 1/31

- Meat products; Meat meal (working-up proteins for foodstuffs [A23J 3/00](#))

U A23L 1/314

- • containing additives

- A23L 1/31472
- • • {-Addition of, or treatment with, micro-organisms ([A23L 1/3185](#) takes precedence)}

U A23L 2/00 **Non-alcoholic beverages; Dry compositions or concentrates therefor; Their preparation (soup concentrates [A23L 1/40](#); {introducing gases into liquids in general, apparatus for impregnating liquids with gases per se, [B01F 3/04099](#)}; preparation of non-alcoholic beverages by removal of alcohol {[C12G 3/08](#)})**

U A23L 2/38

- Other non-alcoholic beverages ({mineral supplements [A23L 1/304](#); milk products [A23C](#); coffee, tea or their substitutes [A23F](#))

- A23L 2/382
- • {-fermented (fermented nut meats or seeds [A23L 1/368](#); fermented milk preparations [A23C 9/12](#); other foodstuffs containing micro-organisms [A23L 1/0345](#); addition of bacteria for nutritional purposes [A23L 1/3014](#))}

Project: N/A (A23V)

A23V 2200/00 **Function of food ingredients (not used; see subgroups)**

NOTE

The indexing codes under this group are used in combination with the codes for ingredients compositions

WARNING

A23V 2250/00 **Food ingredients (not used; see subgroups)**

- U A23V 2250/15
- Inorganic Compounds
- A23V 2250/156
- • Mineral combination (-undefined extract [A23V 2250/1638](#)-)
- U A23V 2250/18
- Lipids
- A23V 2250/184
- • Emulsifier (-emulsifier as function [A23V 2200/222](#) ; not used, see subgroups-)
- U A23V 2250/20
- Natural extracts
- U A23V 2250/204
- • Animal extracts
- A23V 2250/2042
- • • Marine animal, fish extracts (-algae [A23V 2250/202](#)-)
- A23V 2250/218
- • Yeast extracts (-yeast [A23V 2250/76](#)-)

A23V 2300/00 **Processes (not used; see subgroups)**

Project: N/A (A24B)

U A24B 15/00 **Chemical features or treatment of tobacco; Tobacco substitutes ([A24B 3/00](#) takes precedence)**

- U A24B 15/18
- Treatment of tobacco products or tobacco substitutes
- A24B 15/183
- • {-sterilization, preservation or biological decontamination}
- A24B 15/186
- • {-by coating with a coating composition, encapsulation of tobacco particles (encapsulation of additives other than tobacco : [A24B 15/283](#))}
- U A24B 15/24
- • by extraction; Tobacco extracts
- A24B 15/241
- • • {-Extraction of specific substances}
- A24B 15/243
- • • • {-Nicotine}
- A24B 15/245
- • • • {-Nitrosamines}
- A24B 15/246
- • • • {-Polycyclic aromatic compounds}
- A24B 15/248
- • • • {-Heavy metals}
- U A24B 15/28
- • by chemical substances
- U A24B 15/281
- • • {the action of the chemical substances being delayed}

- U A24B 15/283
 - {by encapsulation of the chemical substances}
 - NOTE**
In groups [A24B 15/30](#) to [A24B 15/42](#), in the absence of an indication to the contrary, classification is made in the last appropriate place for a substance
- A24B 15/284
 - {the additive being bound to a host by chemical, electrical or like forces, e.g. use of precursors, inclusion complexes}
- A24B 15/285
 - . . . {-characterised by structural features, e.g. particle shape or size}
- A24B 15/286
 - {-Nanoparticles}
- A24B 15/287
 - . . . {-by inorganic substances only}
- A24B 15/288
 - {-Catalysts or catalytic material, e.g. included in the wrapping material}
- U A24B 15/30
 - . . . by organic substances {([A24B 15/281](#) takes precedence)}
- U A24B 15/302
 - {by natural substances obtained from animals or plants}
- A24B 15/303
 - {-Plant extracts other than tobacco}
- A24B 15/308
 - {-vitamins}

Project: N/A (A24C)

- U A24C 5/00** **Making cigarettes; Making tipping materials for, or attaching filters or mouthpieces to, cigars or cigarettes**
- U A24C 5/14
 - . Machines of the continuous-rod type (tobacco feeding devices [A24C 5/39](#))
- U A24C 5/18
 - . . Forming the rod
- A24C 5/1857
 - . . . {-Belt construction or driving means}

Project: N/A (A24D)

- U A24D 1/00** **Cigars; Cigarettes**
- U A24D 1/02
 - . with special covers
- A24D 1/022
 - . . {-Papers for roll-your-own cigarettes (paper in general [D21H](#))}
- A24D 1/025
 - . . {-the covers having material applied to defined areas, e.g. bands for reducing the ignition propensity}
- U A24D 3/00** **Tobacco smoke filters, e.g. filter-tips, filtering inserts (filters in general [B01D](#)); Mouthpieces for cigars or cigarettes (for pipes, for cigar or cigarette holders [A24F 7/00](#))**
- U A24D 3/02
 - . Manufacture of tobacco smoke filters (manufacture of paper or cellulosic materials for filters [D21](#))
- U A24D 3/0204
 - . . {-Preliminary operations before the filter rod forming process, e.g. crimping, blooming ([A24D 3/0275](#) takes precedence)}
- U A24D 3/0212
 - . . . {-Applying additives to filter materials}
- A24D 3/0216
 - {-the additive being in the form of capsules, beads or the like}
- A24D 3/0225
 - {-with solid additives, e.g. incorporation of a granular product ([A24D 3/0216](#) takes precedence)}
- A24D 3/027
 - . . {-Multiple line manufacturing devices}
- U A24D 3/06
 - . Use of materials for tobacco smoke filters
- A24D 3/062
 - . . {-characterised by structural features}
- A24D 3/063
 - . . . {-of the fibers}
- A24D 3/064
 - {-having non-circular cross-section}
- A24D 3/065
 - {-with sheath/core of bi-component type structure}

- A24D 3/066
 - A24D 3/067
 - A24D 3/068
 - U A24D 3/14
 - A24D 3/145
- • • {-in the form of foam or having cellular structure}
 - • {-characterised by functional properties}
 - • • {-Biodegradable or disintegrable}
 - • of organic materials as additive (of ion exchange materials [A24D 3/12](#))
 - • • {-Microbial metabolite, e.g. enzyme}

Project: N/A (A41B)

- U **A41B 9/00** **Undergarments (corsets, brassières [A41C](#))**
 - A41B 9/004
 - A41B 9/005
 - A41B 9/007
 - A41B 9/008
- U A41B 9/02 **Drawers or underpants for men, with or without inserted crotch or seat parts**
 - A41B 9/026
- U **A41B 11/00** **Hosiery; Panti-hose (elastic stockings for curative purposes [A61F 13/08](#))**
 - A41B 11/003
 - A41B 11/004
- U **A41B 13/00** **Baby linen (babies` napkins or holders therefor [A61F 13/15](#); {patients` garments specially adapted for babies [A41D 13/1272](#)})**
 - U A41B 13/06
 - A41B 13/065
- U **A41B 17/00** **Selection of special materials for underwear**
 - A41B 17/005

Project: N/A (A41C)

- U **A41C 3/00** **Brassieres**
 - A41C 3/0071
 - A41C 3/0078
 - A41C 3/0085
 - A41C 3/0092
- {-with interchangeable or detachable cups}
 - {-with backless strap feature}
 - {-with ventilation feature}
 - {-with different cup sizes}

Project: N/A (A41D)

- U **A41D 1/00** **Garments (for children [A41D 11/00](#))**
 - U A41D 1/002
 - A41D 1/005
 - U A41D 1/06 **Trousers**
 - A41D 1/062
 - A41D 1/065
 - A41D 1/067
 - U **A41D 3/00** **Overgarments (fur garments [A41D 5/00](#); for children [A41D 11/00](#); professional or sporting protective garments [A41D 13/00](#))**
 - A41D 3/005
- {adapted to accomodate electronic equipment (patients' garments for medical monitoring [A41D 13/1281](#); luminous ornaments [A41D 27/085](#))}
 - • {-with embedded cable or connector}
 - {-leaving undergarment visible}
 - • {-with crotch line opening}
 - • {-with reinforcement patches}
 - {-with pullover structure}

- U A41D 13/00** Professional, industrial, or sporting protective garments, e.g. garments affording protection against blows or punches, surgeon`s gowns (helmets [A42B 3/00](#); clothing affording protection against {heat or harmful} chemical agents or for use at high altitudes [A62B 17/00](#); life-saving garments for use at sea, diving-bell suits [B63C](#); bulletproof or armoured clothing [F41H](#); clothing affording protection against radiation [G21F 3/02](#); electric heating elements [H05B](#))
- A41D 13/0015 · {Sports garments other than provided for in groups [A41D 13/0007](#) to [A41D 13/088](#)-(sports overalls [A41D 13/02](#))}
 - U A41D 13/002 · with controlled internal environment {(ventilating means [A41D 27/28](#))}
 - U A41D 13/005 · · with controlled temperature
 - U A41D 13/0053 · · · {Cooled garments}
 - A41D 13/0056 · · · · {-using evaporative effect}
 - A41D 13/0058 · · · {-having pockets for heated or cooled elements}
 - U A41D 13/015 · with shock-absorbing means ([A41D 13/05](#) takes precedence)
 - A41D 13/0153 · · {-having hinged or separable parts}
 - A41D 13/0155 · · {-having inflatable structure, e.g. non automatic}
 - A41D 13/0156 · · {-having projecting patterns}
 - A41D 13/0158 · · {-having ventilation features}
 - U A41D 13/05 · protecting only a particular body part (sports brassières [A41C 3/00](#) {crotch reinforcement for sports trousers [A41D 1/088](#)})
 - A41D 13/055 · · {-Protector fastening, e.g. on the human body}
 - A41D 13/0556 · · · {-with releasable fastening means}
 - A41D 13/0562 · · · · {-with hook and loop fastener}
 - A41D 13/0568 · · · · {-with straps}
 - A41D 13/0575 · · · · {-in an openable pocket}
 - A41D 13/0581 · · · {-with permanent fastening means}
 - A41D 13/0587 · · · · {-Integral with the garment}
 - A41D 13/0593 · · · · {-in a sealed pocket}
 - U A41D 13/11 · · Protective face masks, e.g. for surgical use, or for use in foul atmospheres (eye-masks [A61F 9/04](#); {hoods affording protection against heat or harmful chemical agents [A62B 17/04](#)})
 - A41D 13/1192 · · · {-with antimicrobial agent}
 - U A41D 13/12 · Surgeons` or patients` gowns or dresses {(operating gloves [A61B 19/04](#))}
 - U A41D 13/1209 · · {Surgeons` gowns or dresses}
 - A41D 13/1218 · · · {-with head or face protection}
 - A41D 13/1227 · · · {-with liquid-proof sleeves}
 - A41D 13/129 · · {-Donning facilities, e.g. characterized by the opening}
 - U A41D 15/00** **Convertible garments**
 - A41D 15/007 · {-with bolero structure}
 - U A41D 19/00** **Gloves** ({ brush bodies shaped as gloves [A46B 5/04](#); gloves for washing the body [A47K 7/02](#); gloves for domestic washing or cleaning [A47L 13/18](#) }; operating gloves [A61B 19/04](#); swimming gloves [A63B 31/02](#); as accessories for games or sports, e.g. baseball, boxing or golf gloves [A63B 71/14](#); gloves for glove-boxes [B25J 1/02](#))
 - A41D 19/0003 · {-with ambidextrous shape}
 - U A41D 19/0044 · {Cuff portions}

- A41D 19/0048
 - U A41D 19/015
 - A41D 19/01576
 - U **A41D 20/00**
 - A41D 20/005
 - U **A41D 25/00**
 - A41D 25/005
 - A41D 25/006
 - A41D 25/008
 - U **A41D 27/00**
 - U A41D 27/12
 - U A41D 27/13
 - A41D 27/133
 - A41D 27/136
 - U A41D 27/20
 - U A41D 27/201
 - A41D 27/202
 - A41D 27/207
 - A41D 27/208
 - U A41D 27/24
 - A41D 27/245
 - U A41D 27/28
 - A41D 27/285
 - U **A41D 31/00**
 - U A41D 31/0011
 - A41D 31/0088
 - A41D 31/0094
- · {-with cuff securing features}
 - Protective gloves {(A41D 19/0055 takes precedence)}
 - · {-made of a patchwork of different materials}
 - Wristbands or headbands, e.g. for absorbing sweat (hat fittings A42C 5/02)**
 - {-with cooling effect}
 - Neckties**
 - {-made of different sections}
 - {-Protectors therefor}
 - {-using a slide fastener to adjust the neck loop}
 - Details of garments or of their making (haberdashery A44)**
 - Shields or protectors
 - · Under-arm shields
 - · · {-Self-adhering on the skin}
 - · · {-Secured by straps}
 - Pockets; Making or setting-in pockets
 - · {Pocket closures}
 - · · {-with flap-sealed slide fastener}
 - · {-with drop-proof features}
 - · {-with waterproof feature}
 - Hems; Seams
 - · {-made by welding or gluing (joining of plastics by welding or gluing B29C 65/00; sewing machines for concurrently making thread and welded seams D05B 17/00; thermal or chemical fixing of seams and hems D06M)}
 - Means for ventilation
 - · {-with closure adjustment}
 - Selection of special materials for outerwear**
 - {Selection of special materials for protective garments (composition of materials for clothing affording protection against harmful chemical agents A62D 5/00)}
 - · {-with retroreflective materials}
 - · · {-using layered materials}

Project: N/A (A41F)

- U **A41F 9/00**
 - U A41F 9/002
 - A41F 9/005
- Belts, girdles, or waistbands for trousers or skirts**
 - {Free belts}
 - · {-with handles}

Project: N/A (A41G)

- U **A41G 3/00**
 - U A41G 3/0008
 - A41G 3/0016
 - A41G 3/0025
 - A41G 3/0033
 - A41G 3/0041
 - A41G 3/005
- Wigs (for dolls only A63H 3/44)**
 - {Fastening thereof}
 - · {-by adjusting or elastic means}
 - · {-by adhesive means}
 - · {-by mechanical fasteners, e.g. clasps or combs}
 - {-Bases for wigs}
 - · {-made of a net structure}

- A41G 3/0058
 - A41G 3/0066
 - A41G 3/0075
 - A41G 3/0083
 - A41G 3/0091
- · {made of a frame structure}
 - {Planting hair on bases for wigs}
 - {Methods and machines for making wigs}
 - {Filaments for making wigs (artificial filaments [D01F 6/00](#))}
 - {Sweat absorbing means or deodorants}

U A41G 5/00**Hair pieces, inserts, rolls, pads, or the like; Toupèes**

- A41G 5/0006
 - A41G 5/0013
 - A41G 5/002
 - A41G 5/0026
 - A41G 5/0033
 - A41G 5/004
 - A41G 5/0046
 - A41G 5/0053
 - A41G 5/006
 - A41G 5/0066
 - A41G 5/0073
 - A41G 5/008
 - A41G 5/0086
 - A41G 5/0093
- {Toupèes covering a bald portion of the head}
 - · {Fastening thereof}
 - · · {by threading with the remaining hair of the user}
 - · · {by mechanical fasteners, e.g. clasps, buttons, combs}
 - · · {by adhesives}
 - {Hair pieces}
 - · {forming hair extensions from bundles of hair}
 - · {Fastening thereof}
 - · · {by threading with the remaining hair of the user}
 - · · · {using deformable connecting sleeves}
 - · · {by mechanical fasteners, e.g. clasps, buttons, combs}
 - · · {by adhesives}
 - · {Applicators or tools for applying hair extensions}
 - {Hair accessories connected to a head covering, e.g. scarf}

Project: N/A (A41H)**U A41H 37/00****Machines, appliances or methods for setting fastener-elements on garments (for shoes [A43D 100/00](#); by sewing [D05B](#))**

- U A41H 37/005
 - A41H 37/008
- {Hand implements}
 - {provided with a needle tube (affixing tags [B65C 7/00](#))}

U A41H 43/00**Other methods, machines or appliances**

- U A41H 43/02
 - U A41H 43/0271
 - A41H 43/0278
- Handling garment parts or blanks, e.g. feeding, piling, separating, reversing (handling thin material in general [B65H](#))
 - · {Registering}
 - · · {of one sheet}

Project: N/A (A42B)**U A42B 1/00****Hats; Caps; Hoods**

- A42B 1/004
 - A42B 1/006
 - A42B 1/008
 - U A42B 1/04
 - A42B 1/048
 - U A42B 1/06
 - U A42B 1/061
- {with special decorative arrangements or effects}
 - {convertible or adapted for other uses}
 - {Head coverings with environmental control, e.g. for heating or cooling (ventilating arrangements for head coverings [A42C 5/04](#))}
 - Soft caps; Hoods
 - · {characterised by hoods being attachable to garments}
 - · Caps with flaps; Motoring caps; Caps with means for protecting the eyes, ears, or nape of neck (ear and nape protecting devices in general [A41D](#)); Caps with airpads or removable linings
 - · · {Caps or soft head coverings with means for protecting the eyes; Uniform caps}

- U A42B 1/062 {Peaks; Visors}
- A42B 1/063 {-with stiffening means}
- A42B 1/064 {-detachable or movable, e.g. rotatable}
- A42B 1/065 {-extensible or telescopic}
- U A42B 1/20 . Collapsible hats; Hats made of separable parts
- A42B 1/201 . . {-Collapsible or foldable hats}
- A42B 1/203 . . {-Inflatable hats}
- A42B 1/205 . . {-Hats made of separable parts}
- A42B 1/206 . . {-Transformable, convertible, reversible hats}
- A42B 1/208 . . {-Hats made from a flat sheet}
- U A42B 1/22 . adjustable in size; {Form-fitting or self adjusting head coverings; Devices for reducing hat size}
- A42B 1/225 . . {-with openings for hair}
- U A42B 1/24 . with means for attaching articles thereto, e.g. memorandum tablets, mirrors, lamps, insignia; {Head coverings with pockets}
- A42B 1/241 . . {-Pockets therefor; Headcoverings with pockets}
- A42B 1/242 . . {-Means for mounting detecting, signalling or lighting devices}
- A42B 1/244 . . . {-Means for mounting lamps}
- A42B 1/245 . . {-Means for mounting audio or communication systems}
- A42B 1/247 . . {-Means for attaching eyewear (arrangements for supporting by headgear [G02C 3/02](#))}
- A42B 1/248 . . {-Insignia, logo emblems or the like}
- U **A42B 3/00** **Helmets; Helmet covers; { Other protective head coverings}{ { protective garments [A41D 13/00](#); hoods for welders [A61F 9/06](#)}; hoods as protection against chemical agents or for use at high altitudes [A62B 17/00](#); gas helmets [A62B 18/04](#); swimming helmets [A63B 33/00](#); { head guards for sporting purposes [A63B 71/10](#)}; defence protection helmets [F41H 1/04](#)}**
- A42B 3/006 . {-Means for transporting or storing helmets}
- U A42B 3/04 . Parts, details or accessories of helmets
- U A42B 3/0406 . . {-Accessories for helmets}
- A42B 3/042 . . . {-Optical devices (night vision goggles [G02B 23/12](#))}
- U A42B 3/0433 . . . {Detecting, signalling or lighting devices}
- U A42B 3/044 {Lighting devices, e.g. helmets with lamps}
- A42B 3/0446 {-intended to light the way ahead}
- A42B 3/0453 {-Signalling devices, e.g. auxiliary brake or indicator lights}
- A42B 3/046 {-Means for detecting hazards or accidents}
- A42B 3/0466 {-Means for detecting that the user is wearing a helmet}
- A42B 3/0473 . . . {-Neck restraints}
- A42B 3/048 . . . {-Hydration systems}
- A42B 3/0486 . . . {-Airbags}
- A42B 3/0493 . . {-Aerodynamic helmets; Air guiding means therefor}
- U A42B 3/06 . Impact-absorbing shells, e.g. of crash helmets
- A42B 3/062 . . . {-with reinforcing means}
- A42B 3/063 {-using layered structures}
- A42B 3/064 {-with relative movement between layers}
- A42B 3/065 {-Corrugated or ribbed shells}

- A42B 3/066 . . . {specially adapted for cycling helmets, e.g. for soft shelled helmets}
- A42B 3/067 . . . {with damage indication means}
- A42B 3/068 . . . {with preferential fracture zones}
- A42B 3/069 . . . {with soft external layer, e.g. for use in impact sports}
- U A42B 3/08 . . Chin straps or similar retention devices
- A42B 3/085 . . . {Occipital retention systems}
- U A42B 3/10 . . Linings ([A42B 3/16](#) takes precedence)
- A42B 3/105 . . . {with additional protection for the neck (protective garments for neck or shoulder area [A41D 13/0512](#))}
- U A42B 3/12 . . . Cushioning devices
- A42B 3/121 {with at least one layer or pad containing a fluid}
- A42B 3/122 {inflatable}
- A42B 3/124 {with at least one corrugated or ribbed layer}
- A42B 3/125 {with a padded structure, e.g. foam}
- A42B 3/127 {with removable or adjustable pads}
- A42B 3/128 {with zones of different density}
- U A42B 3/14 . . . Suspension devices
- A42B 3/142 {with restraining or stabilizing means, e.g. nape straps ([A42B 3/085](#) takes precedence)}
- A42B 3/145 {Size adjustment devices}
- A42B 3/147 {Anchoring means}
- U A42B 3/16 . . Ear protection devices
- A42B 3/163 . . . {Wind or noise deflectors}
- A42B 3/166 . . . {Integral hearing protection}
- U A42B 3/18 . . Face protection devices
- A42B 3/185 . . . {Securing goggles or spectacles on helmet shells}
- U A42B 3/20 . . . Face guards, e.g. for ice hockey ([A42B 3/22](#) takes precedence)
- A42B 3/205 {Chin protectors}
- U A42B 3/22 . . . Visors
- A42B 3/221 {Attaching visors to helmet shells, e.g. on motorcycle helmets}
- A42B 3/222 {in an articulated manner, e.g. hinge devices}
- A42B 3/223 {with means for locking the visor in a fully open, intermediate or closed position}
- A42B 3/224 {with electrical actuation means}
- A42B 3/225 {with full face protection, e.g. for industrial safety applications}
- A42B 3/226 {with sunscreens, e.g. tinted or dual visor}
- A42B 3/227 {with sun visors, e.g. peaks above face opening}
- A42B 3/228 {for military or aviation applications (protection helmets [F41H 1/04](#); breathing masks or helmets [A62B 18/00](#))}
- U A42B 3/24 with means for avoiding fogging or misting
- A42B 3/245 {using means for heating, e.g. electric heating of the visor}
- U A42B 3/28 . . Ventilating arrangements ([A42B 3/24](#) takes precedence)
- A42B 3/281 . . . {Air ducting systems}
- A42B 3/283 {Air inlets or outlets, with or without closure shutters}
- A42B 3/285 . . . {with additional heating or cooling means}

- A42B 3/286
 - A42B 3/288
 - U A42B 3/30
 - A42B 3/303
 - A42B 3/306
 - U A42B 3/32
 - A42B 3/328
- • • {-with forced flow, e.g. by a fan}
 - • • {-with means for attaching respirators or breathing masks}
 - • Mounting radio sets or communication systems (methods or devices for transmitting, conducting or directing sound [G10K 11/18](#); electric communication technique [H04](#))
 - • • {-Communication between riders or passengers}
 - • • {-Audio entertainment systems}
 - Collapsible helmets; Helmets made of separable parts ([A42B 3/04](#) takes precedence); {Helmets with movable parts, e.g. adjustable}
 - • {-with means to facilitate removal, e.g. after an accident}

Project: N/A (A42C)

- U **A42C 2/00** **Manufacturing helmets by processes not otherwise provided for**
 - A42C 2/002
 - A42C 2/005
 - A42C 2/007
- {-In-mould forming}
 - {-Forming from solid sheets}
 - {-Manufacturing custom-sized helmets}

Project: N/A (A43B)

- U **A43B 1/00** **Footwear characterised by the material (layered products [B32B](#))**
 - A43B 1/0009
 - A43B 1/0018
 - A43B 1/0027
 - A43B 1/0036
 - A43B 1/0045
 - A43B 1/0054
 - A43B 1/0063
 - A43B 1/0072
 - A43B 1/0081
 - A43B 1/009
 - U **A43B 3/00** **Footwear characterised by the shape or the use**
 - A43B 3/0005
 - A43B 3/001
 - A43B 3/0015
 - A43B 3/0021
 - A43B 3/0031
 - A43B 3/0036
 - A43B 3/0042
 - A43B 3/0047
 - A43B 3/0052
 - A43B 3/0057
 - A43B 3/0063
 - A43B 3/0068
 - A43B 3/0073
- {-Footwear made at least partially of alveolar or honeycomb material}
 - {-Footwear made at least partially of flexible, bellow-like shaped material}
 - {-Footwear made at least partially from a material having special colours}
 - • {-with fluorescent or phosphorescent parts}
 - {-Footwear made at least partially of deodorant means}
 - {-Footwear provided with magnets, magnetic parts or magnetic substances}
 - {-Footwear made at least partially of material that can be recycled}
 - {-Footwear made at least partially of transparent or translucent materials}
 - {-Footwear made at least partially of hook-and-loop type material (hook and loop-type straps for fastening purpose [A43C 11/1493](#))}
 - {-Footwear made at least partially of washable material}
 - {-Footwear provided with electrical or electronic systems}
 - • {-Footwear provided with light source}
 - • {-Footwear provided with generator}
 - • {-Footwear provided with sound or music source}
 - {-Footwear provided with a pocket, e.g. for keys or a card}
 - {-Footwear characterised by a special shape or design}
 - • {-with circular or circle shaped parts}
 - • {-Footwear parts having a male and corresponding female profile to fit together, e.g. form-fit}
 - • {-X-shaped or cross-shaped}
 - • {-S-shaped}
 - • {-U-shaped}
 - • {-V-shaped}
 - • {-Y-shaped}

- A43B 3/0078
 - • {-Footwear provided with logos, letters, signatures or the like decoration ([A43B 23/24](#) takes precedence)}
- A43B 3/0084
 - • • {-Arrangement of flocked decoration on shoes}
- A43B 3/0089
 - • • {-with means to identify the size of the shoe}
- A43B 3/0094
 - • {-with means to differentiate between right and left shoe}
- U A43B 3/24
 - Collapsible or convertible footwear {(multipurpose skate boots [A43B 5/1633](#); exchangeable soles [A43B 13/36](#))}
- A43B 3/242
 - • {-characterised by the upper}
- A43B 3/244
 - • {-characterised by the attachment between upper and sole}
- A43B 3/246
 - • {-characterised by the sole}
- A43B 3/248
 - • {-Collapsible or foldable footwear, e.g. for travelling}
- U A43B 5/00**
 - Footwear for sporting purposes (non-skid devices, e.g. ice-spurs, studs for football shoes, [A43C 15/00](#))**
- A43B 5/006
 - {-for horse riding (stirrups [B68C 3/00](#))}
- A43B 5/007
 - {-Footwear for car driving or racing}
- A43B 5/008
 - {-Bowling Shoes}
- U A43B 5/02
 - Football boots {or shoes, i.e. footwear for soccer, football or rugby}
- A43B 5/025
 - • {-characterised by an element which improves the contact between the ball and the footwear}
- U A43B 5/04
 - Ski boots; Similar boots
- U A43B 5/0405
 - • {-Linings, paddings, insertions; Inner boots (in general [A43B 19/00](#))}
- A43B 5/0409
 - • • {-with means for attaching inner boots or parts thereof to shells of skiboats}
- U A43B 5/0415
 - • {-Accessories ([A43B 5/0403](#), [A43B 5/0413](#), [A43B 5/0494](#) take precedence)}
- U A43B 5/0417
 - • • {-for soles or associated with soles of ski boots; for ski bindings ([A43B 5/0411](#) takes precedence)}
- A43B 5/0421
 - • • • {-located underneath the sole}
- A43B 5/0423
 - • • • {-located on the sides of the sole}
- A43B 5/0427
 - • {-characterised by type or construction details}
- A43B 5/0476
 - • • {-Front-entry skiboats}
- A43B 5/0478
 - • • {-Mid-entry skiboats, hybrid skiboats}
- A43B 5/048
 - • • {-Rear-entry skiboats}
- A43B 5/0482
 - • • {-made from materials with different rigidities}
- A43B 5/0484
 - • • {-permitting easy replacement of parts}
- A43B 5/0486
 - • {-characterized by the material}
- A43B 5/0488
 - • • {-with an upper made of flexible material, e.g. leather ([A43B 5/0401](#), [A43B 5/002](#) take precedence)}
- A43B 5/049
 - • • {-with an upper made of composite material, e.g. fibers or core embedded in a matrix}
- A43B 5/0496
 - • {-boots for touring or hiking skis}
- A43B 5/0498
 - • {-For ski jumping}
- U A43B 5/16
 - Skating boots
- A43B 5/1625
 - • {-made from materials with different rigidities}
- U A43B 7/00**
 - Footwear with health or hygienic arrangements**
- A43B 7/005
 - {-Footwear with cooling arrangements}
- U A43B 7/06
 - Ventilated footwear {(ventilated skating boots [A43B 5/165](#), [A43B 5/1675](#); ventilated socks or inserts [A43B 17/08](#))}

- U A43B 7/08
 - • Footwear with air-holes, with or without closures
 - • • {the air being forced from outside}
 - • • {the air being expelled to the outside}
 - • • {characterised by the location of the holes}
 - • • • {in the upper}
 - • • • {in the bottom of the sole}
 - • • • {in the side of the sole}
- U A43B 7/12
 - Special watertight footwear (overshoes [A43B 3/16](#))
 - • {provided with a vapour permeable member, e.g. a membrane ([A43B 23/022](#) takes precedence)}
- U A43B 7/14
 - Footwear with foot-supporting parts
 - • {provided with pads or holes on one or more locations, or having an anatomical or curved form}
 - • • {having an anatomical or curved form}
 - • • {characterised by the location under the foot}
 - • • • {situated under the medial arch, i.e. the navicular or cuneiform bones}
 - • • • {situated under the ball of the foot, i.e. the joint between the first metatarsal and first phalange}
 - • • • {situated under the lateral arch, i.e. the cuboid bone}
 - • • • {situated under the joint between the fifth phalange and the fifth metatarsal bone}
 - • • • {situated under the heel, i.e. the calcaneus bone}
 - • • • {situated under the midfoot, i.e. the metatarsal}
 - • • • {situated under the toes, i.e. the phalange}
 - • • {with special properties}
 - • • • {provided with acupressure points or means for footmassage}
 - • • • {with removable or adjustable pads to allow custom fit}
 - • • • {for sick or disabled persons, e.g. persons having osteoarthritis or diabetes}
 - • • {characterised by the type of support}
 - • • • {Recesses or holes filled with a support or pad}
 - • • • {Recesses or holes, traversing partially or completely the thickness of the pad}
 - • • • {Pad, e.g. protruding on the foot facing surface}
- U **A43B 13/00**
 - **Soles ({Skating boots characterised by the sole [A43B 5/1641](#),)socks [A43B 17/00](#)}; Sole and heel units**
- U A43B 13/02
 - characterised by the material
 - • {Soles with several layers of the same material (soles with several layers of different materials [A43B 13/12](#))}
 - • {Composites, e.g. carbon fibre or aramid fibre; the sole, one or more sole layers or sole part being made of a composite}
- U A43B 13/12
 - • Soles with several layers of different materials
 - • • {characterised by the outsole or external layer}
 - • • {characterised by the midsole or middle layer}
 - • • • {the midsole being multilayer}
- U A43B 13/14
 - characterised by the constructive form

- U A43B 13/143
 - • {provided with wedged, concave or convex end portions, e.g. for improving roll-off of the foot}
- A43B 13/145
 - • • {-Convex portions, e.g. with a bump or projection, e.g. 'Masai' type shoes}
- U A43B 13/18
 - • Resilient soles {(skating boots provided with resilient means [A43B 5/1658](#))}
- U A43B 13/181
 - • • {Resiliency achieved by the structure of the sole}
- A43B 13/185
 - • • • {-Elasticated plates sandwiched between two interlocking components, e.g. thrustors}
- A43B 13/186
 - • • • {-Differential cushioning region, e.g. cushioning located under the ball of the foot (resilient heel not included in the sole [A43B 21/26](#); resilient supports for the heel of the foot [A43B 21/32](#))}
- U A43B 13/20
 - • • Pneumatic soles {filled with a compressible fluid, e.g. air, gas (inflatable linings for skiboats [A43B 5/0407](#))}
- A43B 13/206
 - • • • {-provided with tubes or pipes or tubular shaped cushioning members}
- U A43B 13/38
 - Insoles
- A43B 13/386
 - • {-Multilayer insoles}
- U A43B 17/00** **Socks (hosiery [A41B 11/00](#); special medical insertions for shoes [A61F 5/14](#))**
- U A43B 17/003
 - {characterised by the material (wooden socks [A43B 17/12](#), made of sponge, rubber or plastic materials [A43B 17/14](#))}
- A43B 17/006
 - • {-Multilayerd}
- U A43B 19/00** **Shoe-shaped inserts; Inserts covering the instep {(for ski boots or similar boots [A43B 5/0405](#), for skating boots [A43B 5/1616](#))}**
- A43B 19/005
 - {-Weighted inserts for shoes, i.e. insert comprising an additional weight}
- U A43B 23/00** **Uppers; Boot legs; Stiffeners; Other single parts of footwear**
- U A43B 23/02
 - Uppers; Boot legs {(ski boots with an upper made of flexible material [A43B 5/0486](#); skating boots characterised by the uppers [A43B 5/1666](#))}
- A43B 23/0205
 - • {-characterised by the material (material of the lining [A43B 23/07](#), material of toe stiffeners or heel stiffeners [A43B 23/08](#))}
- A43B 23/021
 - • • {-Leather}
- A43B 23/0215
 - • • {-Plastics or artificial leather}
- A43B 23/022
 - • • • {-with waterproof breathable membranes}
- A43B 23/0225
 - • • {-Composite materials, e.g. material with a matrix}
- A43B 23/023
 - • • {-Metal}
- A43B 23/0235
 - • • {-Different layers of different material}
- A43B 23/024
 - • • {-Different layers of the same material}
- A43B 23/0245
 - • {-characterised by the constructive form}
- A43B 23/025
 - • • {-assembled by stitching}
- A43B 23/0255
 - • • {-assembled by gluing or thermo bonding}
- A43B 23/026
 - • • {-Laminated layers}
- A43B 23/0265
 - • • {-having different properties in different directions}
- A43B 23/027
 - • • • {-with a part of the upper particularly flexible, e.g. permitting articulation or torsion}
- A43B 23/0275
 - • • • {-with a part of the upper particularly rigid, e.g. resisting articulation or torsion}
- A43B 23/028
 - • • {-Resilient uppers e.g. shock absorbing}
- A43B 23/0285
 - • • • {-filled with a non-compressible fluid, e.g. gel or water}
- A43B 23/029
 - • • • {-Pneumatic upper, e.g. gas filled}

A43B 23/0295 . . . {-Pieced uppers}

Project: N/A (A43C)

- U A43C 1/00 Shoe lacing fastenings (garment fastening devices [A41F](#))**
 A43C 1/003 . {-Zone lacing, i.e. whereby different zones of the footwear have different lacing tightening degrees, using one or a plurality of laces (laces combined with another system [A43C 11/008](#); zone tightening using straps [A43C 11/14](#))}
 A43C 1/006 . {-Rear lacing, i.e. with a lace placed on the back of the foot in place of, or in addition to the traditional front lace}
- U A43C 7/00 Holding-devices for laces**
 A43C 7/005 . {-the devices having means to hold the traditional knots or part of it tightened}
- U A43C 11/00 Other fastenings specially adapted for shoes (dress fastenings in general [A44B](#))**
- U A43C 11/14 . Clamp fastenings, {e.g. strap fastenings}; Clamp-buckle fastenings; Fastenings with toggle levers
- U A43C 11/1406 . . {-Fastenings with toggle levers; Equipment therefor}
- U A43C 11/142 . . . {-Fastenings with toggle levers with adjustment means provided for on the shoe, e.g. rack}
- A43C 11/1426 {-characterised by the attachment of the rack to the footwear}
- A43C 11/1493 . . {-Strap fastenings having hook and loop-type fastening elements}
- U A43C 11/16 . Fastenings secured by wire, bolts, or the like
- A43C 11/165 . . {-characterised by a spool, reel or pulley for winding up cables, laces or straps by rotation}

Project: N/A (A44B)

A44B BUTTONS, PINS, BUCKLES, SLIDE FASTENERS, OR THE LIKE (fastenings specially adapted for footwear [A43C](#))

NOTE

This subclass covers buckles or slide fasteners whether used as haberdashery or otherwise.

WARNING

The following IPC group is not used in the CPC scheme. Subject matter covered by this group is classified in the following CPC group:

- [A44B 1/16](#) covered by [A44B 1/14](#)

A44B 1/00 Buttons (setting on garments [A41H 37/10](#) ; setting on footwear [A43D 100/08](#) ; making buttons: see the relevant groups in the classes for making articles from particular materials)

- A44B 1/06 . Assembling of buttons (covering by braiding [D04D](#))
- U A44B 1/08 . Constructional characteristics
- A44B 1/14 . . with replaceable {or protective} coverings (removable fabric coverings [A44B 1/123](#) ; sleeve-links concealing a sewed-on button [A44B 5/007](#))
- U A44B 1/18 . adapted for special ways of fastening
- A44B 1/20 . . attached by thread visible to the front (A44B 1/185 takes precedence)
- A44B 1/22 . . attached by thread not visible to the front (A44B 1/185 takes precedence)
- U A44B 5/00 Sleeve-links**
 A44B 5/007 . {concealing a sewed-on button (buttons with replaceable coverings [A44B 1/14](#))}

- A44B 6/00** Retainers or tethers for neckties, cravats, neckerchiefs, or the like, e.g. tie-clips, spring clips with attached tie-tethers, woggles, pins with associated sheathing members tetherable to clothing (-tie-pins [A44B 9/08](#) ; decorative or ornamental aspects [A44C-](#))
- A44B 9/00** Hat, scarf, or safety pins or the like (-decorative or ornamental aspect [A44C](#) ; hair pins [A45D 8/02](#) ; sewing needles [D05B 85/00-](#))
- U A44B 9/02
- A44B 9/06
- A44B 9/08
- Simple pins
 - • Hat-pins (-other fastening means for head coverings [A42B 7/00-](#))
 - • Tie-pins (-pins with associated sheathing members tetherable to clothing [A44B 6/00-](#))
- U A44B 11/00** Buckles; Similar fasteners for interconnecting straps or the like, e.g. for safety belts
- A44B 11/006
- U A44B 11/02
- U A44B 11/06
- A44B 11/065
- {Attachment of buckle to strap (-for safety buckles [A44B 11/2553-](#))}
 - frictionally engaging surface of straps
 - • with clamping devices
 - • • {with strap tightening means (-[A44B 11/125](#) takes precedence; tighteners for securing of load on vehicles [B60P 7/0823](#) ; buckles attached to the end of a strap for bundling articles [B65D 63/16-](#))}
- U A44B 11/25
- A44B 11/2503
- with two or more separable parts
 - • {Safety buckles (-safety belts in vehicles [B60R 22/00](#) ; safety belts for aircraft [B64D 25/02-](#))}
- U A44B 11/2546
- A44B 11/2549
- • • {Details}
 - • • • {Fastening of other buckle elements to the main buckle (-buckles with several tongues released by the same mechanism [A44B 11/2507](#) to [A44B 11/2542-](#))}
- A44B 11/2569
- • • {Safety measures (-buckles for releasing in a vehicle emergency [B60R 22/32](#) ; control, alarm, or interlock systems for the correct application of safety belt buckles in vehicles [B60R 22/48-](#))}
- A44B 11/258
- • {fastening by superposing one part on top of the other (-[A44B 11/2503](#) takes precedence-)}
- A44B 11/2592
- • {fastening by sliding in the main plane or a plane parallel to the main plane of the buckle (-[A44B 11/2503](#) , [A44B 11/2584](#) take precedence-)}
- A44B 11/26
- • with push-button fastenings{(-[A44B 11/2507](#) takes precedence; press-button fasteners [A44B 17/00-](#))}
- A44B 11/28
- • with hooks engaging end-pieces on the strap{(-[A44B 11/2503](#) takes precedence-)}
- U A44B 13/00** Hook or eye fasteners
- A44B 13/0005
- {characterised by their material (-[A44B 13/0052](#) and [A44B 13/0058](#) take precedence-)}
- A44B 13/0029
- {characterised by their way of fastening to the support (-[A44B 13/0052](#) and [A44B 13/0058](#) take precedence-)}
- U A44B 17/00** Press-button or snap fasteners
- A44B 17/0005
- {Fastening of press-button fasteners (-[A44B 17/0017](#) and [A44B 17/0035](#) take precedence-)}
- A44B 17/0041
- {Press-button fasteners consisting of two parts (-[A44B 17/0029](#) takes precedence-)}
- A44B 17/0047
- {Press-button fasteners consisting of three parts (-[A44B 17/0029](#) takes precedence-)}

- A44B 17/0052 · {Press-button fasteners consisting of four parts (~~A44B 17/0029~~ takes precedence-)}
- A44B 18/00** **Fasteners of the touch-and-close type; Making such fasteners** (~~making pile fabrics D03 , D04~~)
- A44B 18/0003 · {Fastener constructions (~~A44B 18/0023 , A44B 18/0046~~ take precedence-)}
- A44B 18/0011 · · {Female or loop elements (~~A44B 18/0007~~ takes precedence-)}
- A44B 18/0015 · · {Male or hook elements (~~A44B 18/0007~~ takes precedence-)}
- U A44B 18/0023 · {Woven or knitted fasteners}
- A44B 18/0026 · · {Devices for cutting loops into hooks (~~cutting pile loops D06C 13/08~~-)}
- A44B 18/0034 · · {Female or loop elements (~~A44B 18/003~~ takes precedence-)}
- A44B 18/0038 · · {Male or hook elements (~~A44B 18/003~~ takes precedence-)}
- U A44B 18/0046 · {Fasteners made integrally of plastics}
- A44B 18/0049 · · {obtained by moulding processes (~~compression moulding or articles of indefinite length characterised by the shape of the surface B29C 43/222 ; screen moulding B29C 67/08~~-)}
- A44B 18/0057 · · {Female or loop elements (~~A44B 18/0053~~ takes precedence-)}
- A44B 18/0061 · · {Male or hook elements (~~A44B 18/0053~~ takes precedence-)}
- U A44B 18/0069 · {Details}
- A44B 18/008 · · {Hooks or loops provided with means to reinforce the attachment, e.g. by adhesive means (~~tab fastener elements for absorbent pads combining adhesive and mechanical fastening A61F 13/581~~)}
- U A44B 19/00** **Slide fasteners**
- U A44B 19/10 · with a one-piece interlocking member on each stringer tape
- A44B 19/16 · · interlocking member having uniform section throughout the length of the stringer{(~~for sacks or bags B65D 33/2508~~-)}
- U A44B 19/24 · Details
- U A44B 19/26 · · Sliders
- A44B 19/267 · · · {for slide fasteners with edges of stringers having uniform section throughout the length thereof (~~for sacks or bags B65D 33/2591~~-)}
- A44B 19/34 · · Stringer tapes (~~A44B 19/40~~ takes precedence-); Flaps secured to stringers for covering the interlocking members (~~A44B 19/32~~ takes precedence; { setting slide or glide fastener elements on garments A41H 37/06 })
- A44B 19/346 · · · {Woven stringer tapes (~~weaving of tapes D03D 1/00~~-)}
- A44B 19/42 · Making by processes not fully provided for in one other class, e.g. B21D 53/50 , B21F 45/18 , B22D 17/16 , B29D 5/00 {(~~attaching closure devices, e.g. slide fasteners, to bags B31B 19/00 ; making package opening by applying or incorporating profile strips, e.g. for reclosable bags B65B 61/188~~-)}
- A44B 19/44 · · Securing metal interlocking members to ready-made stringer tapes (~~making metal slide fastener parts combined with attaching B21D 53/52~~-)
- U A44B 19/46 · · · Securing separate interlocking members
- A44B 19/48 · · · · Arranging interlocking members before securing (~~article handling devices associated with conveyers in general B65G 47/00 , e.g. B65G 47/14~~-)

Project: N/A (A44C)

- U A44C 3/00** **Medals; Badges** {(pendants, crosses, crucifixes or charms A44C 25/00; settings for holding gems or the like A44C 17/02)}; **Badges (frames or housings for storing same A47G 1/12)**
- A44C 3/004 · {Medals}

- A44C 3/005
- A44C 3/007
- A44C 3/008
- U A44C 5/00** **Bracelets; Wrist-watch straps; Fastenings for bracelets or wrist-watch straps {(settings for holding gems or the like [A44C 17/02](#); devices for putting-on or pulling-off bracelets [A47G 25/901](#))}**
 - U A44C 5/14
 - A44C 5/142
 - A44C 5/145
 - A44C 5/147
 - U A44C 5/18
 - U A44C 5/20
 - A44C 5/2004
 - U A44C 5/2076
 - A44C 5/208
 - U A44C 5/22
 - U A44C 5/24
 - A44C 5/243
 - A44C 5/246
- U A44C 7/00** **Ear-rings; Devices for piercing the ear-lobes**
 - A44C 7/009
- U A44C 9/00** **Finger-rings {(settings for holding gems or the like [A44C 17/02](#))}**
 - A44C 9/0007
 - A44C 9/0015
 - A44C 9/0023
 - A44C 9/003
 - A44C 9/0038
 - A44C 9/0046
 - A44C 9/0053
 - A44C 9/0061
 - A44C 9/0069
 - A44C 9/0076
 - A44C 9/0084
 - A44C 9/0092
- U A44C 11/00** **Watch chains; Ornamental chains {(fastening devices for watch or ornamental chains [A44C 5/18](#))}**
 - A44C 11/005
 - A44C 11/007
- U A44C 15/00** **Other forms of jewellery**
 - A44C 15/0005
 - A44C 15/0025
 - A44C 15/003

- A44C 15/0035
 - A44C 15/0045
 - A44C 15/005
 - A44C 15/0055
 - A44C 15/006
 - A44C 15/0065
 - A44C 15/007
 - A44C 15/0075
 - A44C 15/008
 - A44C 15/0085
 - A44C 15/009
 - A44C 15/0095
 - U A44C 17/00**
 - U A44C 17/02**
 - A44C 17/0208
 - A44C 17/0216
 - A44C 17/0225
 - A44C 17/0233
 - A44C 17/0241
 - A44C 17/025
 - A44C 17/0258
 - A44C 17/0266
 - A44C 17/0275
 - A44C 17/0283
 - A44C 17/0291
 - U A44C 17/04**
 - A44C 17/046
 - U A44C 25/00**
 - A44C 25/001
 - A44C 25/002
 - A44C 25/004
 - A44C 25/005
 - A44C 25/007
 - A44C 25/008
 - U A44C 27/00**
 - U A44C 27/001**
 - A44C 27/008
- {-Piercing type jewellery (earrings [A44C 7/00](#))}
 - {-Jewellery specially adapted to be worn on a specific part of the body not fully provided for in groups [A44C 1/00](#) to [A44C 9/00](#) ([A44C 15/0035](#) takes precedence)}
 - {-Necklaces (ornamental chains [A44C 11/00](#))}
 - · {-combined with other jewels, e.g. earrings}
 - · {-on the head, e.g. diadem (hair holding devices [A45D 8/00](#))}
 - · {-on the nose or nostrils}
 - · {-on the teeth, e.g. settings or decorations}
 - · {-on the hand or nails}
 - · · {-on the nails}
 - · {-on the leg, foot or toes}
 - · · {-on the foot or toes}
 - · {-on the nipples}
 - Gems or the like**
 - Settings for holding gems { or the like, e.g. for ornaments or decorations}
 - · {-removable}
 - · · {-with automatic locking action, e.g. by using a spring}
 - · · · {-having clamping action}
 - · · {-using screws or screwed elements}
 - · {-slidably arranged}
 - · · {-with the gem sliding along guiding rails}
 - · {-rotatably or pivotably arranged}
 - · · {-with means for maintaining a pivoted position}
 - · {-in an oscillating way}
 - · {-moving freely inside a setting}
 - · · {-in the same plane}
 - Setting gems in jewellery; Setting-tools
 - · {-Setting gems in a plurality of non coplanar table top planes}
 - Miscellaneous fancy ware for personal wear, e.g. { pendants,} crosses, crucifixes, charms {(suspension loops or rings [A44C 3/008](#); settings for holding gems or the like [A44C 17/02](#))}**
 - {-Pendants}
 - · {-forming a container, e.g. for pictures}
 - · · {-with articulated faces}
 - {-Crosses or crucifixes}
 - {-Charms or amulets}
 - {-Jewellery worn on collars, e.g. on shirts (brooches [A44C 1/00](#))}
 - Making jewellery or other personal adornments (single step processes, see the relevant places, e.g. making rings from wire [B21F 37/00](#))**
 - {Materials for manufacturing jewellery}
 - · {-having shape memory behavior}

Project: N/A (A45B)

- U A45B 25/00** **Details of umbrellas (sticks for umbrellas [A45B 1/00](#) to [A45B 9/00](#); illuminating devices for umbrellas [A45B 3/02](#); {sockets or holders for poles or posts [E04H 12/22](#)})**
- A45B 2025/003 · {Accessories not covered by groups [A45B 25/24](#) to [A45B 25/30](#)}

Project: N/A (A45C)

- A45C 5/00** **Rigid or semi-rigid luggage (collapsible or extensible luggage, bags or the like [A45C 7/00](#));**
- A45C 9/00** **{-Purses,} Luggage or { hand carried} bags convertible into { other articles or into} objects for other use (trunk-wardrobes [A47B 61/06](#); trunks convertible into tables [A47B 85/00](#); trunk-beds [A47C 17/82](#))**
- U A45C 13/00** **Details; Accessories (haberdashery [A44](#); hinged lids for containers [B65D 43/16](#); hinges [E05D](#))**
- A45C 13/001 · {-Accessories}
- A45C 13/02 · Interior fittings; Means, { e.g. inserts,} for holding and packing articles
- A45C 13/03 · · Means for holding garments

Project: N/A (A45D)

- U A45D 2/00** **Hair-curling or hair-waving appliances (heated curling-tongs, curling-irons [A45D 1/00](#)); {Appliances for hair dressing treatment not otherwise provided for}**
- U A45D 2/12** · Hair winders or hair curlers for use parallel to the scalp, i.e. flat-curlers ([A45D 6/14](#), [A45D 6/16](#) take precedence; with internal electric heating means [A45D 2/36](#); heating devices designed for use external to, and in connection with, hair curlers or hair winders [A45D 4/08](#))
- U A45D 2/24** · · of multi-part type, e.g. with sliding parts other than for fastening
- U A45D 2/2464** · · · {tube-like}
- U A45D 2/2471** · · · · {comprising bristles}
- A45D 2/2478** · · · · · {-comprising hooks, e.g. hook and loop-type fastener}
- U A45D 8/00** **Hair-holding devices {(as hair-curling or hair-waving appliances [A45D 2/00](#)); Accessories therefor**
- A45D 8/18 · Grip openers; Grip {storing means e.g.} boxes
- A45D 26/00** **Hair-singeing apparatus; -Apparatus for removing superfluous hair, e.g. tweezers (removing hair using electro-surgical instruments [A61B 18/04](#), [A61B 18/18](#))**
- U A45D 27/00** **Shaving accessories (containers for handling shaving soap [A45D 40/00](#); shaving mirrors [A45D 42/08](#))**
- U A45D 27/22** · Containers or carriers for storing shaving appliances
- A45D 27/225** · · {-for storing razor blade cartridges, e.g. after use}
- U A45D 33/00** **Containers or accessories specially adapted for handling toilet or cosmetic powder**
- A45D 33/006 · {Vanity boxes or cases, compacts, i.e. containing a powder receptacle and a puff or applicator ([A45D 33/025](#) to [A45D 33/34](#) and [A45D 40/22](#) take precedence; toilet etuis [A45C 11/008](#)-)}

Project: N/A (A45F)

- U A45F 3/00** **Travelling or camp articles (travelling rugs [A47G 9/06](#)); Sacks or packs carried on the body (convertible into other articles [A45F 4/00](#))**
 A45F 3/005 · {-Sacks or packs carried on the body by means of a single strap around the waist}
- U A45F 4/00** **Travelling or camp articles which may be converted into { other} articles { or into objects} for other use; Sacks or packs carried on the body and convertible into other articles { or into objects for other use}**
 U A45F 4/02 · Sacks or packs convertible into other articles {or into objects for other use}
 A45F 2004/023 · · {into articles covered by groups [A45F 3/00](#) to [A45F 3/15](#)}
- U A45F 5/00** **Holders or carriers for hand articles; Holders or carriers for use while travelling or camping**
 U A45F 5/02 · Fastening articles to the garment
 A45F 5/021 · · {-to the belt}

Project: N/A (A46B)

- U A46B 3/00** **Brushes characterised by the way in which the bristles are fixed or joined in or on the brush body or carrier (machines or appliances therefor [A46D](#))**
 A46B 3/005 · {-Bristle carriers and bristles moulded as a unit ([A46B 1/00](#) takes precedence)}
- U A46B 5/00** **Brush bodies; Handles integral with brushware**
 A46B 5/0004 · {-Additional brush head}
 A46B 5/0008 · · {-Brushes with two or more heads on the same end of a handle not intended for simultaneous use}
 A46B 5/0012 · · {-Brushes with two or more heads on the same end of a handle for simultaneous use, e.g. cooperating with each-other}
 A46B 5/0016 · · {-Brushes with heads on opposite sides or ends of a handle not intended for simultaneous use}
- U A46B 5/002 · {having articulations, joints or flexible portions}
 A46B 5/0025 · · {-Brushes with elastically deformable heads that change shape during use}
 A46B 5/0029 · · · {-Head made of soft plastics, rubber or rubber inserts in plastics matrix}
 A46B 5/0033 · · {-bending or stretching or collapsing ([A46B 7/023](#) takes precedence)}
 A46B 5/0037 · · · {-Flexible resilience by plastic deformation of the material}
 A46B 5/0041 · · · {-Mechanical joint or hinge, made up of several components}
 A46B 5/0045 · · · {-Brushes articulated with more than one hinge}
 A46B 5/005 · · · {-Brushes with a telescopic or similarly moveable portion}
 A46B 5/0054 · · {-designed to allow relative positioning of the head to body}
 A46B 5/0058 · · · {-Mechanical joint or hinge made up of several components}
 A46B 5/0062 · · · {-being flexible or resilient during use}
 A46B 5/0066 · · · · {-Flexible resilience by elastic deformation of the material}
 A46B 5/007 · · · · {-Inserts made of different material e.g. springs, plates}
- U A46B 5/0075 · · · {being adjustable and stable during use}
 A46B 5/0079 · · · · {-Adjustable and stable shaft or handle, e.g. generally in one piece}
 A46B 5/0083 · · · · {-Mechanical joint allowing adjustment in at least one plane}
 A46B 5/0087 · · · · {-Mechanical joint featuring a ball and socket}
- A46B 5/0095 · {-Removable or interchangeable brush heads}
- U A46B 5/02 · specially shaped for holding by the hand

- A46B 5/021
 - A46B 5/023
 - A46B 5/025
 - A46B 5/026
 - A46B 5/028
 - U A46B 7/00** **Bristle carriers arranged in the brush body**
 - U A46B 7/04
 - A46B 7/042
 - A46B 7/044
 - A46B 7/046
 - A46B 7/048
 - A46B 7/06
 - U A46B 9/00** **Arrangements of the bristles in the brush body**
 - A46B 9/005
 - U A46B 9/02
 - A46B 9/021
 - A46B 9/023
 - A46B 9/025
 - A46B 9/026
 - A46B 9/028
 - A46B 9/04
 - U A46B 9/06
 - A46B 9/065
 - U A46B 11/00** **Brushes with reservoir or other means for applying substances, e.g. paints, pastes, water (driven brush bodies [A46B 13/00](#); { message apparatus with liquid delivery [A61H 7/002](#), [A61H 2201/105](#)}; applying liquids or other fluent materials to surfaces by liquid carrying members in general, e.g. by pads [B05C 1/00](#), [B05D 1/28](#))**
 - A46B 11/001
 - A46B 11/0017
 - A46B 11/002
 - A46B 11/0024
 - U A46B 11/0027
 - A46B 11/0031
 - A46B 11/0034
- • {-Grips or handles specially adapted to conform to the hand}
 - • {-Grips or handles specially adapted for children}
 - • {-Grips or handles specially adapted for handicapped persons}
 - • {-Grips or handles having a nonslip section}
 - • {-Handles featuring an adjustable thumbrest}
 - interchangeably { removable bristle carriers}
 - • {-Clip or snap connection for bristle carriers}
 - • {-Sliding connections for bristle carriers}
 - • {-Threaded or screw connections for bristle carriers}
 - • • {-Lock screw to secure carriers}
 - movably during use, {i.e. the normal brushing action causing movement-(driven brush bodies [A46B 13/00](#))}
 - {-where the brushing material is not made of bristles, e.g. sponge, rubber or paper}
 - Position or arrangement of bristles in relation to surface of the brush body, e.g. inclined, in rows, in groups
 - • {-arranged like in cosmetics brushes, e.g. mascara, nail polish, eye shadow}
 - • {-arranged like in hair brushes, e.g. hair treatment, dyeing, streaking}
 - • {-the bristles or the tufts being arranged in an angled position relative to each other}
 - • {-where the surface of the brush body or carrier is not in one plane, e.g. not flat ([A46B 9/005](#) takes precedence)}
 - • {-Bristle profile, the end of the bristle defining a surface other than a single plane or deviating from a simple geometric form, e.g. cylinder, sphere or cone}
 - • {-Arranged like in or} for toothbrushes
 - Arrangement of mixed bristles or tufts of bristles, e.g. wire, fibre, rubber
 - • {-the bristles or the tufts being embedded in a different brushing material}
 - {-with integral reservoirs ([A46B 11/0003](#), [A46B 11/0006](#) take precedence)}
 - • {-with pre-pressurised reservoirs, e.g. aerosols}
 - • {-pressurised at moment of use manually or by powered means}
 - • • {-with a permanently displaceable pressurising member that remain in position unless actuated, e.g. lead-screw or ratchet mechanisms, toothpaste tube twisting or rolling devices}
 - • • • {-Lead-screw mechanisms}
 - • • • {-Means for influencing rotation of the knob, e.g. ratchet, click mechanisms, one way clutches}
 - • • • {-Means comprising a ratchet mechanism or equivalent for advancing the piston stepwise}

- A46B 11/0037 {A piston or plunger advanced by direct pushing along the side of brush handle}
- A46B 11/0041 . . . {Flexible or deformable reservoirs, e.g. resilient bulbs, compressible tubes}
- A46B 11/0044 {where a tube is rolled up transverse to long axis}
- A46B 11/0048 {where a tube is twisted along length}
- A46B 11/0051 {Peristaltic pump}
- A46B 11/0058 . . . {with a metered dosage}
- A46B 11/0062 . . {Brushes where the reservoir is specifically intended for being refilled when empty}
- A46B 11/0065 . . {Brushes where the reservoir is specifically intended for being replaced when empty}
- A46B 11/0068 . . {Brushes where the reservoir is specifically intended for solid substance that dissolves gradually}
- U A46B 11/0072 . {Details}
- A46B 11/0075 . . {Means integral with the brush for opening, puncturing or piercing sealed reservoirs, e.g. on insertion}
- U A46B 11/0079 . . {Arrangements for preventing undesired leakage or dispensing}
- A46B 11/0082 . . . {Means for closing, sealing or controlling the flow using capillary action}
- A46B 11/0086 . . . {Means for closing or sealing, e.g. toothpaste outlet when brush not in use thereby preventing leakage or drying out}
- A46B 11/0089 . . . {Caps or covers for bristles}
- A46B 11/0096 . . {Indication of the level of the remaining fluid, e.g. through transparent walls}
- A46B 11/06 . . connected to supply pipe {or to other external supply means-([A46B 11/0003](#) and [A46B 11/0006](#) take precedence)}
- U A46B 13/00** **Brushes with driven brush bodies {or carriers}{power-driven toothbrushes [A61C 17/16](#)}**
- U A46B 13/02 . . Power-driven {carriers}
- A46B 13/023 . . {with means for inducing vibration to the bristles}
- A46B 13/026 . . {Brushes which automatically reverse direction of rotation, e.g. using gravity switches}
- U A46B 15/00** **Other brushes; Brushes with additional arrangements**
- A46B 15/0002 . . {Arrangements for enhancing monitoring or controlling the brushing process}
- A46B 15/0004 . . {with a controlling means}
- A46B 15/0008 . . . {with means for controlling duration, e.g. time of brushing}
- A46B 15/001 . . . {with means indicating the remaining useful life of brush}
- A46B 15/0012 . . . {with a pressure controlling device}
- A46B 15/0014 . . . {with a controlling temperature device}
- A46B 15/0016 . . {with enhancing means}
- A46B 15/0018 . . . {with antistatic properties}
- A46B 15/002 . . . {with a means for removing or creating static electricity}
- A46B 15/0022 . . . {with an electrical means}
- A46B 15/0024 . . . {with means generating ions}
- A46B 15/0026 . . . {with a magnetic means}
- A46B 15/0028 . . . {with an acoustic means}
- A46B 15/003 . . . {Enhancing with heat}
- A46B 15/0032 . . . {with protrusion for polishing teeth}

- A46B 15/0034
 - • • {with a source of radiation, e.g. UV, IR, LASER, X-ray for irradiating the teeth and associated surfaces}
- A46B 15/0036
 - • • {with a lighting means, e.g. laser, bulb ([A46B 15/0034](#) takes precedence)}
- A46B 15/0038
 - • {with signaling means}
- A46B 15/004
 - • • {with an acoustic signaling means, e.g. noise}
- A46B 15/0042
 - • • • {with musical signaling means}
- A46B 15/0044
 - • • {with light signaling means ([A46B 15/0034](#), [A46B 15/0036](#) takes precedence)}
- A46B 15/0046
 - • • {with vibrating signaling means}
- A46B 15/0048
 - • {Drip collector, e.g. collecting the liquids dripping from the brush during a brushing process}
- A46B 15/0051
 - • {Brushes fitted with ventilation means, e.g. with air buffers, air vents}
- A46B 15/0053
 - • {Brushes fitted with ventilation suction, e.g. for removing dust (vacuum cleaner [A47L 7/00](#))}
- U A46B 15/0055
 - {Brushes combined with other articles normally separate from the brushing process, e.g. combs, razors, mirrors}
- A46B 15/0057
 - • {Brushes fitted with a device for cleaning the ears}
- A46B 15/0059
 - • {Brushes with a comb}
- A46B 15/0061
 - • {with a container for accessories, e.g. pills, polish, condoms, cells ([A46B 11/00](#) takes precedence)}
- A46B 15/0063
 - • {Brushes with a device for opening containers, e.g. shoes polish ([A46B 11/0093](#) takes precedence)}
- A46B 15/0065
 - • {Brush with an additional cutting tool, e.g. nail clippers, hair cutting}
- A46B 15/0067
 - • {Brushes fitted with a drinking device, i.e. brushes with devices allowing drinking}
- A46B 15/0069
 - • {Brushes fitted with a interdental devices, e.g. toothpick ([A46B 2200/108](#) takes precedence)}
- A46B 15/0071
 - • • {Toothbrushes with flossing arrangements ([A61C 15/04](#) takes precedence)}
- A46B 15/0073
 - • • {Brushes with an arrangement for using the floss}
- A46B 15/0075
 - • {Brushes with an additional massage device}
- A46B 15/0077
 - • {Brushes fitted with a mirror}
- A46B 15/0079
 - • {Brushes fitted with a razor or other shaving equipments}
- A46B 15/0081
 - • {Brushes with a scraper, e.g. tongue scraper}
- A46B 15/0083
 - • {Brushes with a shoehorn}
- A46B 15/0085
 - {Brushes provided with an identification, marking device or design}
- A46B 15/0087
 - {Brushes with decoration on or in the handle}
- A46B 15/0089
 - {Brushes with figurines such as animals on the handle}
- A46B 15/0091
 - {Container, e.g. bag or box with a collection of various devices}
- A46B 15/0093
 - {Magazines or sets of brushes components, e.g. plurality of brushes linked as a package}
- A46B 15/0095
 - {Brushes with a feature for storage after use}
- A46B 15/0097
 - {Self supporting, e.g. brushes that stand upright or in other particular ways}
- U **A46B 17/00** **Accessories for brushes**
- U A46B 17/06
 - Devices for cleaning brushes after use
- A46B 17/065
 - • {Sterilising brushes; products integral with the brush for sterilising, e.g. tablets, rinse, disinfectant}

Project: N/A (A46D)

- U A46D 1/00** **Bristles; Selection of materials for bristles (making artificial bristles [D01D](#), [D01F](#))**
- A46D 1/003 · {-Testing of brushes}
 - A46D 1/006 · {-Antimicrobial, disinfectant bristles, handle, bristle-carrier or packaging}
 - A46D 1/02 · {-Bristles details}
 - A46D 1/0207 · · {-Bristles characterised by the choice of material e.g. metal}
 - A46D 1/0215 · · {-Bristles characterised by the material being biodegradable}
 - A46D 1/0223 · · {-Bristles characterised by being electrostatically charged}
 - A46D 1/023 · · {-Bristles with at least a core and at least a partial sheath}
 - A46D 1/0238 · · {-Bristles with non-round cross-section}
 - A46D 1/0246 · · {-Hollow bristles}
 - A46D 1/0253 · · {-Bristles having a shape which is not a straight line e.g. curved, "S", hook, loop}
 - A46D 1/0261 · · {-Roughness structure on the bristle surface}
 - A46D 1/0269 · · {-Monofilament bristles}
 - A46D 1/0276 · · {-Bristles having pointed ends}
 - A46D 1/0284 · · {-Bristles having rounded ends}
 - A46D 1/0292 · · {-Bristles having split ends}
- U A46D 3/00** **Preparing, {i.e. Manufacturing} brush bodies**
- U A46D 3/04 · Machines for inserting or fixing bristles in bodies
 - A46D 3/045 · · {-for fixing bristles by fusing or gluing to a body}
 - A46D 3/047 · · {-for clamping or gluing bristles into rings, e.g. paint brushes, brooms}
- U A46D 9/00** **Machines for finishing brushes {([A46D 1/00](#) and [A46D 3/00](#) take precedence)}**
- U A46D 9/02 · Cutting; Trimming
 - A46D 9/025 · · {-Deflecting parts of the bristle field in order to trim the rest}

Project: N/A (A47B)

- U A47B 21/00** **Tables or desks {for office equipment, e.g. typewriters, keyboards}**
- U A47B 21/007 · with under-desk displays, e.g. displays being viewable through a transparent working surface of the table or desk
 - A47B 21/0073 · · {-liftable above the desk top}
 - U A47B 21/03 · with substantially horizontally extensible or adjustable parts other than drawers, e.g. leaves
 - A47B 21/0314 · · {-Platforms for supporting office equipment}
 - A47B 21/0371 · · {-Platforms for supporting wrists}
- U A47B 47/00** **Cabinets, racks or shelf units, characterised by features related to dismountability or building-up from elements ([A47B 43/00](#), [A47B 45/00](#) take precedence; features for adjusting shelves or partitions [A47B 57/00](#))**
- U A47B 47/02 · made of metal only
 - U A47B 47/021 · · {Racks or shelf units ([A47B 47/03](#) takes precedence)}
 - A47B 47/025 · · · {-with panels connected together without three dimensional frames ([A47B 47/0025](#), [A47B 47/005](#), [A47B 47/0066](#), [A47B 47/042](#) take precedence)}

- U A47B 73/00** **Bottle cupboards; Bottle racks**
- A47B 73/002 · {-Racks made of wire}
 - A47B 73/004 · {-holding the bottle by the neck only}
 - A47B 73/006 · {-with modular arrangements of identical units}
 - A47B 73/008 · {-with attachment means for fixing in another cupboard or rack}
- U A47B 88/00** **Drawers for tables, cabinets or like furniture; Guides for drawers**
(A47B 63/02 takes precedence; drawers coupled to doors A47B 96/16; {locks for drawers, e.g. anti-tilt interlock E05B 65/46})
- U A47B 88/04 · Sliding drawers; Slides or guides therefor
 - A47B 88/0411 · · {-Drawers with castors, rollers or wheels, supported directly on a surface below, e.g. on a floor, shelf or desktop}
 - A47B 88/0451 · · {-Profiled walls having grooves or protuberances for supporting multiple drawers}
 - A47B 88/0455 · · {-Profiles or supporting structures for supporting single drawers ([A47B 88/044](#) takes precedence)}
 - A47B 88/0477 · · {-Self-opening, e.g. by touch-latch, touch-touch or push push movements}
 - A47B 88/0481 · · {-both self-closing and self-opening}

Project: N/A (A47C)

- U A47C 1/00** **Chairs adapted for special purposes (features relating to vertical adjustability [A47C 3/20](#); convertible chairs [A47C 13/00](#); chairs or personal conveyances specially adapted for patients or disabled persons [A61G 5/00](#); operating chairs, dental chairs [A61G 15/00](#))**
- U A47C 1/02 · Reclining or easy chairs (supports for parts of body [A47C 7/36](#), [A47C 7/50](#), [A47C 7/54](#))
 - U A47C 1/022 · · having independently-adjustable supporting parts
 - U A47C 1/024 · · · the parts, being the back-rest, or the back-rest and seat unit, having adjustable { and lockable} inclination
 - A47C 1/0242 · · · · {-by electric motors}
 - A47C 1/0244 · · · · {-by fluid means}
 - A47C 1/0246 · · · · {-by means of screw-and-nut mechanism}
 - A47C 1/0248 · · · · {-by chains, ropes or belts}
 - U A47C 1/026 · · · · by means of peg-and-notch or { pawl-and-ratchet} mechanism
 - A47C 1/0265 · · · · · {-positioned under the arm-rests}
 - U A47C 1/031 · · having coupled adjustable supporting parts
 - U A47C 1/032 · · · the parts being movably-coupled seat and back-rest ([A47C 1/035](#) takes precedence)
 - A47C 1/03205 · · · · {-having adjustable and lockable inclination}
 - A47C 1/03211 · · · · · {-by electric motors}
 - A47C 1/03216 · · · · · {-by fluid means}
 - A47C 1/03222 · · · · · {-by means of screw-and-nut mechanism}
 - A47C 1/03227 · · · · · {-by chains, ropes or belts}
 - A47C 1/03233 · · · · · {-by means of a rack-and-pinion or like gearing mechanism}
 - A47C 1/03238 · · · · · {-by means of peg-and-notch or pawl-and-ratchet mechanism}
 - A47C 1/03244 · · · · · · {-positioned under the arm-rests}
 - A47C 1/0325 · · · · · {-by means of clamps or friction locking members}
 - A47C 1/03261 · · · · · {-characterised by elastic means}

- A47C 1/03266 {-with adjustable elasticity}
- A47C 1/03272 {-with coil springs}
- A47C 1/03277 {-with leaf springs}
- A47C 1/03283 {-with fluid springs}
- A47C 1/03288 {-with resilient blocks}
- A47C 1/03294 {-slidingly movable in the base frame, e.g. by rollers}
- U A47C 1/034 . . . the parts including a leg-rest or foot-rest ([A47C 1/037](#) takes precedence; { supports for the feet or the legs coupled to fixed parts of the chair [A47C 7/50](#); independent foot-rests or leg-rests [A47C 16/02](#)})
- A47C 1/0342 {-in combination with movable backrest-seat unit or back-rest}
- A47C 1/0345 {-characterised by foot-rests actuated by lazy-tongs}
- A47C 1/0347 {-characterised by the backrest-seat unit or back-rest slidingly movable in the base frame, e.g. by rollers}
- U A47C 1/035 in combination with movably coupled seat and back-rest, { i.e. the seat and back-rest being movably coupled in such a way that the extension mechanism of the foot-rest is actuated at least by the relative movements of seat and backrest}
- A47C 1/0352 {-characterised by coupled seat and back-rest slidingly movable in the base frame. e.g. by rollers}
- U A47C 1/14 . . Beach chairs; {Chairs for outdoor use, e.g. chairs for relaxation or sun-tanning}
- A47C 1/143 . . {-Chaise longues}
- A47C 1/146 . . {-of legless type}
- U A47C 3/00** **Chairs characterised by structural features; Chairs or stools with rotatable or vertically-adjustable seats ([A47C 1/00](#), [A47C 4/00](#) take precedence)**
- U A47C 3/02 . . Rocking chairs (specially for children [A47D 13/10](#))
- U A47C 3/025 . . with seat, or seat and back-rest unit elastically { or pivotally} mounted in a rigid { base} frame
- A47C 3/0252 . . . {-connected only by an elastic member positioned between seat and base frame}
- A47C 3/0255 . . . {-pivotally mounted in the base frame, e.g. swings}
- A47C 3/0257 . . . {-slidingly movable in the base frame, e.g. by rollers}
- U A47C 3/18 . . Chairs or stools with rotatable seat (adjustable in height by rotation [A47C 3/24](#))
- A47C 3/185 . . {-self-returning to the original position}
- U A47C 3/20 . . Chairs or stools with vertically-adjustable seats (tables with variable height [A47B 9/00](#); {locking of telescopic systems in general [F16B 7/10](#)})
- U A47C 3/26 . . with vertical, { or inclined} toothed rack; { with peg-and-notch mechanism}
- A47C 3/265 . . . {-with rack-and-pinion gearing}
- U A47C 4/00** **Foldable, collapsible or dismountable chairs (of tubular metal type [A47C 5/10](#); children`s foldable chairs [A47D 1/02](#))**
- U A47C 4/02 . . Dismountable chairs
- A47C 4/021 . . {-connected by slotted joints}
- A47C 4/022 . . {-connected by bars or wires}
- A47C 4/024 . . {-having integral back-rest and rear leg}
- A47C 4/025 . . {-having integral back-rest and front leg}
- A47C 4/027 . . {-having integral seat and rear leg}
- A47C 4/028 . . {-Upholstered chairs, e.g. metal, plastic or wooden chairs}
- U A47C 4/04 . . Folding chairs with inflexible seats

- A47C 4/045
 - • {-foldable side to side only}
- U A47C 4/28
 - Folding chairs with flexible coverings for the seat or back elements
- A47C 4/283
 - • {-foldable side to side only}
- A47C 4/286
 - • {-foldable side to side and front to back, e.g. umbrella type}
- U A47C 5/00**
 - Chairs of special materials**
- A47C 5/005
 - {-of paper, cardboard or similar pliable material}
- A47C 5/02
 - {of woven material, e.g.} basket chairs
- U A47C 5/04
 - Metal chairs, e.g. tubular (of rocking type [A47C 3/023](#); of non-tubular folding, collapsible, or dismountable type [A47C 4/00](#))
- A47C 5/043
 - • {-of tubular non-circular cross-section}
- A47C 5/046
 - • {-of non-tubular cross-section}
- U A47C 5/12
 - of plastics, with or without reinforcement
- A47C 5/125
 - • {-completely made of foam material}
- U A47C 7/00**
 - Parts, details, or accessories of chairs or stools (attaching to floor [A47B 91/08](#))**
- A47C 7/002
 - {-Chair or stool bases ([A47C 3/20](#) takes precedence)}
- A47C 7/004
 - • {-for chairs or stools with central column, e.g. office chairs}
- A47C 7/006
 - • {-with castors}
- A47C 7/008
 - • {-for uneven surfaces}
- U A47C 7/02
 - Seat parts (adaptation of seats to mounting in tubular chairs [A47C 5/06](#); such parts not restricted to chairs [A47C 23/00](#); removable upholstered units or cushions [A47C 27/00](#))
- A47C 7/021
 - • {-Detachable or loose seat cushions}
- A47C 7/024
 - • {-with double seats}
- A47C 7/025
 - • {-Springs not otherwise provided for in [A47C 7/22](#) - [A47C 7/35](#)}
- A47C 7/027
 - • • {-with elastomeric springs ([A47C 7/282](#) takes precedence)}
- A47C 7/028
 - • • {-with wooden springs, e.g. slated type}
- U A47C 7/28
 - • with tensioned springs, e.g. of flat type
- A47C 7/282
 - • • {-with mesh-like supports, e.g. elastomeric membranes}
- A47C 7/285
 - • • {-with metal strips or webs}
- A47C 7/287
 - • • {-with combinations of different types flat type tensioned springs}
- U A47C 7/34
 - • with springs in compression, e.g. coiled
- A47C 7/342
 - • • {-Edge stiffeners}
- A47C 7/347
 - • • {-with means for connecting springs to each other or to seat frame}
- U A47C 7/36
 - Support for the head or the back
- U A47C 7/38
 - • for the head {(adjustable coupled to reclining or easy chairs [A47C 1/036](#); for operating or dental chairs [A61G 15/00](#); for car seats [B60N 2/48](#))}
- A47C 7/383
 - • • {-Detachable or loose head- or neck-supports, e.g. horse-shoe shaped (detachable head rests for cars [B60N 2/4879](#))}
- A47C 7/386
 - • • {-Detachable covers for headrests}
- U A47C 7/40
 - • for the back
- A47C 7/402
 - • • {-adjustable in height}
- A47C 7/405
 - • • {-with double backrests}
- A47C 7/407
 - • • {-of collapsible type}

- U A47C 7/42
 - • • of detachable { or loose} type {(detachable or loose back supports associated with beds [A47C 20/027](#))}
- A47C 7/425
 - • • • {-Supplementary back-rests to be positioned on a back-rest or the like}
- U A47C 7/44
 - • • with elastically-mounted { back-rest or backrest-seat unit in the base} frame
- A47C 7/441
 - • • • {-with adjustable elasticity}
- A47C 7/443
 - • • • {-with coil springs}
- A47C 7/445
 - • • • {-with leaf springs}
- A47C 7/446
 - • • • {-with fluid springs}
- A47C 7/448
 - • • • {-with resilient blocks}
- U A47C 7/46
 - • • with special, e.g. adjustable, { lumbar region support} profile; "Ackerblom" profile chairs
- A47C 7/462
 - • • • {-adjustable by mechanical means}
- A47C 7/465
 - • • • • {-by pulling an elastic cable}
- A47C 7/467
 - • • • {-adjustable by fluid means}
- U A47C 7/50
 - Supports for the feet or the legs { coupled to fixed parts of the chair}{coupled to other adjustable parts { of the chair} [A47C 1/034](#), [A47C 1/037](#); { stand-alone rests or supports for the feet or the legs, e.g.} footstools [A47C 16/02](#))
- A47C 7/503
 - • {-with double foot-rests or leg-rests}
- A47C 7/506
 - • {-of adjustable type}
- U A47C 7/54
 - Supports for the arms
- A47C 7/543
 - • {-movable to inoperative position}
- A47C 7/546
 - • {-of detachable type}
- U A47C 7/62
 - Accessories for chairs
- U A47C 7/72
 - • Adaptations for incorporating lamps, radio sets, bars, telephones, ventilation, heating or cooling arrangements or the like
- A47C 7/725
 - • • {-for illumination, e.g. lamps}
- U A47C 7/74
 - • • for ventilation, heating or cooling {(actuated by rocking the chair [A47C 3/02](#))}
- A47C 7/742
 - • • • {-for ventilating or cooling ([A47C 31/116](#) takes precedence)}
- A47C 7/744
 - • • • • {-with active means, e.g. by using air blowers or liquid pumps}
- A47C 7/746
 - • • • • {-without active means, e.g. with openings or heat conductors}
- U A47C 9/00**
 - Stools for specified purposes (with rotatable seats [A47C 3/18](#); with vertically adjustable seats [A47C 3/20](#); footstools [A47C 16/02](#); prayer stools [A47C 16/04](#); platforms or seat-boxes specially adapted for angling [A01K 97/22](#)){other seating furniture for specified purposes [A47C 15/004](#)}**
- A47C 9/007
 - {-High stools, e.g. bar stools (children's high chairs [A47D 1/00](#))}
- U A47C 9/10
 - Camp, travelling, or sports stools (walking sticks or umbrellas convertible into seats, hunting sticks [A45B 5/00](#))
- A47C 9/105
 - • {-having several foldable or detachable legs converging in one point}
- U A47C 11/00**
 - Benches not otherwise provided for (school forms [A47B 39/00](#))**
- A47C 11/005
 - {-having multiple separate seats}
- U A47C 15/00**
 - Other seating furniture (school forms [A47B 39/00](#))**
- A47C 15/002
 - {-Corner seating furniture, e.g. corner sofas (changing corner couches into double bed [A47C 17/36](#))}
- U A47C 15/004
 - {Seating furniture for specified purposes not covered by main groups [A47C 1/00](#) or [A47C 9/00](#)}

- A47C 15/006
 - • {-Floating seats (floatable vessel furniture for life-saving [B63C 9/30](#))}
- A47C 15/008
 - • {-for sexual intercourse}
- A47C 16/00**
 - { Stand-alone} rests or supports for feet, legs, arms, back or head (associated with chairs [A47C 7/00](#); associated with beds or sofas [A47C 20/00](#))**
- A47C 16/005
 - {-Back-rests}
- U A47C 17/00**
 - Sofas; Couches; Beds (bedsteads [A47C 19/00](#); spring mattresses [A47C 23/00](#); divan bases [A47C 23/00](#); stuffed mattresses [A47C 27/00](#); beds with special provisions for nursing [A61G 7/00](#))**
- A47C 17/04
 - {-Seating furniture, e.g.} sofas, couches, settees, or the like, with movable parts [changeable to beds]; -Chair beds
- A47C 17/045
 - • {-Seating furniture having loose or by fabric hinge connected cushions changeable to beds}
- A47C 17/13
 - • {-Seating furniture having non-movable backrest} changeable { to beds} by increasing the available { seat} part, e.g. by drawing { seat cushion} forward
- A47C 17/132
 - • • {-with multiple seat cushions}
- A47C 17/134
 - • • • {-by lifting or tilting}
- A47C 17/136
 - • • {-with a single seat cushion}
- A47C 17/138
 - • • • {-by lifting or tilting}
- A47C 17/16
 - • {-Seating furniture} changeable to beds by tilting or pivoting the back-rest
- A47C 17/161
 - • • {-with back-rest made of multiple movable cushions}
- A47C 17/162
 - • • {-with adjustable back-rest}
- A47C 17/163
 - • • {-and a foot-rest}
- U A47C 17/165
 - • • with forward tiltable back-rest, e.g. back cushion
- A47C 17/1655
 - • • • {-forming top surface of the bed with non-rotatable seat cushion}
- U A47C 17/17
 - • • with coupled movement of back-rest and seat
- U A47C 17/175
 - • • • with tilting or lifting seat-back-rest pivot
- A47C 17/1753
 - • • • • {-by sliding, e.g. by rollers}
- A47C 17/1756
 - • • • • {-by pivoted linkages}
- U A47C 17/20
 - • • thereby uncovering one or more auxiliary parts previously hidden ([A47C 17/22](#) takes precedence)
- U A47C 17/207
 - • • • with seat cushion consisting of { multiple} superposed parts, at least one lower { hidden} part being used to form part of the { bed} surface
- A47C 17/2073
 - • • • • {-by sliding forward}
- A47C 17/2076
 - • • • • {-by lifting or tilting}
- A47C 17/22
 - • {-Seating furniture having non-movable back-rest changeable to beds} with means for uncovering a previously hidden mattress or similar bed part
- A47C 17/225
 - • • {-with hidden separate full size mattress frame unfolded out of the base frame}
- U A47C 17/64
 - Travelling or camp beds (adjusting members for rests [A47C 20/00](#); travelling or camp sacks or packs convertible into beds or mattresses [A45F 4/06](#); stretchers [A61G 1/00](#))
- A47C 17/645
 - • {-dismountable}
- U A47C 17/70
 - • the bed frame being foldable about a horizontal axis
- A47C 17/705
 - • • {-with detachable legs}
- U A47C 19/00**
 - Bedsteads (spring mattresses with rigid frame or forming part of the bedstead [A47C 23/00](#); bed jointing members or fittings for bedsteads [F16B](#))**

- A47C 19/005
 - {-dismountable}
- U A47C 19/02
 - Parts or details of bedsteads not fully covered in a single one of the following sub-groups, e.g. bed rails, post rails
- U A47C 19/021
 - • {Bedstead frames}
- A47C 19/024
 - • • {-Legs}
- A47C 19/025
 - • • {-Direct mattress support frames, Cross-bars}
- A47C 19/027
 - • • • {-with means for preventing frame from sagging}
- A47C 19/028
 - • {-for joining separate bedsteads}
- U A47C 19/04
 - Extensible bedsteads, e.g. with adjustment of length, width, height (for children`s beds [A47D 7/00](#))
- A47C 19/045
 - • {-with entire frame height or inclination adjustments}
- U A47C 19/12
 - Folding bedsteads (travelling or camp beds [A47C 17/64](#))
- A47C 19/122
 - • {-foldable head to foot only}
- A47C 19/124
 - • {-foldable side to side only}
- A47C 19/126
 - • {-foldable side to side and head to foot, e.g. umbrella type}
- A47C 19/128
 - • {-only legs being foldable}
- A47C 19/20
 - Multi-stage bedsteads; { e.g. bunk beds} (multiple-wall beds [A47C 17/50](#); suspended beds [A47C 17/84](#)); -Bedsteads stackable to multi-stage bedsteads
- A47C 19/205
 - • {-convertible, e.g. from single bed or sofa}
- A47C 19/207
 - • {-Mezzanine beds}
- U **A47C 20/00**
 - Head -, foot -, or like rests for beds, sofas or the like (book rests or bed tables [A47B 23/00](#); bed-rests specially adapted for nursing [A61G 7/065](#))**
- U A47C 20/02
 - of detachable { or loose} type ([A47C 20/04](#), [A47C 20/08](#) take precedence; { for chairs [A47C 7/00](#); pillows [A47G 9/10](#))
- A47C 20/021
 - • {-Foot or leg supports}
- A47C 20/022
 - • • {-for preventing the user from slipping down}
- A47C 20/023
 - • {-Arm supports}
- A47C 20/025
 - • {-Supports specially adapted for pregnant women}
- A47C 20/026
 - • {-Supports for lying in a prone position ([A47C 20/025](#) takes precedence)}
- A47C 20/027
 - • {-Back supports, e.g. for sitting in bed}
- A47C 20/028
 - • • {-with a table attached thereto}
- U A47C 20/04
 - with adjustable inclination ([A47C 20/08](#) takes precedence)
- A47C 20/041
 - • {-by electric motors}
- A47C 20/042
 - • {-by means of screw-and-nut mechanism}
- A47C 20/043
 - • {-by means of peg-and-notch or pawl-and-ratchet mechanism}
- A47C 20/045
 - • • {-urged into an operative or non-operative position at an end of stretch}
- A47C 20/046
 - • {-by means of a rack-and-pinion or like gearing mechanism}
- A47C 20/047
 - • {-by friction locking means}
- A47C 20/048
 - • {-by fluid means}
- U **A47C 21/00**
 - Attachments for beds, e.g. sheet holders, bed-cover holders (bed tables supported on the bedstead [A47B 23/02](#); for children`s beds {[A47D 7/00](#)}, [A47D 15/00](#)); Ventilating, cooling or heating means in connection with bedsteads or mattresses**
- A47C 21/02
 - {-Holders for loose bed elements, e.g.} sheet holders; -bed cover holders
- A47C 21/022
 - • {-Sheet holders; Bed cover holders}

- A47C 21/024
 - • • {for holding bed covers above the body of the user (bed-clothes supports to alleviate the weight of the bed-clothes on the patient [A61G 7/0501](#))}
- A47C 21/028
 - • {-Holders for facilitating making the bed}
- U A47C 21/04
 - Devices for ventilating, cooling or heating
- A47C 21/042
 - • {-for ventilating or cooling ([A47C 21/028](#) and [A47C 27/007](#) take precedence)}
- A47C 21/044
 - • • {-with active means, e.g. by using air blowers or liquid pumps}
- A47C 21/046
 - • • {-without active means, e.g. with openings or heat conductors}
- U **A47C 23/00**

Spring mattresses with rigid frame or forming part of the bedstead; Divan bases; {Slatted bed bases}(unframed spring units [A47C 25/00](#); spring units forming part of stuffed mattresses [A47C 27/00](#))
- A47C 23/002
 - {-with separate support elements, e.g. elastomeric springs arranged in a two-dimensional matrix pattern}
- A47C 23/005
 - {-foldable or dismountable}
- U A47C 23/04
 - using springs in compression, e.g. coiled
- U A47C 23/043
 - • using wound springs
- A47C 23/0431
 - • • {-supporting a flat board or strip}
- A47C 23/0433
 - • • {-of different resilience}
- A47C 23/0435
 - • • {-of adjustable resilience}
- A47C 23/0436
 - • • {-made from a single wire}
- A47C 23/0438
 - • • {-of special shape}
- U A47C 23/05
 - • Frames therefor; Connecting the springs to the frame; { Interconnection of springs, e.g. in spring units}
- A47C 23/0507
 - • • {-using tensioned spiral springs}
- A47C 23/0515
 - • • {-using clamps or similar connecting means}
- A47C 23/0522
 - • • {-using metal wires}
- U A47C 23/06
 - using wooden springs, e.g. of slat type; {Slatted bed bases}
- A47C 23/061
 - • {-Slat structures}
- A47C 23/062
 - • {-Slat supports}
- A47C 23/063
 - • • {-by elastic means, e.g. coil springs}
- A47C 23/064
 - • • • {-by elastomeric springs}
- A47C 23/065
 - • • {-by fluid means}
- A47C 23/066
 - • • {-by chains, ropes or belts}
- A47C 23/067
 - • • {-adjustable, e.g. in height or elasticity}
- A47C 23/068
 - • • {-with additional supports between the ends of the slats}
- A47C 27/00**

Stuffed or fluid mattresses specially adapted for chairs, beds or sofas (arrangements for preventing bed-sores or for supporting patients with burns, e.g. mattresses specially adapted therefor, [A61G 7/057](#); ready-made upholstery pads in general [B68G 5/00](#); making mattresses [B68G 7/00](#))
- A47C 27/002
 - {-Mattress tickings or covers (bed cover holders [A47C 21/02](#); mattress hand- straps [A47C 31/08](#); bed linen or counterpanes [A47G 9/0238](#))}
- A47C 27/003
 - • {-having edge welts or rolls}
- A47C 27/005
 - • {-liquid-impermeable}
- A47C 27/006
 - • • {-breathable}
- A47C 27/007
 - • {-permeable to liquid or air in a special way ([A47C 27/006](#) takes precedence)}
- A47C 27/008
 - • {-protecting against wear or damage}
- U A47C 27/04
 - with spring inlays ([A47C 27/20](#) takes precedence)

- A47C 27/045
 - Attachment of spring inlays to coverings (upholstery attaching means [A47C 31/02](#)); Use of stiffening sheets, lattices or grids { in, on, or} under spring inlays
- A47C 27/0453
 - • • {Attachment of spring inlays to outer layers}
- A47C 27/0456
 - • • {Use of stiffening sheets, lattices or grids in, on, or under, spring inlays}
- U A47C 27/05
 - • with { padding material, e.g.} foamed material, in top, bottom, or side layers
- A47C 27/053
 - • • {with only one layer of foamed material}
- A47C 27/056
 - • • {with different layers of foamed material}
- U A47C 27/06
 - Spring inlays
- A47C 27/061
 - • • {of adjustable resiliency}
- A47C 27/062
 - • • {of different resiliencies}
- A47C 27/063
 - • • {wrapped or otherwise protected}
- A47C 27/064
 - • • • {Pocketed springs}
- A47C 27/065
 - • • {of special shape}
- A47C 27/066
 - • • {Edge stiffeners}
- A47C 27/067
 - • • {of plane meandering type}
- A47C 27/068
 - • • {made from a single wire}
- A47C 27/08
 - {Fluid mattresses, e.g.} pneumatic mattresses, { Liquid mattresses or mattresses with fluid-like particles}(connecting valves to inflatable elastic bodies [B60C 29/00](#))
- A47C 27/081
 - • {Pneumatic mattresses}
- A47C 27/082
 - • • {with non-manual inflation, e.g. with electric pumps}
- A47C 27/083
 - • • {with pressure control, e.g. with pressure sensors}
- A47C 27/084
 - • • {self inflating}
- A47C 27/085
 - • {Liquid mattresses, e.g. filled with water or gel}
- A47C 27/086
 - • {Fluid-like particles mattresses, e.g. filled with beads}
- A47C 27/087
 - • {with means for connecting opposite sides of the mattress, e.g. internal ties or strips}
- A47C 27/088
 - • {Fluid mattresses filled with elastic bodies, e.g. foam}
- U A47C 27/14
 - with foamed material inlays
- A47C 27/142
 - • {with projections, depressions or cavities}
- A47C 27/144
 - • • {inside the mattress}
- A47C 27/146
 - • • {on the outside surface of the mattress}
- A47C 27/148
 - • {of different resilience}
- U **A47C 29/00**
 - Nets for protection against insects in connection with chairs or beds (insect nets for animals [A01K 13/00](#); insect nets as travelling equipment [A45F 3/52](#)); Bed canopies**
- A47C 29/006
 - {Mosquito nets}
- U **A47C 31/00**
 - Details or accessories for chairs, beds, or the like, not provided for in other groups of this subclass, e.g. upholstery fasteners, mattress protectors, stretching devices for mattress nets**
- A47C 31/001
 - {Fireproof means}
- A47C 31/002
 - {Anti-earthquake means}
- A47C 31/003
 - {Magnets}
- A47C 31/004
 - {Means for protecting against undesired influence, e.g. magnetic radiation or static electricity}

- A47C 31/005
 - A47C 31/006
 - A47C 31/007
 - A47C 31/008
 - U A47C 31/02
 - A47C 31/023
 - A47C 31/026
 - U A47C 31/10
 - A47C 31/105
 - U A47C 31/11
 - A47C 31/113
 - A47C 31/116
 - U A47C 31/12
 - A47C 31/123
 - A47C 31/126
- {-Use of aromatic materials, e.g. herbs}
 - {-Use of three-dimensional fabrics}
 - {-Anti-mite, anti-allergen or anti-bacterial means}
 - {-Use of remote controls}
 - Upholstery attaching means (quilting, quilting means, fastening, fixing or finishing upholstery [B68G 7/00](#))
 - • {-connecting upholstery to frames, e.g. by hooks, clips, snap fasteners, clamping means or the like}
 - • {-passing through the upholstery, e.g. upholstery nails or buttons}
 - Loose { or removable} furniture covers
 - • {-for mattresses}
 - • for chairs {(for headrests only [A47C 7/386](#); removable protective covers for car seats [B60N 2/60](#))}
 - • • {-liquid-impermeable}
 - • • {-permeable to liquid or air in a special way}
 - Means, e.g. measuring means for adapting chairs, beds or mattresses to the shape or weight of persons (body measuring means for clothing manufacture [A41H 1/00](#))
 - • {-for beds or mattresses}
 - • {-for chairs}

Project: N/A (A47D)

- U **A47D 1/00**
 - A47D 1/002
 - A47D 1/004
 - A47D 1/006
 - A47D 1/008
 - U A47D 1/10
 - A47D 1/103
 - A47D 1/106
 - U **A47D 5/00**
 - A47D 5/003
 - A47D 5/006
 - U **A47D 7/00**
 - A47D 7/002
 - A47D 7/005
 - A47D 7/007
 - A47D 9/00**
 - U **A47D 13/00**
 - U A47D 13/04
 - A47D 13/046
- Children`s chairs (chairs generally [A47C](#))**
 - {-adjustable}
 - • {-in height}
 - {-dismountable}
 - {-with trays}
 - capable of being suspended from, or attached to, tables or other articles (vehicle seats for children [B60N 2/26](#))
 - • {-attachable to adult's chairs}
 - • {-attachable to tables}
 - Dressing-tables { or diaper changing supports} for children (chests of drawers [A47B 67/00](#))**
 - {-attached to the wall}
 - {-foldable}
 - Children`s beds (beds in general [A47C](#))**
 - {-foldable}
 - {-dismountable}
 - {-combined with other nursery furniture, e.g. chests of drawers}
 - {Small beds for newborns or infants, e.g. bassinets or} cradles**
 - Other nursery furniture (auxiliary or portable toilet seats for children [A47K 13/06](#))**
 - Apparatus for helping babies to walk; Baby walkers or strollers (walking aids for the sick [A61H 3/04](#))
 - • {-Harnesses for helping babies to walk (safety harnesses for already walking children [A47D 13/086](#))}

- U A47D 13/06 · Children's { play-} pens
- A47D 13/061 · · {-foldable}
- A47D 13/063 · · · {-with soft walls}
- A47D 13/065 · · · {-with rigid walls}
- A47D 13/066 · · {-dismountable}
- A47D 13/068 · · {-extensible}
- A47D 13/08 · Devices for use in guiding or supporting children, e.g. safety harness, { feeding cushions-(harnesses for helping babies to walk [A47D 13/046](#); restraining devices in chairs [A47D 15/006](#); restraining devices in beds, playpens or cradles [A47D 15/008](#))}
- A47D 13/083 · · {-Baby feeding cushions}
- A47D 13/086 · · {-Safety harnesses for already walking children}
- U A47D 13/10 · Rocking-chairs (in general [A47C 3/02](#); rocking horses [A63G 15/00](#)); { Indoor } swings (in general [A63G 9/00](#)); { Baby bouncers}
- A47D 13/105 · · {-pivotally mounted in a frame}
- A47D 13/107 · · {-resiliently suspended or supported, e.g. baby bouncers}
- U A47D 15/00** **Accessories for children's furniture, e.g. safety belts (holders for { baby bottles or} bottles for medicinal feeding [A61J 9/06](#); safety belts or body harnesses, in general [A62B 35/00](#); { infant exercisers attachable to play-pens, beds or cradles [A63H 33/006](#)}; safety belts or body harnesses in land vehicles [B60R 22/00](#); harnessing in aircraft [B64D 25/06](#))**
- A47D 15/001 · {-Mattresses}
- A47D 15/003 · · {-foldable, e.g. baby mats}
- A47D 15/005 · {-Restraining devices, e.g. safety belts, contoured cushions or side bumpers}
- A47D 15/006 · · {-in chairs}
- A47D 15/008 · · {-in beds, play-pens or cradles}

Project: N/A (A47F)

- U A47F 1/00** **Racks for dispensing merchandise (racks in general [A47B](#); storing means for workshops [B25H](#)); Containers for dispensing merchandise (show or display aspects [A47F 3/00](#); for workshop fittings [B25H 3/00](#); containers in general [B65D](#); {for liquids [B67D](#)}; coin-freed dispensers [G07F](#))**
- A47F 1/04 · {Racks or} containers with arrangements for dispensing articles, {e.g. by means of gravity or springs-(for wallpaper or textile materials in rolls or rolled tapes [A47F 7/17](#); paper-bag dispensers for check-out counters [A47F 9/042](#); for cigarette papers [A24F 17/00](#); for hand towels or toilet paper [A47K](#); for bandages [A61F](#); for playing cards [A63F](#); for pills, needles [B65D 83/00](#); for web-like material with cutting devices [B65H 35/00](#); photographic paper [G03B](#))}
- U A47F 1/08 · · dispensing from bottom
- A47F 1/082 · · · {-the container being made of tubes or wire ([A47F 1/085](#), [A47F 1/087](#), take precedence)}
- U A47F 3/00** **Show cases or show cabinets**
- A47F 3/005 · {-with glass panels}
- A47F 3/06 · with movable or removable shelves {or receptacles ([A47F 3/0486](#) takes precedence; display racks with movable parts [A47F 5/0081](#)-)}
- A47F 3/12 · Clamps or other devices for supporting, fastening, or connecting glass plates, {panels or the like-(surrounds or partitioning for display trays or shelves [A47F 5/005](#))}

- U A47F 5/00 Show stands, hangers, or shelves characterised by their constructional features**
- U A47F 5/0043 · {Show shelves (shelves in general [A47B 96/02](#); brackets or similar shelf-supporting means [A47B 96/06](#); advertising or price indication [G09F](#))}
- A47F 5/005 · · {-Partitions therefore (horizontally adjustable [A47B 57/58](#); drawers with compartments [A47B 88/20](#))}
- A47F 5/0068 · · {-Shelf extensions, e.g. fixed on price rail}
- A47F 5/0081 · {-Show stands or display racks with movable parts ([A47F 5/0037](#), [A47F 5/02](#), [A47F 5/05](#), [A47F 5/12](#) take precedence; show cabinets with movable parts [A47F 3/06](#))}
- U A47F 5/08 · secured to the wall, ceiling, or the like; Wall-bracket display devices
- U A47F 5/0807 · · {Display panels, grids or rods used for suspending merchandise or cards supporting articles; Movable brackets therefor (with fixed brackets [A47F 5/0876](#); packages comprising articles attached to cards [B65D 73/00](#); labels [G09F](#))}
- A47F 5/0869 · · · {Accessories for article-supporting brackets, e.g. price-indicating means, not covered by a single one of groups [A47F 5/08](#)-(pushing means therefor [A47F 1/128](#))}
- U A47F 7/00 Show stands, hangers, or shelves, adapted for particular articles or materials {(A47F 5/0006 takes precedence)}**
- A47F 7/14 · for pictures, e.g. in combination with books or seed-bags; {for cards, magazines, newspapers, books or booklike articles, e.g. audio/video cassettes-(racks or containers with dispensing arrangements [A47F 1/04](#); for cardboard panels, e.g. posters, [A47F 7/0042](#))}
- U A47F 7/16 · for carpets; for wallpaper; for textile materials {(for ceramic tiles [A47F 7/0042](#))}
- A47F 7/163 · · {-in the form of flat shaped samples ([G09F 5/02](#); sample cards [G09F 5/04](#))}
- A47F 7/28 · for containers, e.g. flasks, bottles, {tins, milk packs-(racks or containers with dispensing arrangements [A47F 1/04](#); for lipsticks or markers [A47F 7/0021](#); for audio/video cassettes or booklike articles [A47F 7/14](#))}

Project: N/A (A47G)

- U A47G 1/00 Mirrors (as optical elements [G02B 5/08](#)); Picture frames or the like, {e.g. provided with heating, lighting or ventilating means}**
- U A47G 1/16 · Devices for hanging or supporting pictures, mirrors, or the like
- A47G 1/1606 · · {-comprising a wall member cooperating with a corresponding picture member}
- A47G 1/1613 · · · {-and being adjustable}
- A47G 1/162 · · {-Picture members for connection to a conventional wall hook or nail}
- A47G 1/1626 · · · {-and being adjustable}
- A47G 1/1633 · · {-Wall members for connection to a conventional picture}
- A47G 1/164 · · · {-and being adjustable}
- A47G 1/1653 · · {-for connecting to a surface other than a flat wall, e.g. room corner, ceiling, window}
- A47G 1/166 · · {-for rotatably hanging or supporting}
- A47G 1/1666 · · {-Devices for connecting a suspension wire to a picture}
- U A47G 1/20 · · Picture hooks; X-hooks (plugs or hooks for general use [F16B 13/00](#), [F16B 45/00](#))
- A47G 1/202 · · · {-adjustable}
- U A47G 1/21 · · · with clamping action (in general [F16B 2/00](#))

- A47G 1/215 . . . {-Mirror clamps}
- U A47G 9/00 Bed-covers; Counterpanes; Travelling rugs; Sleeping rugs; Sleeping bags; Pillows {(loose filling materials for bedding [B68G 1/00](#))}**
- U A47G 9/02 . Bed linen; Blankets; Counterpanes (sheets specially adapted for use as or with stretchers for patients or invalids [A61G 1/01](#))
- U A47G 9/0207 . . {-Blankets; Duvets}
- A47G 9/023 . . . {-having individualized insulation for each of two persons}
- A47G 9/0292 . . {-Bed skirts, valances or dust ruffles ([A47G 9/0284](#) takes precedence)}
- U A47G 9/08 . Sleeping bags
- A47G 9/083 . . {-for babies and infants}
- A47G 9/086 . . {-for outdoor sleeping}
- U A47G 9/10 . Pillows (pillow holders [A47C 21/00](#), { [A47C 21/026](#)}; specially adapted for preventing snoring [A61F 5/56](#))
- A47G 9/1054 . . {-for lying face downwards}
- A47G 9/1063 . . . {-comprising limb accommodation}
- A47G 9/1072 . . {-for lying in reclined position, e.g. for reading}
- A47G 9/1081 . . {-comprising a neck support, e.g. a neck roll}
- A47G 9/109 . . . {-adapted to lie on the side and in supine position}
- U A47G 21/00 Table-ware (crumb trays [A47L 13/52](#); table knives [B26B](#))**
- A47G 21/004 . {-Table-ware comprising food additives to be used with foodstuff (spoon-like infusers [A47G 19/16](#); drinking straws [A47G 21/183](#))}
- U A47G 23/00 Other table equipment**
- U A47G 23/02 . Glass or bottle holders {(serving trays with openings for carrying glasses or bottles [A47G 23/0641](#); bottle racks [A47B 73/00](#); for feeding-bottles [A61J 9/06](#); in vehicles [B60N 3/10](#))}
- U A47G 23/0208 . . {-for drinking-glasses, plastic cups, or the like}
- A47G 23/0216 . . . {-for one glass or cup}
- U A47G 23/03 . Underlays for glasses or drinking-vessels
- A47G 23/0303 . . {-Table mats ([A47G 23/0306](#) takes precedence)}
- U A47G 23/06 . Serving trays (service tables [A47B 31/00](#))
- A47G 23/0633 . . {-Attachments to trays ([A47G 19/04](#), [A47G 23/0225](#) take precedence)}
- U A47G 25/00 Household implements used in connection with wearing apparel; Dress, hat or umbrella holders (wardrobes [A47B 61/00](#))**
- U A47G 25/02 . Dress holders; Dress suspending devices; Clothes-hanger assemblies; Clothing lifters (clothing or suit hangers [A47G 25/14](#); clothing holders with locking devices [E05B 69/00](#))
- U A47G 25/06 . . Clothes hooks; Clothes racks; Garment-supporting stands with swingable or extending arms (with lockable hooks [E05B 69/02](#))
- U A47G 25/0607 . . . {-Clothes hooks}
- A47G 25/0614 {-for mounting to a door top}
- A47G 25/0621 {-for mounting to a door hinge}
- A47G 25/0628 {-for mounting to a brick wall, e.g. in a mortar joint}
- A47G 25/0635 {-comprising a separate wall plate}
- A47G 25/0642 {-preventing overloading}
- A47G 25/065 {-preventing knocking against, e.g. comprising a collapsible or retractable hook element}

- U A47G 25/14
 - Clothing hangers, e.g. suit hangers ([A47G 25/60](#) takes precedence; wardrobes with extensible garment holders [A47B 61/02](#))
- U A47G 25/1407
 - · {with identification means (identification in general [G09F](#))}
- A47G 25/1414
 - · · {-connected to the hook member}
- A47G 25/1421
 - · · · {-at the top}
- A47G 25/1428
 - · · · {-at or around the stem}
- A47G 25/1435
 - · · · {-at a web between the stem and hanger body}
- U A47G 25/1442
 - · {Handling hangers, e.g. stacking, dispensing}
- A47G 25/145
 - · · {-Devices for holding or carrying multiple loaded hangers}
- A47G 25/1457
 - · · · {-comprising a hanging hook or handle}
- A47G 25/1464
 - · · {-Storage or transport receptacles or racks for empty hangers}
- A47G 25/1471
 - · · {-Distance holders for hangers; Hanger separators}
- U A47G 25/18
 - · for two or more similar garments, e.g. constructed to connect to, or support, a similar hanger
- A47G 25/183
 - · · {-constructed to connect to, or support a similar hanger}
- A47G 25/186
 - · · · {-comprising a separate connecting member}
- U A47G 25/44
 - · Slidable hangers; {Adjustable hangers ([A47G 25/4053](#), [A47G 25/62](#) take precedence)}
- A47G 25/441
 - · · {-having adjustable width ([A47G 25/447](#) takes precedence)}
- A47G 25/442
 - · · · {-to support shouldered garments (non-adjustable shoulder support members [A47G 25/20](#))}
- A47G 25/445
 - · · · {-to support trousers or skirts at the waistband or leg ends}
- A47G 25/446
 - · · · · {-comprising gripping members being concurrently adjustable, e.g. by a rack and pinion mechanism}
- U A47G 25/48
 - · Hangers with clamps or the like, e.g. for trousers or skirts
- A47G 25/481
 - · · {-with parallel trouser clamping bars}
- A47G 25/482
 - · · {-with a plurality of clips integral with the hanger body}
- A47G 25/483
 - · · {-with pivoting clamps or clips having axis of rotation parallel with the hanger arms}
- A47G 25/488
 - · · {-with multiple hooks for hooking the stretched waist band of garments having different widths}
- U A47G 25/80
 - Devices for putting-on or removing boots or shoes, e.g. boot-hooks, boot-jacks (shoe buttoners [A47G 25/92](#))
- U A47G 25/84
 - · Shoe benches
- A47G 25/845
 - · · {-specially adapted for mounting to a wall}
- U A47G 27/00**
 - Floor fabrics; Fastenings therefor (woven fabrics [D03D](#); non-woven fabrics [D04H](#); {floor covering on a textile basis [D06N 7/0005](#)})**
- U A47G 27/02
 - Carpets; Stair runners; Bedside rugs; Foot mats (mat-like foot scrapers [A47L 23/22](#); {doormats [A47L 23/26](#)})
- A47G 27/0243
 - · {-Features of decorative rugs or carpets}
- A47G 27/025
 - · · {-Modular rugs}
- A47G 27/0275
 - · · {-Surface patterning of carpet modules, e.g. of carpet tiles}
- A47G 27/0281
 - · · {-Resisting skidding or creeping ([A47G 27/0225](#) takes precedence)}
- U A47G 29/00**
 - Miscellaneous supports, holders, or containers for household use (for drying towels [A47K 10/04](#); stands, racks, or the like for airing beds, garments, or the like, clothes, drying devices [D06F 57/00](#))**

- A47G 29/02
- {-Wall-mounted}(shelves [A47B](#)); -Supporting brackets or clamps therefor
- WARNING
- This group is no longer used for classification. Documents are in the process of being reorganised to groups [A47B 97/001](#) or **B43B1/04**
- U A47G 29/12
- Mail or newspaper receptacles, e.g. letter-boxes; Openings in doors or the like for delivering mail or newspapers ([A47G 29/14](#) takes precedence; chutes for mail in buildings [B65G 11/04](#); { for desktop use [B42F 7/10](#)})
- U A47G 29/122
- • Parts, details, or accessories, e.g. signalling devices, lamps, devices for leaving messages {([A47G 29/1201](#) to [A47G 29/1218](#) take precedence)}
- A47G 29/1223
- • • {-Pouches or the like to prevent mail dropping on the floor behind the mail slot}
- U A47G 29/124
- • • Appliances to prevent unauthorised removal of contents
- A47G 29/1245
- • • • {-Letter flap blocking devices}
- U A47G 33/00**
- Religious or ritual equipment in dwelling or for general use**
- A47G 33/006
- {-Levitated arches}
- A47G 33/008
- {-Devices related to praying, e.g. counters, reminders, study aids, compasses, rugs, cushions, or the like}
- U A47G 33/04
- Christmas trees (lighting devices therefor [F21S](#) {electric candles [F21S 10/04](#), string lighting systems [F21S 4/00](#)}, candle holders [F21V 35/00](#), {light guides for lighting systems [G02B 6/00](#)})
- U A47G 33/12
- • Christmas tree stands {(sockets or holders for poles or posts [E04H 12/2238](#))}
- A47G 33/1206
- • • {-of self-clamping type}
- A47G 33/1213
- • • {-comprising a single handle or pedal for releasing, tensioning or locking of clamping members}
- A47G 33/1226
- • • {-comprising a ball joint or similar fulcrum surface for straightening the tree}

Project: N/A (A47J)

- U A47J 31/00**
- Apparatus for making beverages (household machines or implements for straining foodstuffs [A47J 19/00](#); preparation of non-alcoholic beverages, e.g. by adding ingredients to fruit or vegetable juices, [A23L 2/00](#); coffee or tea pots [A47G 19/14](#); tea infusers [A47G 19/16](#); dispensing beverages on draught [B67D 1/00](#); brewing of beer [C12C](#); preparation of wine or other alcoholic beverages [C12G](#))**
- U A47J 31/06
- Filters or strainers for coffee or tea makers; { Holders therefor}
- A47J 31/0642
- • {-specially adapted to cooperate with a cartridge, e.g. having grooves or protrusions to separate cartridge from the bottom of the brewing chamber ([A47J 31/0668](#) takes precedence)}
- A47J 31/0647
- • {-with means to adjust the brewing chamber volume to accommodate different quantities of brewing material}
- A47J 31/0652
- • {-with means to by-pass a quantity of water, e.g. to adjust beverage strength}
- A47J 31/0657
- • {-for brewing coffee under pressure, e.g. for espresso machines}
- A47J 31/0663
- • • {-to be used with loose coffee ([A47J 31/0689](#) takes precedence)}
- A47J 31/0668
- • • {-specially adapted for cartridges}
- A47J 31/0673
- • • • {-Means to perforate the cartridge for creating the beverage outlet}
- A47J 31/0678
- • • • {-Means to separate the cartridge from the bottom of the brewing chamber, e.g. grooves or protrusions}
- A47J 31/0684
- • • {-Sealing means for sealing the filter holder to the brewing head}

- A47J 31/0689
 - • • {-Reusable cartridges suitable to be opened for being filled with brewing material and to be closed to envelope the brewing material therein (disposable cartridges to be filled by the user with brewing material [A47J 31/08](#); disposable cartridges already filled with brewing material [B65D 85/8043](#))}
- U A47J 31/08
 - • Paper filter inlays therefor { to be disposed after use}
- A47J 31/085
 - • • {-to be used for brewing coffee under pressure, e.g. for espresso machines}
- U A47J 31/24
 - Coffee-making apparatus in which hot water is passed through the filter under pressure, {i.e. in which the coffee grounds are extracted under pressure} ([A47J 31/043](#) {and [A47J 31/40](#)} take precedence)
- U A47J 31/34
 - • with hot water under liquid pressure
- U A47J 31/36
 - • • with mechanical pressure-producing means
- A47J 31/3604
 - • • • {-with a mechanism arranged to move the brewing chamber between loading, infusing and ejecting stations}
- A47J 31/3609
 - • • • • {-Loose coffee being employed (with a filtering tape [A47J 31/3652](#))}
- A47J 31/3614
 - • • • • {-Means to perform transfer from a loading position to an infusing position}
- A47J 31/3619
 - • • • • {-Means to remove coffee after brewing}
- A47J 31/3623
 - • • • • {-Cartridges being employed (with tape of cartridges [A47J 31/3652](#))}
- A47J 31/3628
 - • • • • {-Perforating means therefor}
- A47J 31/3633
 - • • • • {-Means to perform transfer from a loading position to an infusing position}
- A47J 31/3638
 - • • • • {-Means to eject the cartridge after brewing}
- A47J 31/3642
 - • • • • {-Cartridge magazines therefor}
- A47J 31/3647
 - • • • • {-a tape being employed}
- A47J 31/3652
 - • • • • {-the tape including only filtering means, i.e. not including brewing material}
- A47J 31/3657
 - • • • • {-the tape including permeable cartridges}
- A47J 31/3661
 - • • • • {-the tape including impermeable cartridges}
- A47J 31/3666
 - • • • {-whereby the loading of the brewing chamber with the brewing material is performed by the user ([A47J 31/3604](#) takes precedence)}
- A47J 31/3671
 - • • • • {-Loose coffee being employed}
- A47J 31/3676
 - • • • • {-Cartridges being employed}
- A47J 31/368
 - • • • • {-Permeable cartridges being employed}
- A47J 31/3685
 - • • • • • {-Brewing heads therefor}
- A47J 31/369
 - • • • • • {-Impermeable cartridges being employed}
- A47J 31/3695
 - • • • • • {-Cartridge perforating means for creating the hot water inlet (cartridge perforating means of the filter holder for creating the beverage outlet [A47J 31/0673](#))}
- U A47J 31/40
 - Beverage-making apparatus with dispensing means for adding a measured quantity of ingredients, e.g. coffee, water, sugar, cocoa, milk, tea
- A47J 31/405
 - • {-with one or more infusion chambers moving successively between loading, infusing and dumping stations}
- A47J 31/407
 - • {-with ingredient-containing cartridges; Cartridge-perforating means}
- A47J 31/408
 - • {-with means for moving a filter in the form of a tape (coffee or tea filters per se [A47J 31/06](#))}
- U A47J 31/44
 - Parts or details {or accessories} of beverage-making apparatus (filters or strainers [A47J 31/06](#))

- U A47J 31/4403 · · {Constructional details}
- A47J 31/441 · · · {-Warming devices or supports for beverage containers (warming devices not being part of the beverage-making apparatus [A47J 36/24](#); stands or holders for beverage containers not being part of the beverage-making apparatus [A47J 47/16](#))}
- A47J 31/4414 · · · · {-Supports for empty beverage containers while not in use, e.g. for storing extra jug or cups}
- A47J 31/4417 · · · · · {-with heating means for pre-heating the empty beverage containers, e.g. cup-warmers}
- A47J 31/4421 · · · · · · {-Heated support plates}
- A47J 31/4425 · · · · · {-Supports for beverage containers when filled or while being filled (supports allowing to adapt the beverage making apparatus to the size of the beverage container [A47J 31/4482](#))}
- A47J 31/4428 · · · · · · {-with a drip-tray underneath}
- A47J 31/4432 · · · · · · {-with means for keeping the beverage warm (urns with devices for keeping beverages hot or cool [A47J 31/50](#))}
- A47J 31/4435 · · · · · · · {-Heated support plates}
- A47J 31/4439 · · · · · · · · {-with electrical heating elements (for flow-through heaters [A47J 31/445](#))}
- A47J 31/4442 · · · · · · · · · {-in combination with a continuous-flow heater for the water (continuous-flow heaters per se [A47J 31/542](#))}
- A47J 31/4446 · · · · · · · · · · {-microwaves being used for the flow-through heater}
- A47J 31/445 · · · · · · · · · · · {-an electrical heating element being used for the flow-through heater}
- A47J 31/4453 · · · · · · · · · · · {-interposed between means for keeping the beverage warm and the beverage container, e.g. spacers for raising the beverage container from the heated support plate in order to reduce heat transfer}
- U A47J 31/446 · · · {Filter holding means; Attachment of filters to beverage-making apparatus}
- A47J 31/4464 · · · · {-by means of bayonet-type engagement}
- A47J 31/4467 · · · · · {-by means of linear guides, e.g. drawer-type engagement}
- A47J 31/4471 · · · · · · {-by means of a hinge}
- A47J 31/4492 · · · {-Means to read code provided on ingredient pod or cartridge}
- A47J 31/4496 · · · · {-Means to produce beverage with a layer on top, e.g. of cream, foam or froth}
- U **A47J 36/00** **Parts, details or accessories of cooking-vessels ([A47J 27/00](#) to [A47J 33/00](#) take precedence insofar as these parts, details or accessories are restricted to a particular kind of cooking-vessel provided for in a single one of these groups; heating devices for cooking-vessels in general [F24](#))**
- U A47J 36/02 · Selection of specific materials, e.g. heavy bottoms with copper inlay or with insulating inlay {(Processes for applying fluoropolymers to obtain an anti-adhesive surface [B05D 5/083](#))}
- A47J 36/022 · · {-Cooking- or baking-vessels or supports thereof for using only once (eating- or serving-plates for using only once [A47G 19/02](#); heat-resistant food-packages [B65D 81/34](#))}
- A47J 36/025 · · · {-Vessels with non-stick features, e.g. coatings}
- U A47J 36/24 · Warming devices
- A47J 36/2405 · · {-for warming food contained in vessels immersed in a water bath, e.g. chafers or steam tables ([A47J 36/2438](#) takes precedence)}
- U A47J 36/2483 · · {-with electrical heating means (baby bottle warmers [A47J 36/2433](#), drinking cups [A47J 36/2461](#))}

- A47J 36/2488
 - · · {-having infrared radiating elements}
- A47J 36/2494
 - · {-using heat storage elements or materials, e.g. lava stones}
- U A47J 37/00** **Baking; Roasting; Grilling; Frying (bakers` ovens, non-domestic baking apparatus or equipment [A21B](#); domestic stoves or ranges [F24B](#), [F24C](#))**
- U A47J 37/06
 - Roasters; Grills; Sandwich grills
- A47J 37/0605
 - · {-specially adapted for "raclettes"}
- A47J 37/0623
 - · {-Small-size cooking ovens, i.e. defining an at least partially closed cooking cavity ([A47J 37/0605](#) takes precedence; barbecues [A47J 37/07](#))}
- A47J 37/0629
 - · · {-with electric heating elements}
- A47J 37/0635
 - · · · {-with reflectors}
- A47J 37/0641
 - · · · {-with forced air circulation}
- A47J 37/0647
 - · · · {-with gas burners}
- A47J 37/0652
 - · · · {-with reflectors}
- A47J 37/0658
 - · · {-specially adapted for cooking pizza}
- A47J 37/0664
 - · · {-Accessories}
- U A47J 39/00** **Heat-insulated warming chambers; Cupboards with heating arrangements for warming kitchen utensils**
- U A47J 39/02
 - Dish-warmers; Devices to keep food hot {([A47J 39/006](#) takes precedence)}
- A47J 39/025
 - · {-for warming dishes without food before use}
- U A47J 41/00** **Thermally-insulated vessels, e.g. flasks, jugs, jars (containers with thermal insulation in general [B65D 81/38](#))**
- U A47J 41/0038
 - {comprising additional heating or cooling means, i.e. use of thermal energy in addition to stored material}
- A47J 41/005
 - · {-comprising heat or cold producing means, i.e. energy transfer from outside the vessel}
- A47J 41/0055
 - {-Constructional details of the elements forming the thermal insulation ([A47J 41/02](#) takes precedence)}
- U A47J 43/00** **Miscellaneous implements for preparing or holding food**
- U A47J 43/04
 - Machines for domestic use not covered elsewhere, e.g. for grinding, mixing, stirring, kneading, emulsifying, whipping or beating foodstuffs, e.g. power-driven (food straining implements [A47J 19/00](#); devices for grating [A47J 43/25](#); multi-purpose machines [A47J 44/00](#))
- U A47J 43/07
 - · Parts or details, e.g. mixing tools, whipping tools
- U A47J 43/075
 - · · {Safety devices}

WARNING
Not complete, see also [A47J 42/56](#), [A47J 43/07](#)
- U A47J 43/0761
 - · · · {for machines with tools driven from the lower side}

WARNING
Not complete, see also [A47J 43/0716](#)
- A47J 43/0783
 - · · · · {activated by the proper positioning of a separate food chute on the cover}**N04**
- A47J 43/0794
 - · · · · {in which operation is not possible without the use of a food pusher}**N04**
- U A47J 43/12
 - Whipping by introducing a stream of gas {(milk-foaming devices adapted to coffee-making machines [A47J 31/4485](#), [A47J 31/4489](#); aerating or deaerating milk [A01J 11/04](#); making ice-cream [A23G 9/20](#))}

- A47J 43/126
 - • {-Tools whereby gas is introduced through their axis; Gas pumping means therefor}
- U A47J 43/28
 - Other culinary hand implements, e.g. spatulas, pincers, forks or like food holders, ladles, skimming ladles, cooking spoons; Spoon-holders attached to cooking pots ({measuring spoons for powders [A61J](#), measuring flasks [B01L 3/00](#)}; calibrated capacity measures for fluids or fluent solid material [G01F 19/00](#); weighing spoons [G01G 19/56](#))
- U A47J 43/284
 - • {-Hand implements for separating solids from liquids or liquids from liquids}
 - WARNING
Skimmers and skimming ladles are being continuously reclassified to [A47J 43/285](#)
- A47J 43/286
 - • • {-Hand implements for draining preserving liquid from canned food, e.g. tuna-squeezers (devices for squeezing-out liquid from liquid-containing material not used as kitchen equipment [B30B 9/02](#); containers with provisions for draining away fluids [B65D 81/26](#))}
- U A47J 47/00
 - **Miscellaneous kitchen containers, stands, or the like** ({**bowls for food processors [A47J 43/0727](#)**}; **containers in general [B65D](#)**); **Cutting-boards, e.g. for bread (with slicing devices [B26D](#))**
- U A47J 47/14
 - Carriers for prepared human food (lunch boxes, picnic boxes, or the like [A45C 11/20](#))
- A47J 47/145
 - • {-Hand carriers for pizza delivery, e.g. with thermal insulation, heating means or humidity control}

Project: N/A (A47K)

- U A47K 3/00
 - **Baths; Douches; Appurtenances therefor (for curative purposes [A61H](#), [A61M](#), e.g. bathing devices for special therapeutic or hygienic purposes [A61H 33/00](#); {spray heads [B05B](#); devices for suspending or supporting the supply pipe or supply hose of a shower bath [E03C 1/06](#); heated bath tubs [F24H 1/0072](#))}**
- U A47K 3/001
 - {Accessories for baths, not provided for in other subgroups of group [A47K 3/00](#) (bath lifting devices for sick persons and invalids [A61G 7/10](#)); Insertions, e.g. for babies; Tubs suspended or inserted in baths; Security or alarm devices; Protecting linings or coverings; Devices for cleaning or disinfecting baths; Bath insulation}
- A47K 3/005
 - • {-Tap covers for protection against injury}
- A47K 3/10
 - Wave-producers or the like, {e.g. with devices for admitting gas, e.g. air, in the bath-water-(baths with gas-containing liquids [A61H 33/02](#); for swimming-pools [E04H 4/0006](#))}
- U A47K 3/28
 - Showers { or bathing douches}(combined with baths [A47K 3/20](#); nozzles, spray heads [B05B 1/00](#); { means for suspending or supporting the supply pipe or supply hose [E03C 1/06](#))}
- A47K 3/30
 - • Screens or {collapsible} cabinets {for showers or baths-([A47K 3/283](#) takes precedence)}
- U A47K 3/40
 - • Pans or trays
- A47K 3/405
 - • • {-flush with the surrounding floor, e.g. for easy access}
- U A47K 5/00
 - **Holders or dispensers for soap, toothpaste, or the like (specially adapted for shaving soap or cosmetics [A45D 33/00](#) to [A45D 40/00](#))**
- A47K 5/18
 - for both soap and toothpaste or the like; -in combination with holders for drinking glasses, toothbrushes, or the like; {Toothpaste dispensers; Dental care centers-(soap dispensers per se [A47K 5/06](#); dispensers using pliable containers with auxiliary devices for expelling contents [B65D 35/28](#))}

- U A47K 10/00** **Body-drying implements; Toilet paper; Holders therefor**
- U A47K 10/24
- Towel dispensers, {e.g. for piled-up or folded textile towels}; Toilet-paper dispensers (sheet or web dispensers in general [B65H](#); {paper dispensers for publicity purposes [G09F 21/22](#), [G09F 23/10](#)}); Dispensers for piled-up or folded textile towels provided or not with devices for taking-up soiled towels as far as not mechanically driven
- U A47K 10/32
- · Dispensers for paper towels or toilet-paper
- U A47K 10/34
- · · dispensing from a web, e.g. with mechanical dispensing means
- U A47K 10/36
- · · · with {mechanical dispensing, roll switching or} cutting devices
- A47K 10/3606
- · · · · {-The cutting devices being motor driven}
- A47K 10/3612
- · · · · · {-with drive and pinch rollers}
- A47K 10/3618
- · · · · · {-The drive roller pressing against the paper roll}
- A47K 10/3625
- · · · · · {-with electronic control means}
- A47K 10/3631
- · · · · {-The cutting devices being driven manually}
- A47K 10/3637
- · · · · · {-using a crank or handle}
- A47K 10/3643
- · · · · · {-by pulling the paper}
- A47K 10/3656
- · · · · {-with paper jam preventing devices}
- A47K 10/3662
- · · · · {-with devices preventing the use of non-authorized paper rolls}
- A47K 10/38
- · · · the web being rolled up {with or without tearing edge ([A47K 10/36](#) and [A47K 10/46](#) take precedence)}
- A47K 10/3845
- · · · · {-with devices preventing the use of non-authorized paper rolls}
- U A47K 11/00** **Closets without flushing (closets with recirculation of bowl-cleaning fluid [E03D 5/016](#)); Urinals without flushing (for vehicles in general [B60R](#); closets for railway-cars [B61D](#); for ships [B63B](#); for aircraft [B64D](#); urinals with flushing arrangements [E03D 13/00](#)); Chamber pots; Chairs with toilet conveniences or specially adapted for use with toilets**
- A47K 11/10
- Hand tools for cleaning the toilet bowl, {seat or cover, e.g. toilet brushes-(cleaning devices without flushing [A47K 17/00](#); mechanical devices for cleaning toilet bowls [E03D](#))}
- U A47K 13/00** **Seats or covers for all kinds of closets {(dog or cat toilets adapted to fit on conventional toilets [A01K 1/0121](#))}**
- U A47K 13/14
- Protecting covers for closet seats
- A47K 13/145
- · {-of rolled-up paper tubes or rolled-up plastic tubes}
- U A47K 13/24
- Parts or details not covered in, or of interest apart from, groups [A47K 13/02](#) to [A47K 13/22](#), {e.g. devices imparting a swinging or vibrating motion to the seats}
- A47K 13/245
- · {-Devices for locking the cover in the open position}
- A47K 13/247
- · {-Covers with sliding wings or wings pivoting around a vertical axis}
- U A47K 13/30
- · Seats having provisions for heating, deodorising or the like, {e.g. ventilating, noise-damping or cleaning devices}
- A47K 13/302
- · · {-Seats with cleaning devices (apparatus for cleaning toilet bowls or whole toilets [E03D 9/002](#))}
- A47K 13/305
- · · {-Seats with heating devices}
- A47K 13/307
- · · {-Seats with ventilating devices}

- U A47K 17/00** Other equipment, {e.g. separate apparatus for deodorising, disinfecting or cleaning devices without flushing for toilet bowls, seats or covers; Holders for toilet brushes (portable urinating aids [A61F 5/4556](#));}(devices for receiving spittle [A61J 19/00](#); {disinfecting apparatus for medical, surgical or hygienic purposes [A61L](#); cleaning devices with flushing for toilet bowls, seats or covers [E03D 9/00](#); for emptying or cleaning chamber-pots, bed pans, bed urinals or the like [E03D 11/025](#)})
- U A47K 17/02** • Body supports, other than seats, for closets, e.g. handles, back-rests, foot-rests; Accessories for closets, e.g. reading tables; {(devices for lifting patients or disabled persons [A61G 7/10](#))}
- A47K 17/022 • • {-Wall mounted grab bars or handles, with or without support on the floor}
- A47K 17/024 • • • {-pivotally mounted on the wall}
- A47K 17/026 • • {-Armrests mounted on or around the toilet ([A47K 17/022](#) takes precedence)}
- A47K 17/028 • • {-Foot- or knee-rests}

Project: N/A (A47L)

- U A47L 5/00** **Structural features of suction cleaners**
- U A47L 5/12** • with power-driven air-pumps or air-compressors, e.g. driven by motor vehicle engine vacuum
- U A47L 5/22** • • with rotary fans
- A47L 5/225 • • • {-Convertible suction cleaners, i.e. convertible between different types thereof, e.g. from upright suction cleaners to sledge-type suction cleaners}
- U A47L 7/00** **Suction cleaners adapted for additional purposes (suction devices for removing ash [F23J 1/02](#)); Tables with suction openings for cleaning purposes; Containers for cleaning articles by suction; Suction cleaners adapted to cleaning of brushes; Suction cleaners adapted to taking-up liquids**
- A47L 7/0004 • {-Suction cleaners adapted to take up liquids, e.g. wet or dry vacuum cleaners (floor-scrubbing machines taking-up dirty liquid by suction [A47L 11/30](#))}
- A47L 7/0009 • • {-with means mounted on the nozzle; nozzles specially adapted for the recovery of liquid}
- A47L 7/0014 • • {-with additional means or devices between nozzle and casing}
- A47L 7/0019 • • {-Details of the casing}
- A47L 7/0023 • • {-Recovery tanks (for cleaning machines [A47L 11/4013](#))}
- A47L 7/0028 • • • {-Security means, e.g. float valves or level switches for preventing overflow}
- A47L 7/0033 • • • {-with means for recycling the dirty liquid}
- A47L 7/0038 • • • {-with means for emptying the tanks}
- A47L 7/0042 • • {-Gaskets; Sealing means}
- A47L 7/0047 • {-Furniture or stationary devices with suction openings (built-in suction cleaners [A47L 5/38](#))}
- A47L 7/0052 • {-Containers for cleaning articles by suction}
- A47L 7/0057 • {-Suction cleaners adapted for cleaning of brushes (shakers for dust-cloths or mops [A47L 13/502](#))}
- A47L 7/0061 • {-adapted for disinfecting or sterilising}
- A47L 7/0066 • {-adapted for removing nail dust, hair or the like}
- A47L 7/0071 • {-with containers for ash, soot, contaminant or harmful materials (suction devices for removing ashes [F23J 1/02](#))}
- A47L 7/0076 • {-adapted for vehicle cleaning (vehicle cleaning apparatus for interior of land vehicles [B60S 3/008](#))}

- A47L 7/008 · {-adapted for mattresses or the like}
 - A47L 7/0085 · {-adapted for special purposes not related to cleaning}
 - A47L 7/009 · {-Details of suction cleaner tools for additional purposes}
 - A47L 7/0095 · {-Suction cleaners or attachments adapted to collect dust or waste from power tools}
- U A47L 9/00** **Details or accessories of suction cleaners, e.g. mechanical means for controlling the suction or for effecting pulsating action; Storing devices specially adapted to suction cleaners or parts thereof; Carrying-vehicles specially adapted for suction cleaners**
- A47L 9/0009 · {-Storing devices (winding devices for electric cables [A47L 9/26](#)); Supports, stands or holders}
 - A47L 9/0018 · · {-integrated in or removably mounted upon the suction cleaner for storing parts of said suction cleaner}
 - A47L 9/0027 · · · {-specially adapted for holding the suction cleaning tools}
 - A47L 9/0036 · · · {-specially adapted for holding the suction hose}
 - A47L 9/0045 · · · {-specially adapted for holding the suction tube}
 - A47L 9/0054 · · {-Stands or the like for temporary interruption of work}
 - A47L 9/0063 · · {-External storing devices; Stands, casings or the like for the storage of suction cleaners}
- U A47L 9/02** · Nozzles (suction nozzles for fluid transport [B65G 51/00](#))
- U A47L 9/04** · · with driven brushes or agitators
- A47L 9/0405 · · · {-Driving means for the brushes or agitators}
 - A47L 9/0411 · · · · {-driven by electric motor}
 - A47L 9/0416 · · · · {-driven by fluid pressure, e.g. by means of an air turbine}
 - A47L 9/0422 · · · · {-driven by the rotation of the supporting wheels on which the nozzle travels over the floor}
 - A47L 9/0427 · · · · {-Gearing or transmission means therefor}
 - A47L 9/0433 · · · · {-Toothed gearings}
 - A47L 9/0438 · · · · · {-with gears having orbital motion, e.g. planetary gearing}
 - A47L 9/0444 · · · · · {-for conveying motion by endless flexible members, e.g. belts}
 - A47L 9/045 · · · · · {-Friction gearings}
 - A47L 9/0455 · · · · {-Bearing means therefor}
 - A47L 9/0461 · · · · {-Dust-loosening tools, e.g. agitators, brushes}
 - A47L 9/0466 · · · · · {-Rotating tools}
 - A47L 9/0472 · · · · · · {-Discs}
 - A47L 9/0477 · · · · · · {-Rolls}
 - A47L 9/0483 · · · · · {-Reciprocating or oscillating tools, e.g. vibrators, agitators, beaters}
 - A47L 9/0488 · · · · · {-Combinations or arrangements of several tools, e.g. edge cleaning tools}
 - A47L 9/0494 · · · · {-Height adjustment of dust-loosening tools}
- U A47L 9/06** · · with fixed, e.g. adjustably fixed brushes or the like
- A47L 9/0606 · · · {-rigidly anchored brushes, combs, lips or pads}
 - A47L 9/0613 · · · · {-with means specially adapted for picking up threads, hair or the like, e.g. brushes, combs, lint pickers or bristles pads}
 - A47L 9/062 · · · · · {-Rigidly anchored edge brushes}
 - A47L 9/0626 · · · · · {-Rigidly anchored lips, e.g. nozzles adapted for picking up liquids}

- U A47L 9/0633 . . . {with retractable brushes, combs, lips or pads}
- A47L 9/064 {-actuating means therefor}
- A47L 9/0646 {-with pneumatic actuation}
- A47L 9/0653 {-with mechanical actuation, e.g. using a lever}
- A47L 9/066 . . . {-with adjustably mounted brushes, combs, lips or pads; Height adjustment of nozzle or dust loosening tools (for suction cleaners with handles and nozzles fixed on the casing [A47L 5/34](#))}
- A47L 9/0666 . . . {-with tilting, floating or similarly arranged brushes, combs, lips or pads}
- A47L 9/0673 . . . {-with removable brushes, combs, lips or pads}
- A47L 9/068 . . . {-Nozzles combined with a different cleaning side, e. g. duplex nozzles or dual purpose nozzles}
- A47L 9/0686 . . . {-Nozzles with cleaning cloths, e.g. using disposal fabrics for covering the nozzle}
- A47L 9/0693 . . . {-Specially shaped nozzles, e.g. for cleaning radiators, tubes, fans or the like; Dusters}
- A47L 9/10 . . . Filters (in general [B01D](#); cyclones [B04C](#)); -Dust separators; -Dust removal; -Automatic exchange of filters {(for machines for cleaning floors [A47L 11/40](#))}
- A47L 9/102 . . . {-Dust separators (cyclones [A47L 9/16](#))}
- A47L 9/104 . . . {-Means for intercepting small objects}
- A47L 9/106 . . . {-Dust removal}
- A47L 9/108 . . . {-Dust compression means}
- U A47L 9/12 . . . Dry filters
- A47L 9/122 {-flat}
- A47L 9/125 {-funnel-shaped}
- A47L 9/127 {-tube- or sleeve-shaped}
- U A47L 9/14 . . . Bags or the like; { Rigid filtering receptacles;} Attachment of, or closures for, bags { or receptacles}
- A47L 9/1409 {-Rigid filtering receptacles (dust collecting receptacles for cyclones [A47L 9/1683](#))}
- A47L 9/1418 {-Impermeable dust collecting bags}
- A47L 9/1427 {-Means for mounting or attaching bags or filtering receptacles in suction cleaners; Adapters}
- A47L 9/1436 {-Connecting plates, e.g. collars, end closures}
- A47L 9/1445 {-with closure means}
- A47L 9/1454 {-Self-sealing closures, e.g. valves}
- A47L 9/1463 {-specially adapted for rigid filtering receptacles}
- A47L 9/1472 {-combined with security means, e.g. for preventing use, e.g. in case of absence of the bag}
- A47L 9/1481 {-Means for removing bags in suction cleaners, e.g. ejecting means; Means for exchanging bags}
- A47L 9/149 {-Emptying means; Reusable bags}
- U A47L 9/16 . . . Arrangement or disposition of cyclones or other devices with centrifugal action
- A47L 9/1608 {-Cyclonic chamber constructions}
- A47L 9/1616 {-Multiple arrangement thereof}
- A47L 9/1625 {-for series flow}
- A47L 9/1633 {-Concentric cyclones}

- A47L 9/1641 {-for parallel flow}
- A47L 9/165 . . . {-Construction of inlets}
- A47L 9/1658 . . . {-Construction of outlets}
- A47L 9/1666 {-with filtering means}
- A47L 9/1675 {-movable, revolving or rotary}
- A47L 9/1683 . . . {-Dust collecting chambers; Dust collecting receptacles}
- A47L 9/1691 . . . {-Mounting or coupling means for cyclonic chamber or dust receptacles}
- U A47L 9/18 . . . Liquid filters
- A47L 9/181 {-Separating by passing the air through a liquid bath}
- A47L 9/182 {-Separating by passing the air over a liquid bath (arrangement of cyclones [A47L 9/16](#))}
- A47L 9/183 {-Spray cleaning}
- A47L 9/185 {-Means for the mechanical control of flow of air, e.g. deflectors, baffles or labyrinths}
- A47L 9/186 {-Construction of outlets}
- A47L 9/187 {-with filtering means, e.g. separators}
- A47L 9/188 {-movable, revolving or rotary}
- A47L 9/24 . . . Hoses {or pipes}; -Hose {or pipe} couplings (hoses or hose joints in general [F16L](#))
- U A47L 9/28 . . . Installation of the electric equipment, e.g. adaptation or attachment to the suction cleaner; Regulation of suction cleaners by electric means
- A47L 9/2805 {-Parameters or conditions being sensed}
- A47L 9/281 {-the amount or condition of incoming dirt or dust}
- A47L 9/2821 {-Pressure, vacuum level or airflow}
- A47L 9/2826 {-the condition of the floor}
- A47L 9/2831 {-Motor parameters, e.g. motor load or speed}
- A47L 9/2836 {-characterised by the parts which are regulated}
- A47L 9/2842 {-Suction motors or blowers}
- A47L 9/2847 {-Surface treating elements}
- A47L 9/2852 {-Elements for displacement of the vacuum cleaner or the accessories therefor, e.g. wheels, casters or nozzles}
- A47L 9/2857 {-User input or output elements for control, e.g. buttons, switches or displays}
- A47L 9/2863 {-Control elements activated by pivoting movement of the upright vacuum cleaner handle}
- A47L 9/2868 {-Arrangments for power supply of vacuum cleaners or the accessories thereof}
- A47L 9/2873 {-Docking units or charging stations (for autonomous or robotic vacuum cleaners [A47L 2201/02](#))}
- A47L 9/2878 {-Dual-powered vacuum cleaners, i.e. devices which can be operated with mains power supply or by batteries}
- A47L 9/2884 {-Details of arrangements of batteries or their installation}
- A47L 9/2889 {-Safety or protection devices or systems, e.g. for prevention of motor over-heating or for protection of the user}
- A47L 9/2894 {-Details related to signal transmission in suction cleaners}
- U **A47L 11/00** **Machines for cleaning floors, carpets, furniture, walls, or wall coverings**

- U A47L 11/40
- Parts or details of machines not { provided for in} groups [A47L 11/02](#) to [A47L 11/38](#), { or not restricted to one of these groups}, e.g. handles, arrangement of switches, skirts, buffers, levers
- A47L 11/4002
- • {-Installations of electric equipment}
- A47L 11/4005
- • • {-Arrangements of batteries or cells; Electric power supply arrangements}
- A47L 11/4008
- • • {-Arrangements of switches, indicators or the like}
- A47L 11/4011
- • {-Regulation of the cleaning machine by electric means; Control systems and remote control systems therefor}
- A47L 11/4013
- • {-Contaminants collecting devices, i.e. hoppers, tanks or the like}
- A47L 11/4016
- • • {-specially adapted for collecting fluids}
- A47L 11/4019
- • • • {-Fill level sensors; Security means to prevent overflow, e.g. float valves}
- A47L 11/4022
- • • • {-with means for recycling the dirty liquid (treatment of waste water [C02F](#))}
- A47L 11/4025
- • • {-Means for emptying}
- A47L 11/4027
- • {-Filtering or separating contaminants or debris}
- A47L 11/403
- • • {-Means for monitoring filtering operation}
- A47L 11/4033
- • • {-Means for cleaning filters}
- A47L 11/4036
- • {-Parts or details of the surface treating tools}
- A47L 11/4038
- • • {-Disk shaped surface treating tools}
- A47L 11/4041
- • • {-Roll shaped surface treating tools}
- A47L 11/4044
- • • {-Vacuuming or pick-up tools; Squeegees}
- A47L 11/4047
- • • {-Wound-up or endless cleaning belts}
- A47L 11/405
- • • {-Machines using UV-lamps, IR-lamps, ultrasound or plasma cleaning}
- A47L 11/4052
- • {-Movement of the tools or the like perpendicular to the cleaning surface}
- A47L 11/4055
- • • {-for lifting the tools to a non-working position}
- A47L 11/4058
- • • {-for adjusting the height of the tool}
- A47L 11/4061
- • {-Steering means; Means for avoiding obstacles; Details related to the place where the driver is accommodated}
- A47L 11/4063
- • {-Driving means; Transmission means therefor}
- A47L 11/4066
- • • {-Propulsion of the whole machine}
- A47L 11/4069
- • • {-Driving or transmission means for the cleaning tools}
- A47L 11/4072
- • {-Arrangement of castors or wheels}
- A47L 11/4075
- • {-Handles; levers}
- A47L 11/4077
- • {-Skirts or splash guards}
- A47L 11/408
- • {-Means for supplying cleaning or surface treating agents}
- A47L 11/4083
- • • {-Liquid supply reservoirs; Preparation of the agents, e.g. mixing devices}
- A47L 11/4086
- • • {-Arrangements for steam generation}
- A47L 11/4088
- • • {-Supply pumps; Spraying devices; Supply conduits}
- A47L 11/4091
- • {-Storing or parking devices, arrangements therefor; Means allowing transport of the machine when it is not being used}
- A47L 11/4094
- • {-Accessories to be used in combination with conventional vacuum-cleaning devices}
- A47L 11/4097
- • {-Means for exhaust-air diffusion; Exhaust-air treatment, e.g. air purification; Means for sound or vibration damping}
- U A47L 13/00
- Implements for cleaning floors, carpets, furniture, walls, or wall coverings (brushes, their handles or fastenings [A46B](#), [B25G](#); scrapers for finishing work on buildings [E04F 21/00](#))**

- U A47L 13/10 • Scrubbing; Scouring; Cleaning; Polishing
- U A47L 13/20 • • Mops
- U A47L 13/22 • • • with liquid-feeding devices
- A47L 13/225 • • • • {Steam mops}

- U A47L 15/00** **Washing or rinsing machines for crockery or tableware**
- A47L 15/0002 • {Washing processes, i.e. machine working principles characterised by phases or operational steps}
- A47L 15/0005 • • {Rinsing phases, e.g. pre-rinsing, intermediate rinsing, final rinsing}
- A47L 15/0007 • • {Washing phases}
- A47L 15/001 • • {Drain phases, including initial, intermediate or partial draining phases}
- A47L 15/0013 • • {Drying phases, including dripping-off phases}
- A47L 15/0015 • • {other treatment phases, e.g. steam or sterilizing phase}
- A47L 15/0018 • {Controlling processes, i.e. processes to control the operation of the machine characterised by the purpose or target of the control (for control of water softening or water softener regeneration [A47L 15/4229](#); for control of water level [A47L 15/4244](#); for control of bad smells or odours [A47L 15/4276](#); for control of water temperature [A47L 15/4287](#); for control of water pressure [A47L 15/4289](#); for control of condition of crockery or tableware [A47L 15/4295](#); for control of condition of washing water [A47L 15/4297](#))}
- A47L 15/0021 • • {Regulation of operational steps within the washing processes, e.g. optimisation or improvement of operational steps depending from the detergent nature or from the condition of the crockery}
- A47L 15/0023 • • • {Water filling ([A47L 15/4244](#) takes precedence)}
- A47L 15/0026 • • • {Rinsing phases}
- A47L 15/0028 • • • {Washing phases}
- A47L 15/0031 • • • {Water discharge phases}
- A47L 15/0034 • • • {Drying phases, including dripping-off phases}
- A47L 15/0036 • • • {Steam or sterilizing phases}
- A47L 15/0039 • • • {Filter cleaning phases}
- A47L 15/0042 • • • {Desorption phases of reversibly dehydrogenated drying material. e.g. zeolite in a sorption drying system}
- A47L 15/0044 • • {Operation time reduction}
- A47L 15/0047 • • {Energy or water consumption, e.g. by saving energy or water}
- A47L 15/0049 • • {Detection or prevention of malfunction, including accident prevention (arrangements to prevent clogging of filters [A47L 15/4208](#); safety arrangements for preventing water damage [A47L 15/421](#))}
- A47L 15/0052 • • {Noise reduction}
- A47L 15/0055 • • {Metering or indication of used products, e.g. type or quantity of detergent, rinse aid or salt; for measuring or controlling the product concentration}
- A47L 15/0057 • • {Cleaning of machines parts, e.g. removal of deposits like lime scale or proteins from piping or tub}
- A47L 15/006 • • {using wireless communication between internal components of the machine}
- A47L 15/0063 • • {using remote monitoring or controlling of the dishwasher operation, e.g. networking systems}

- A47L 15/0076
 - {-of non-domestic use type, e.g. commercial dishwashers for bars, hotels, restaurants, canteens or hospitals (machines specially adapted for drinking glasses [A47L 15/0065](#); drawer-type dishwashers [A47L 15/0084](#); in-sink dishwashers [A47L 15/0086](#); miniature dishwashers [A47L 15/0089](#); conveyer-type dishwashers [A47L 15/24](#); machines with crockery cleaned by brushes [A47L 15/37](#))}
- A47L 15/0078
 - • {-with a plurality of fluid recirculation arrangements, e.g. with separated washing liquid and rinsing liquid recirculation circuits}
- A47L 15/0081
 - • {-with vertical sliding closing doors, e.g. hood-type dishwashers}
- A47L 15/0084
 - {-of drawer-type}
- A47L 15/0086
 - {-In-sink dishwashers}
- A47L 15/0089
 - {-of small size, e.g. portable mini dishwashers for small kitchens, office kitchens, boats, recreational vehicles (specially adapted for drinking glasses [A47L 15/0065](#))}
- A47L 15/0092
 - {-specially adapted to wash large items like pots, trays, baking trays, cooking grids}
- A47L 15/0094
 - {-cleaning with abrasive solid particles, e.g. by blasting the crockery with liquid containing granules}
- A47L 15/0097
 - {-Combination of dishwashers with other household appliances}
- U A47L 15/24
 - with movement of the crockery baskets by conveyers {(for drinking glasses [A47L 15/0071](#))}
- A47L 15/247
 - • {-Details specific to conveyer-type machines, e.g. curtains}
- U A47L 15/42
 - Details

NOTE

Details specific to a particular type of dishwasher should also get a classification symbol for the relevant type of dishwasher
- A47L 15/4202
 - • {-Water filter means or strainers}
- A47L 15/4204
 - • • {-Flat filters}
- A47L 15/4206
 - • • {-Tubular filters}
- A47L 15/4208
 - • • {-Arrangements to prevent clogging of the filters, e.g. self-cleaning}
- U A47L 15/421
 - • {-Safety arrangements for preventing water damage}
- A47L 15/4212
 - • • {-Detection of water leaks; Collection of leaked water, e.g. in the casing}
- A47L 15/4214
 - • {-Water supply, recirculation or discharge arrangements; Devices therefor}
- A47L 15/4217
 - • • {-Fittings for water supply, e.g. valves or plumbing means to connect to cold or warm water lines, aquastops}
- A47L 15/4219
 - • • {-Water recirculation ([A47L 15/0078](#) takes precedence)}
- A47L 15/4221
 - • • • {-Arrangements for redirection of washing water, e.g. water diverters to selectively supply the spray arms ([A47L 15/0078](#) takes precedence)}
- A47L 15/4223
 - • • {-Devices for water discharge, e.g. devices to prevent siphoning, non-return valves}
- A47L 15/4225
 - • • {-Arrangements or adaption of recirculation or discharge pumps}
- A47L 15/4227
 - • • • {-with macerator arrangements for chopping entrained food particles}
- A47L 15/4229
 - • {-Water softening arrangements}
- A47L 15/4234
 - • {-Steam generating arrangements}
- A47L 15/4236
 - • {-Arrangements to sterilize or disinfect dishes or washing liquids ([A47L 15/4234](#) takes precedence)}
- A47L 15/4238
 - • • {-by using electrolytic cells}
- A47L 15/424
 - • • {-by using ozone}

- A47L 15/4242 . . . {-by using ultraviolet generators}
- A47L 15/4244 . . {-Water-level measuring or regulating arrangements}
- A47L 15/4246 . . {-Details of the tub ([A47L 15/4272](#) takes precedence)}
- A47L 15/4248 . . . {-Arrangements for dividing the tub compartment, e.g. for simultaneous washing of delicate and normal crockery}
- A47L 15/4251 . . {-Details of the casing (collecting leaked water in the casing for preventing water damage [A47L 15/4212](#))}
- A47L 15/4253 . . . {-Supporting arrangements for the casing, e.g. rollers or supporting legs}
- A47L 15/4255 . . . {-Insulation arrangements, e.g. for sound damping or heat insulation}
- A47L 15/4257 . . . {-Details of the loading door}
- A47L 15/4259 {-Arrangements of locking or security/safety devices for doors, e.g. door latches, switch to stop operation when door is open}
- A47L 15/4261 {-Connections of the door to the casing, e.g. door hinges}
- A47L 15/4263 {-Door sealing arrangements}
- A47L 15/4265 {-Arrangements of door covering/decoration panels or plinths, e.g. for integrated dishwashers}
- A47L 15/4268 . . . {-Arrangements for transporting or moving, e.g. stiffening}
- A47L 15/427 . . . {-Arrangements for setting the machine, e.g. anti-tip devices therefor, fixing of integrated machines}
- A47L 15/4272 . . . {-Supporting arrangements for the tub}
- A47L 15/4274 . . . {-Arrangement of electrical components, e.g. control units or cables ([A47L 15/4293](#) takes precedence)}
- A47L 15/4276 . . {-Arrangements to detect or remove bad smells or odours}
- A47L 15/4278 . . {-Nozzles}
- A47L 15/428 . . . {-Rotary nozzles}
- A47L 15/4282 . . . {-Arrangements to change or modify spray pattern or direction}
- A47L 15/4285 . . {-Water-heater arrangements (Steam generating arrangements [A47L 15/4234](#))}
- A47L 15/4287 . . {-Temperature measuring or regulating arrangements}
- A47L 15/4289 . . {-Spray-pressure measuring or regulating arrangements (nozzles [A47L 15/4278](#))}
- A47L 15/4293 . . {-Arrangements for programme selection, e.g. control panels; Indication of the selected programme, programme progress or other parameters of the programme, e.g. by using display panels}
- U A47L 15/44 . . . Devices for adding cleaning agent; { Devices for dispensing cleaning agents, rinsing aids or deodorants}
- A47L 15/4445 {-Detachable devices}
- A47L 15/4454 {-with automatic identification means, e.g. barcodes, RFID tags or magnetic strips}
- A47L 15/4463 {-Multi-dose dispensing arrangements}
- A47L 15/4472 {-Blister packaging or refill cartridges}
- A47L 15/4481 {-Deodorants, perfumes or odor removals ([A47L 15/4276](#) takes precedence)}
- A47L 15/449 {-Metering controlling devices ([A47L 15/4229](#) takes precedence)}
- U A47L 15/48 . . . Drying arrangements
- A47L 15/481 {-by using water absorbent materials, e.g. Zeolith}
- A47L 15/483 {-by using condensers}

- A47L 15/485 • • • {by using alternative heat sources, e.g. microwave or infrared}
- A47L 15/486 • • • {-Blower arrangements}
- A47L 15/488 • • • {-Connections of the tub with the ambient air, e.g. air intake or venting arrangements}
- U A47L 15/50 • • Racks
- A47L 15/501 • • • {-Baskets, e.g. for conveyer-type, in-sink type or hood-type machines}
- A47L 15/505 • • • {-Inserts, e.g. for holding baby bottles, stemware or cups}

Project: N/A (A61B)**A61B**

DIAGNOSIS; SURGERY; IDENTIFICATION (-analysing biological material [G01N](#), e.g. [G01N 33/48](#) ; obtaining records using waves other than optical waves, in general [G03B 42/00](#) -)

NOTE

This subclass covers instruments, implements and processes for diagnostic, surgical and person-identification purposes, including obstetrics, instruments for cutting corns, vaccination instruments, finger-printing, psycho-physical tests.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

A61B 5/0295	covered by	A61B 5/026	A61B 5/1455
covered by	A61B5/00N4	A61B 5/1459	covered by
A61B5/00N4B	A61B 5/1464	covered by	A61B5/00N4F
A61B 5/1468	covered by	A61B5/00N2	A61B 5/1473
covered by	A61B5/00N2B	A61B 5/1477	covered by
A61B5/00N2D	A61B 5/1482	covered by	A61B5/00N2F
A61B 5/151	covered by	A61B 5/1411	A61B 5/153
covered by	A61B 5/1405	A61B 5/154	covered by
A61B 5/1438	A61B 5/157	covered by	A61B 5/00
and s. gr.	A61B 17/03	covered by	A61B 17/00
A61B 17/125	covered by	A61B 17/122	A61B 17/138
covered by	A61B 17/12	A61B 17/76	covered by
A61B 17/744			
A61B 17/78	covered by	A61B 17/744	A61B 17/90
covered by	A61B 17/88	A61B 17/94	covered by
A61B 17/29			

A61B 1/00

Instruments for performing medical examinations of the interior of cavities or tubes of the body by visual or photographic inspection, e.g. endoscopes (-examination of body cavities or body tracts using ultrasonic, sonic or infrasonic waves [A61B 8/12](#) ; instruments, e.g. endoscopes, for taking a cell sample [A61B 10/00](#) ; endoscopic cutting instruments [A61B 17/32](#) ; surgical instruments using a laser beam being directed along or through a flexible conduit [A61B 18/22](#) ; technical endoscopes [G02B 23/24](#) -); Illuminating arrangements therefor (-for the eyes [A61B 3/00](#) -)

- U A61B 1/00002 • {Operational features of endoscopes}
- U A61B 1/00004 • • {characterised by electronic signal processing}
- A61B 1/00009 • • • {of image signals ([G06T](#) takes precedence)}
- U A61B 1/00064 • {Constructional details of the endoscope body}
- A61B 1/00066 • • {Proximal part of endoscope body, e.g. handles (-[A61B 1/0052](#) takes precedence-)}
- A61B 1/00071 • • {Insertion part of the endoscope body (-[A61B 1/0055](#) takes precedence-)}
- U A61B 1/0008 • • • {characterised by distal tip features}

- A61B 1/00087 . . . {Tools (-A61B 17/00234 takes precedence-)}
- U A61B 1/00131 . {Accessories for endoscopes}
- A61B 1/00135 . . {Oversleeves (-A61B 1/00142 takes precedence-)}
- A61B 1/00163 . {Optical arrangements (-A61B 1/002 , A61B 1/06 take precedence-)}
- A61B 1/00165 . . {with light-conductive means, e.g. fibre optics (-A61B 1/07 takes precedence-)}
- U A61B 1/00174 . . {characterised by the viewing angles}
- A61B 1/00181 . . . {for multiple fixed viewing angles (-A61B 1/00193 takes precedence-)}
- A61B 1/002 . having rod-lens arrangements (-A61B 1/055 takes precedence-)
- A61B 1/04 . combined with photographic or television appliances ({-camera adapters G03B 17/48-})
- U A61B 1/12 . with cooling or rinsing arrangements
- A61B 1/127 . . {with means for preventing fogging (-A61B 1/253 takes precedence-)}
- A61B 1/24 . for the mouth, i.e. stomatoscopes, e.g. with tongue depressors (-tongue depressors per se A61B 13/00-); Instruments for opening or keeping open the mouth (-combined with saliva removers A61C 17/00 ; mouth openers for animals A61D 15/00-)
- A61B 1/32 . Devices for opening or enlarging the visual field, e.g. of a tube of the body (-dilators A61M 29/00-)
- A61B 3/00** **Apparatus for testing the eyes; Instruments for examining the eyes (-eye inspection using ultrasonic, sonic or infrasonic waves A61B 8/10 ; devices for treatment of the eyes A61F 9/00 ; exercisers for the eyes A61H 5/00 ; optical systems in general G02B-)**
- A61B 3/0008 . {provided with illuminating means (-A61B 3/117 takes precedence; gonio-lenses used for laser treatment A61F 9/009 ; illuminating means for optical instruments G02B 27/00-)}
- A61B 3/0075 . {provided with adjusting devices, e.g. operated by control lever (-manipulators B25J-)}
- U A61B 3/02 . Subjective types, i.e. testing apparatus requiring the active assistance of the patient
- U A61B 3/028 . . for testing visual acuity; for determination of refraction, e.g. phoropters
- A61B 3/032 . . . Devices for presenting test symbols or characters, e.g. test chart projectors (-A61B 3/036 takes precedence-)
- A61B 3/04 . . . Trial frames; Sets of lenses for use therewith (-lenses per se G02C 7/02-)
- U A61B 3/10 . Objective types, i.e. instruments for examining the eyes independent of the patients` perceptions or reactions
- A61B 3/1005 . . {for measuring distances inside the eye, e.g. thickness of the cornea (-A61B 3/11 takes precedence-)}
- U A61B 3/103 . . for determining refraction, e.g. refractometers, skiascopes
- A61B 3/1035 . . . {for measuring astigmatism (-testing astigmatism A61B 3/036-)}
- A61B 3/12 . . for looking at the eye fundus, e.g. ophthalmoscopes (-A61B 3/13 takes precedence-)
- A61B 3/125 . . . with contact lenses (-contact lenses per se G02C 7/04-)

- A61B 5/00** Detecting, measuring or recording for diagnostic purposes (~~radiation diagnosis A61B 6/00~~; diagnosis by ultrasonic, sonic or infrasonic waves ~~A61B 8/00~~); Identification of persons(~~measuring or recording in general subclasses of G01~~; medical informatics ~~G06F 19/30~~)}
- WARNING**
Groups [A61B 5/40](#) - [A61B 5/748](#) do not correspond to former or present IPC groups. Concordance CPC : IPC for these groups is as follows: [A61B 5/40](#) : [A61B 5/00](#) [A61B 5/41](#) : [A61B 5/00](#) [A61B 5/42](#) : [A61B 5/00](#) [A61B 5/43](#) : [A61B 5/00](#) [A61B 5/44](#) : [A61B 5/00](#) [A61B 5/45](#) : [A61B 5/00](#) [A61B 5/48](#) : [A61B 5/00](#) [A61B 5/68](#) : [A61B 5/00](#) [A61B 5/70](#) : [A61B 5/00](#) [A61B 5/72](#) : [A61B 5/00](#) [A61B 5/74](#) : [A61B 5/00](#)
- A61B 5/0002
- Remote monitoring of patients using telemetry, e.g. transmission of vital signals via a communication network (~~A61B 5/07~~ takes precedence; transmission systems for measured values [G08C](#); transmission [H04B](#); transmission of digital information [H04L](#); wireless communication networks [H04W](#))}
- U A61B 5/0004
- • {characterised by the type of physiological signal transmitted}
- A61B 5/0013
- • • {Medical image data (~~A61B 1/00011~~ , [A61B 6/56](#) , [A61B 8/56](#) take precedence)}
- U A61B 5/0015
- • {characterised by features of the telemetry system}
- A61B 5/0017
- • • {transmitting optical signals (~~transmission by light H04B 10/00~~)}
- A61B 5/002
- • • {Monitoring the patient using a local or closed circuit, e.g. in a room or building (~~A61B 5/0017~~ takes precedence)}
- A61B 5/0033
- {Features or image-related aspects of imaging apparatus classified in [A61B 5/00](#) , e.g. for MRI, optical tomography or impedance tomography apparatus; arrangements of imaging apparatus in a room (image data processing or generation [G06T](#))}
- WARNING**
Group [A61B 5/0033](#) and subgroups are not complete pending a reorganisation
- A61B 5/004
- • {adapted for image acquisition of a particular organ or body part (~~A61B 5/0082~~ takes precedence; arrangements for optical scanning [A61B 5/0062](#))}
- A61B 5/0048
- {Detecting, measuring or recording by applying mechanical forces or stimuli (~~A61B 5/021~~ , [A61B 5/4884](#) and [A61B 9/00](#) take precedence)}
- WARNING**
Group [A61B 5/0048](#) and subgroups are not complete pending a reorganisation, see also groups [A61B 5/00](#) , [A61B 5/022](#) , [A61B 5/11](#)
- A61B 5/0059
- {using light, e.g. diagnosis by transillumination, diascopy, fluorescence (~~A61B 5/0093~~ , [A61B 5/1455](#) , [A61B 5/02416](#) and [A61B 5/0261](#) take precedence)}
- A61B 5/0073
- • {by tomography, i.e. reconstruction of 3D images from 2D projections (~~A61B 5/0066~~ takes precedence)}
- A61B 5/0075
- • {by spectroscopy, i.e. measuring spectra, e.g. Raman spectroscopy, infrared absorption spectroscopy (~~A61B 5/0071~~ takes precedence)}
- U A61B 5/0082
- • {adapted for particular medical purposes}
- A61B 5/0084
- • • {for introduction into the body, e.g. by catheters (~~A61B 5/1459~~ takes precedence)}
- A61B 5/01
- Measuring temperature of body parts; {Diagnostic temperature sensing, e.g. for malignant or inflamed tissue} (~~clinical thermometers G01K 5/22~~ ; thermometers for special purposes [G01K 13/00](#))}

- U A61B 5/02
 - Detecting, measuring or recording pulse, heart rate, blood pressure or blood flow; Combined pulse/heart-rate/blood pressure determination; Evaluating a cardiovascular condition not otherwise provided for, e.g. using combinations of techniques provided for in this group with electrocardiography or electroauscultation; Heart catheters for measuring blood pressure
- A61B 5/021
 - • Measuring pressure in heart or blood vessels (~~A61B 5/0205~~ takes precedence)
 - WARNING
[A61B 5/02108](#) and subgroups are not complete pending a reorganisation; see also group [A61B 5/021](#)
- U A61B 5/02108
 - • • {from analysis of pulse wave characteristics}
- A61B 5/02116
 - • • • {of pulse wave amplitude (~~A61B 5/02225~~ takes precedence)}
- A61B 5/02141
 - • • Details of apparatus construction, e.g. pump units or housings therefor, cuff pressurising systems, arrangements of fluid conduits or circuits (~~A61B 5/02233~~ , ~~A61B 5/0235~~ take precedence)]
- A61B 5/0215
 - • • by means inserted into the body (~~catheters A61M 25/00~~)
- U A61B 5/022
 - • • by applying pressure to close blood vessels, e.g. against the skin; Ophthalmodynamometers
 - WARNING
Subgroups of [A61B 5/022](#) are not complete pending a reorganisation; see also this group
- A61B 5/02233
 - • • • {Occluders specially adapted therefor (~~tourniquets A61B 17/132~~)}
- A61B 5/024
 - • Detecting, measuring or recording pulse rate or heart rate (~~A61B 5/0205~~ , ~~A61B 5/021~~ take precedence)
- A61B 5/02416
 - • • {using photoplethysmograph signals, e.g. generated by infra-red radiation (~~A61B 5/14552~~ takes precedence)}
- A61B 5/02444
 - • • {Details of sensor (~~A61B 5/02427~~ takes precedence)}
- U A61B 5/0245
 - • • by using sensing means generating electric signals, {i.e. ECG signals}
- A61B 5/025
 - • • • within occluders, e.g. responsive to Korotkoff sounds (~~electric stethoscopes A61B 7/04~~)
- A61B 5/026
 - • Measuring blood flow (~~A61B 3/1233~~ , ~~A61B 3/1241~~ take precedence)}
- A61B 5/029
 - • • Measuring or recording blood output from the heart, e.g. minute volume (~~A61B 8/065~~ takes precedence)}
- A61B 5/03
 - Detecting, measuring or recording fluid pressure within the body other than blood pressure, e.g. cerebral pressure; {Measuring pressure in body tissues or organs (~~A61B 5/205~~ takes precedence)}
- A61B 5/036
 - • {by means introduced into body tracts (~~A61B 5/032~~ and ~~A61B 5/035~~ take precedence)}
- U A61B 5/04
 - Detecting, measuring or recording bioelectric signals of the body of parts thereof
- A61B 5/04005
 - • {Detecting magnetic fields produced by bio-electric currents (~~measuring magnetic variables in general G01R 33/00~~)}
- U A61B 5/04012
 - • {Analysis of electro-cardiograms, electro-encephalograms, electro-myograms}
- A61B 5/04014
 - • • {by measuring frequency distribution using a set of filters (~~arrangements for analysing frequency spectra in general G01R 23/00~~)}
- U A61B 5/0402
 - • Electrocardiography, i.e. ECG
- A61B 5/04023
 - • • {Physical templates or devices for measuring ECG waveforms, e.g. an electrocardiograph ruler or caliper (~~A61B 5/04525~~ takes precedence)}

- A61B 5/0408
 - • • Electrodes specially adapted therefor (for foetal cardiography [A61B 5/0448](#) ; for electroencephalograph signals [A61B 5/0478](#) ; for electromyography [A61B 5/0492](#)-)
- A61B 5/04085
 - • • • {Multiple electrode holders (-[A61B 5/04286](#) , [A61B 5/0422](#) take precedence-)}
- U A61B 5/0428
 - • • Input circuits specially adapted therefor
- A61B 5/04282
 - • • • {using insulating or floating elements, e.g. transformers, opto-couplers (-transformers for specific applications [H01F 38/00](#) ; amplifiers [H03F](#); optocouplers [H04B 10/80](#)-)}
- A61B 5/044
 - • • Displays specially adapted therefor{(-arrangements for displaying electric variables or waveforms, e.g. cathode-ray oscilloscopes, [G01R 13/00](#)-)}
- U A61B 5/0452
 - • • Detecting specific parameters of the electrocardiograph cycle
- A61B 5/0456
 - • • • {Detecting R peaks, e.g. for synchronising diagnostic apparatus} (-physiological signal analysis for synchronising or triggering a measurement or image acquisition [A61B 5/7285](#)-)
- A61B 5/0476
 - • Electroencephalography{(-devices for psychotechnics [A61B 5/16](#)-)}
- A61B 5/048
 - • • Detecting the frequency distribution of signals{(-analysing frequency spectra in general [G01R 23/00](#)-)}
- A61B 5/0482
 - • • using biofeedback{(-biofeedback per se [A61B 5/486](#)-)}
- A61B 5/0496
 - • Electro-oculography, e.g. detecting nystagmus{(-measuring or inducing nystagmus [A61B 5/4863](#)-)}
- A61B 5/05
 - Detecting, measuring or recording for diagnosis by means of electric currents or magnetic fields; {Measuring using microwaves or radiowaves} (-[A61B 5/02](#) , [A61B 5/04](#) , [A61B 5/11](#) take precedence-)
- A61B 5/055
 - • involving electronic or nuclear magnetic resonance, e.g. magnetic resonance imaging (-arrangements or instruments for measuring magnetic variables involving electronic or nuclear magnetic resonance, in general [G01R 33/20](#)-)
- A61B 5/0555
 - • • {Means for positioning of patients (-for radiation diagnosis or therapy [A61B 6/04](#)-)}
- A61B 5/06
 - Devices, other than using radiation, for detecting or locating foreign bodies (-or removing same [A61B 17/50](#)-); {determining position of probes within or on the body of the patient}
- A61B 5/061
 - • {Determining position of a probe within the body employing means separate from the probe, e.g. sensing internal probe position employing impedance electrodes on the surface of the body (-[A61B 1/00158](#) takes precedence-)}

WARNING
[A61B 5/061](#) and subgroups are not complete pending a reorganisation, see also group(s) [A61B 5/06](#)
- A61B 5/064
 - • • {using markers (-[A61B 5/062](#) takes precedence-)}
- U A61B 5/07
 - Endoradiosondes
- A61B 5/076
 - • {Permanent implantations} (-telemetry using implanted circuitry [A61B 5/0031](#) ; implanted stimulators for therapy [A61N 1/362](#) , [A61N 1/372](#)-)
- A61B 5/08
 - Detecting, measuring or recording devices for evaluating the respiratory organs (-[A61B 5/0205](#) takes precedence-)
- A61B 5/0806
 - • {by whole-body plethysmography}(-measuring blood flow using plethysmography [A61B 5/0295](#) ; impedance plethysmography [A61B 5/053](#) ; measuring volume of the body or parts thereof [A61B 5/1073](#)-)}
- A61B 5/0816
 - • {Measuring devices for examining respiratory frequency}(-measuring frequency of electric signals [G01R 23/00](#)-)}

- A61B 5/082
- {Evaluation by breath analysis, e.g. determination of the chemical composition of exhaled breath (~~A61B 5/083~~ , ~~A61B 5/091~~ take precedence-)}
WARNING
Group [A61B 5/082](#) is not complete pending a reorganisation, see also group [A61B 5/083](#)
- A61B 5/0826
- {Detecting or evaluating apnoea events (~~A61B 5/4818~~ takes precedence-)}
WARNING
Group [A61B 5/0826](#) is not complete pending a reorganisation, see also group [A61B 5/08](#)
- U A61B 5/083
- • Measuring rate of metabolism by using breath test, e.g. measuring rate of oxygen consumption
- A61B 5/0836
- • • {Measuring rate of [CO2](#) production-}
- U A61B 5/087
- • Measuring breath flow
- A61B 5/09
- • • using an element rotated by the flow{(toys actuated by air current [A63H 33/40](#)-)}
- A61B 5/103
- Detecting, measuring or recording devices for testing the shape, pattern, {colour,}size or movement of the body or parts thereof, for diagnostic purposes (~~A61B 5/08~~ takes precedence; measuring aids for tailors [A41H 1/00](#) ; measuring instruments specially adapted for dentistry [A61C 19/04](#)-)
- A61B 5/1032
- • {Determining colour for diagnostic purposes (~~measuring colour in general [G01J 3/46](#)-)}~~
- U A61B 5/107
- • Measuring physical dimensions, e.g. size of the entire body or parts thereof
- A61B 5/1071
- • • {measuring angles, e.g. using goniometers (~~A61B 5/1123~~ takes precedence-)}
- A61B 5/1072
- • • {measuring distances on the body, e.g. measuring length, height or thickness (~~A61B 5/1076~~ takes precedence-)}
- A61B 5/1075
- • • {for measuring dimensions by non-invasive methods, e.g. for determining thickness of tissue layer (~~A61B 8/0858~~ takes precedence-)}
- A61B 5/1076
- • • {for measuring dimensions inside body cavities, e.g. using catheters (~~A61B 3/1005~~ takes precedence-)}
- A61B 5/11
- • Measuring movement of the entire body or parts thereof, e.g. head or hand tremor, mobility of a limb (~~for measuring pulse [A61B 5/02](#)-})(~~A61B 5/1038~~ takes precedence; motion detection to correct for motion artifacts in physiological signals [A61B 5/721](#)-)}~~
- A61B 5/1104
- • • {induced by stimuli or drugs; (~~A61B 5/1102~~ takes precedence; investigating medicinal preparations [G01N 33/15](#)-)}
- A61B 5/1107
- • • {Measuring contraction of parts of the body, e.g. organ, muscle (~~apparatus for measuring work or force in general [G01L](#)-)}~~
- A61B 5/1123
- • • {Discriminating type of movement, e.g. walking or running (~~A61B 5/1116~~ , [A61B 5/112](#) take precedence-)}
- U A61B 5/1126
- • • {using a particular sensing technique}
- A61B 5/1128
- • • • {using image analysis (~~A61B 5/1127~~ takes precedence-)}
- A61B 5/117
- Identification of persons, e.g. finger-printing, foot-printing, impression techniques (~~dental impression cups or articulators [A61C 9/00](#) , [A61C 11/00](#) ; recognition of data [G06K](#) ; recognising finger-prints [G06K 9/00](#) ; identification tags [G09F 3/00](#)-)~~
- A61B 5/12
- Audiometering {Evaluation or the auditory system, not limited to hearing capacity(~~A61B 5/04845~~ , [A61B 5/4023](#) take precedence-)}

- A61B 5/14
- Devices for taking samples of blood (-hypodermic syringes [A61M 5/00](#)); Measuring characteristics of blood in vivo, e.g. gas concentration within the blood, pH-value of blood (-measuring of blood pressure [A61B 5/02](#) ; non-radiation detecting or locating of foreign bodies in blood [A61B 5/06](#)-)
- WARNING
- This group and its subgroups are no longer used for the classification of new documents as from April 1st, 2010. The backlog of these group is being continuously reclassified to [A61B 5/15](#) and subgroups
- A61B 5/1405
- {Devices for taking blood samples (-devices for taking samples of other body liquids [A61B 10/0045](#)-)}
- A61B 5/1416
- • {by syringes containing more than one piston (-medical syringes in general [A61M 5/178](#)-)}
- A61B 5/1433
- • {provided with locking means (-details of syringes [A61M 5/315](#)-)}
- U A61B 5/1438
- • {using pre-evacuated means}
- A61B 5/1444
- • • {Safety means, e.g. for locking cannula (-Removing or disposing of used needles or syringes [A61M 5/3205](#)-)}
- A61B 5/145
- Measuring characteristics of blood in vivo, e.g. gas concentration, pH value; {Measuring characteristics of body fluids or tissues, e.g. interstitial fluid, cerebral tissue} (-measuring of blood pressure or blood flow [A61B 5/02](#) ; non-radiation detecting or locating of foreign bodies in blood [A61B 5/06](#)-)
- WARNING
- Groups [A61B 5/14535](#), [A61B 5/14539](#) and [A61B 5/14546](#) are not complete pending a reorganisation; see also groups [A61B 5/145](#)
- A61B 5/14503
- {invasive, e.g. introduced into the body by a catheter or needle or using implanted sensors (-[A61B 5/1459](#) , [A61B 5/1464](#) , [A61B 5/1473](#) , [A61B 5/1482](#) , [A61B 5/14865](#) take precedence-)}
- A61B 5/14507
- {specially adapted for measuring characteristics of body fluids other than blood (-devices for taking samples of body liquids [A61B 10/0045](#)-)}
- U A61B 5/14517
- • {for sweat}
- A61B 5/14521
- • • {using means for promoting sweat production, e.g. heating the skin (-measuring sweat secretion [A61B 5/4266](#)-)}
- A61B 5/14542
- {for measuring blood gases (-[A61B 5/14551](#) takes precedence-)}
- U A61B 5/1455
- • using optical sensors, e.g. spectral photometrical oximeters
- U A61B 5/14551
- • {for measuring blood gases}
- A61B 5/14556
- • • {by fluorescence (-[A61B 5/14555](#) takes precedence-)}
- A61B 5/1459
- • • invasive, e.g. introduced into the body by a catheter{(-[A61B 5/1464](#) takes precedence-)}
- A61B 5/1468
- • using chemical or electrochemical methods, e.g. by polarographic means{(-[A61B 5/1486](#) takes precedence-)}
- A61B 5/1473
- • • invasive, e.g. introduced into the body by a catheter{(-[A61B 5/1482](#) takes precedence-)}
- A61B 5/15
- Devices for taking samples of blood (-hypodermic syringes [A61M 5/178](#)-)
- NOTE
- In these subgroups, the following terms are used with the meaning indicated:
- "piercing element" means skin penetrating component e.g. blade, needle, lancet, laser beam;
 - "piercing or lancing device" means device ready to be

used for lancing; - "driving device" means device for driving a piercing element
e.g. spring

WARNING

This group and its subgroups are not complete pending a reorganisation. See also [A61B 5/14](#) , [A61B 5/1405](#) and subgroups

- U A61B 5/150007
 - • {Details}
- U A61B 5/150053
 - • • {for enhanced collection of blood or interstitial fluid at the sample site, e.g. by applying compression, heat, vibration, ultrasound, suction or vacuum to tissue; for reduction of pain or discomfort; Skin piercing elements, e.g. blades, needles, lancets or canulas, with adjustable piercing speed}
- U A61B 5/150106
 - • • • {Means for reducing pain or discomfort applied before puncturing; desensitising the skin at the location where body is to be pierced}
- A61B 5/150137
 - • • • • {by vibration (-enhancing collection by vibration [A61B 5/150175](#)-)}
- U A61B 5/150175
 - • • {Adjustment of penetration depth}
- A61B 5/15019
 - • • • {Depth adjustment mechanism using movable stops located inside the piercing device housing and limiting the travel of the drive mechanism (-mechanisms using distal end caps [A61B 5/150183](#) , mechanisms at the piercing element carrier proximal end [A61B 5/150198](#)-)}
- U A61B 5/150206
 - • • {Construction or design features not otherwise provided for; manufacturing or production; packages; sterilisation of piercing element, piercing device or sampling device}
- A61B 5/150251
 - • • • {Collection chamber divided into at least two compartments, e.g. for division of samples (-injection syringes having more than one chamber [A61M 5/19](#) ; syringes for injection of two or more media [A61M 5/2448](#) , [A61M 5/284](#) ; sample preparation for further analysis [A61B 5/150755](#)-)}
- U A61B 5/150274
 - • • • {Manufacture or production processes or steps for blood sampling devices}
- A61B 5/150297
 - • • • • {for piercing devices i.e. devices ready to be used for lancing or piercing (-for piercing elements [A61B 5/150282](#) , for driving devices [A61B 5/15029](#)-)}
- A61B 5/150305
 - • • • {Packages specially adapted for piercing devices or blood sampling devices (-kits for diabetes [A61M 5/003](#) ; packaging in general [B65D](#)-)}
- A61B 5/150312
 - • • • {Sterilisation of piercing elements, piercing devices or sampling devices (-piercing element stocking means, e.g. cartridges, [A61B 5/15176](#)-)}
- A61B 5/150343
 - • • {Collection vessels for collecting blood samples from the skin surface, e.g. test tubes, cuvettes (-test tubes in general [B01L 3/14](#) , sampling from within body cavities [A61B 5/150015](#) , [A61B 5/150045](#)-)}
- A61B 5/150351
 - • • {Caps, stoppers or lids for sealing or closing a blood collection vessel or container e.g. a test-tube or syringe barrel (-caps for bottles or containers in general [B65D 41/00](#)-)}
- A61B 5/150358
 - • • {Strips for collecting blood, e.g. absorbent (-optical reagent test strips [G01N 21/8483](#) ; chemical reagent test strips [G01N 33/4875](#) , [G01N 33/52](#)-)}
- A61B 5/150366
 - • • {Blood collection bags, e.g. connected to the patient by a catheter comprising means for removing a small sample of collected blood from the bag (-collection bags as such [A61J1/00T](#) , [A61M 1/0209](#)-)}
- A61B 5/150374
 - • • {Details of piercing elements or protective means for preventing accidental injuries by such piercing elements (-double-ended hollow needles [A61B 5/150473](#) , [A61B 5/150389](#) ; single-ended hollow needles [A61B 5/150503](#) , [A61B 5/150389](#)-)}
- U A61B 5/150381
 - • • • {Design of piercing elements}

- A61B 5/150412 {Pointed piercing elements, e.g. needles, lancets for piercing the skin (-blade-like piercing elements [A61B 5/150442](#)-)}
- A61B 5/150473 {Double-ended needles e.g. used with pre-evacuated sampling tubes (-hollow piercing element tip design [A61B 5/150396](#) ; needle sets for catheters [A61M 25/06](#) ; needles for bringing media into the body [A61M 5/32](#)-)}
- A61B 5/150503 {Single-ended needles (-hollow piercing element tip design [A61B 5/150396](#) , needle sets for catheters [A61M 25/06](#) , needles for bringing media into the body [A61M 5/32](#)-)}
- U A61B 5/150534 {Design of protective means for piercing elements for preventing accidental needle sticks e.g. shields, caps, protectors, axially extensible sleeves, pivotable protective sleeves}
- U A61B 5/15058 {Joining techniques used for protective means}
- A61B 5/150595 {by snap-lock (*i.e. based on axial displacement*)}(~~*i.e. based on axial displacement*~~)}
- A61B 5/150748 . . . {Having means for aiding positioning of the piercing device at a location where the body is to be pierced (-means for aiding positioning of devices for bringing media into the body [A61M 5/427](#) , locating blood vessels [A61B 5/489](#)-)}
- A61B 5/150763 . . . {with identification means (-identification means for surgical instruments [A61B 19/44](#)-)}
- A61B 5/150847 . . . {Communication to or from blood sampling device (-transmitting measured data [A61B 5/0002](#)-)}
- A61B 5/15087 {short range, e.g. between console and disposable (-using implanted devices [A61B 5/150877](#)-)}
- A61B 5/150992 . . {Blood sampling from a fluid line external to a patient, such as a catheter line, combined with an infusion line; blood sampling from indwelling needle sets, e.g. sealable ports, luer couplings, valves (tubing connectors and couplings [A61M 39/00](#))}
- U A61B 5/151 . . . {Devices} specially adapted for taking samples of capillary blood, e.g. by lancets{, needles or blades}
- U A61B 5/15101 . . . {Details}
- U A61B 5/15126 {Means for controlling the lancing movement, e.g. 2D- or 3D-shaped elements, tooth-shaped elements or sliding guides}
- A61B 5/15128 {comprising 2D- or 3D-shaped elements, e.g. cams, curved guide rails or threads (-comprising tooth-shaped elements [A61B 5/15132](#)-)}
- A61B 5/1513 {comprising linear sliding guides (-comprising tooth-shaped elements [A61B 5/15132](#)-)}
- A61B 5/15146 . . . {Devices loaded with multiple lancets simultaneously, e.g. for serial firing without reloading, for example by use of stocking means.(-multiple simultaneous cutting or piercing [A61B 5/150977](#)-)}
- U A61B 5/15148 {Constructional features of stocking means e.g. strip, roll, disc, cartridge, belt or tube}
- A61B 5/15178 {Stocking means comprising separate compartments or units for new and for used piercing elements (-separate compartments for used piercing elements in piercing devices [A61B 5/15184](#)-)}
- A61B 5/15184 {Piercing device comprising a separate compartment or unit for used piercing elements (-separate compartments for used piercing elements in stocking means [A61B 5/15178](#)-)}
- U A61B 5/153 . . . {Devices} specially adapted for taking samples of venous or arterial blood, e.g. with syringes

- A61B 5/1535
- • {comprising means for indicating vein or arterial entry ([A61B 5/1545](#) takes precedence)}
- A61B 5/155
- • {Devices} specially adapted for continuous or multiple sampling, e.g. at predetermined intervals (-(devices loaded with multiple lancets simultaneously [A61B 5/15146](#)-)}
- A61B 5/16
- Devices for psychotechnics (-(testing capability [G09B 1/00](#) to [G09B 5/00](#)-); Testing reaction times; [Devices for evaluating the psychological state]
- WARNING**
- Groups [A61B 5/167](#) and **A61B5/5/16L** are not complete pending a reorganisation; see also group [A61B 5/16](#)
- A61B 5/161
- • {Flicker fusion testing (-(eye testing [A61B 3/00](#)-)}
- A61B 5/162
- • {Testing reaction times (-(reaction-time training with a substantial physical effort [A63B 69/0053](#) ; reaction-time games [A63F 9/0096](#)-)}
- A61B 5/18
- • for vehicle drivers {or machine operators}
- A61B 5/20
- for measuring urological functions {restricted to the evaluation of the urinary system} (-([A61B 5/4375](#) takes precedence-))
- A61B 5/22
- Ergometry; Measuring muscular strength or the force of a muscular blow ({exercising apparatus [A63B 21/00](#) } ; measuring of work or force in general [G01L](#)-)
- U A61B 5/224
- • {Measuring muscular strength}
- A61B 5/228
- • • {of masticatory organs, e.g. detecting dental force (-(measuring instruments for dentigraphy [A61C 19/04](#)-)}
- A61B 5/40
- {Detecting, measuring or recording for evaluating the nervous system (-([A61B 5/4806](#) , [A61B 5/4821](#) , [A61B 5/4824](#) take precedence-)}
- WARNING**
- Group [A61B 5/40](#) and subgroups are not complete pending a reorganisation, see also groups also groups [A61B 5/00](#) , [A61B 5/02](#) , [A61B 5/0476](#) , [A61B 5/048](#) , [A61B 5/145](#) , [A61B 5/16](#) , [A61B 5/18](#) .
- A61B 5/4005
- • {for evaluating the sensory system (-([A61B 5/12](#) , [A61B 5/4058](#) take precedence-)}
- A61B 5/4029
- • {for evaluating the peripheral nervous systems (-([A61B 5/04001](#) takes precedence-)}
- A61B 5/4058
- • {for evaluating the central nervous system (-([A61B 5/4806](#) , [A61B 5/4821](#) take precedence-)}
- A61B 5/4064
- • • {Evaluating the brain (-([A61B 5/031](#) , [A61B 5/0476](#) , [A61B 5/14553](#) take precedence-)}
- A61B 5/407
- • • {Evaluating the spinal cord (-([A61B 5/4896](#) takes precedence-)}
- A61B 5/4076
- • {Diagnosing or monitoring particular conditions of the nervous system (-([A61B 5/4821](#) , [A61B 5/4824](#) take precedence-)}
- A61B 5/42
- {Detecting, measuring or recording for evaluating the gastrointestinal, the endocrine or the exocrine systems (-([A61B 1/00](#) , [A61B 5/4857](#) , [A61B 5/486](#) , [A61B 5/4866](#) , [A61B 5/4869](#) take precedence-)}
- WARNING**
- Group [A61B 5/42](#) and subgroups are not complete pending a reorganisation, see also groups [A61B 5/00](#) , [A61B 5/02](#) , [A61B 5/0488](#) , [A61B 5/145](#) .
- A61B 5/4261
- • {Evaluating exocrine secretion production (-([A61B 3/101](#) takes precedence-)}

- U A61B 5/43
- {Detecting, measuring or recording for evaluating the reproductive systems}
- WARNING
Group [A61B 5/43](#) and subgroups are not complete pending a reorganisation, see also groups [A61B 5/00](#) , [A61B 5/02](#) , [A61B 5/04](#) , [A61B 5/05](#) , [A61B 5/053](#) , [A61B 5/103](#) , [A61B 5/11](#) , [A61B 5/145](#) .
- U A61B 5/4306
- • {for evaluating the female reproductive systems, e.g. gynaecological evaluations}
- A61B 5/4312
- • • {Breast evaluation or disorder diagnosis (-[A61B 5/0091](#) takes precedence-)}
- A61B 5/4318
- • • {Evaluation of the lower reproductive system (-[A61B 5/4343](#) takes precedence-)}
- A61B 5/4331
- • • • {of the cervix (-[A61B 5/435](#) takes precedence-)}
- U A61B 5/4343
- • • {Pregnancy and labour monitoring, e.g. for labour onset detection}
- A61B 5/4356
- • • • {Assessing uterine contractions (-[A61B 5/033](#) takes precedence-)}
- A61B 5/44
- {Detecting, measuring or recording for evaluating the integumentary system, e.g. skin, hair or nails (-[A61B 5/117](#) takes precedence-)}
- WARNING
Group [A61B 5/44](#) and subgroups are not complete pending a reorganisation, see also groups [A61B 5/00](#) , [A61B 5/05](#) , [A61B 5/053](#) , [A61B 5/103](#) , [A61B 5/145](#) , [A61B 5/68](#) : [A61B 5/00](#) , [A61B 5/01](#) , [A61B 5/02](#) , [A61B 5/03](#) , [A61B 5/04](#) , [A61B 5/05](#) , [A61B 5/06](#) , [A61B 5/07](#) , [A61B 5/08](#) , [A61B 5/103](#) , [A61B 5/12](#) , [A61B 5/145](#) , [A61B 5/20](#) , [A61B 5/22](#)
- A61B 5/45
- {For evaluating or diagnosing the musculoskeletal system or teeth (-[A61B 5/1036](#) , [A61B 5/1074](#) , [A61B 7/006](#) take precedence-)}
- A61B 5/4504
- • {Bones (-[A61B 5/4547](#) takes precedence-)}
- A61B 5/4519
- • {Muscles (-[A61B 5/0488](#) , [A61B 5/224](#) take precedence-)}
- A61B 5/4528
- • {Joints (-[A61B 5/4533](#) , [A61B 5/4538](#) take precedence-)}
- U A61B 5/4538
- {Evaluating a particular part of the musculoskeletal system or a particular medical condition}
- A61B 5/4561
- • • {Evaluating static posture, e.g. undesirable back curvature (-[A61B 5/1116](#) takes precedence-)}
- A61B 5/4566
- • • {Evaluating the spine (-[A61B 5/4561](#) takes precedence-)}
- U A61B 5/48
- {Other medical applications}
- A61B 5/4806
- • {Sleep evaluation (-[A61B 5/4821](#) takes precedence; devices for inducing sleep [A61M 21/02](#)-)}
- A61B 5/4821
- • {Determining level or depth of anaesthesia (-[A61B 5/1106](#) takes precedence-)}
- A61B 5/4824
- • {Touch or pain perception evaluation (-[A61B 5/4821](#) takes precedence-)}
- A61B 5/4845
- • {Toxicology, e.g. by detection of alcohol, drug or toxic products (-[A61B 5/4848](#) takes precedence-)}
- A61B 5/4851
- • {Prosthesis assessment or monitoring (-[A61B 5/04888](#) takes precedence-)}
- A61B 5/4857
- • {Indicating the phase of biorhythm (-clocks or watches with indicators for biological cycles [G04B 19/264](#)-)}
- A61B 5/486
- • {Bio-feedback (-[A61B 5/0482](#) takes precedence-)}
- A61B 5/4866
- • {Evaluating metabolism (-[A61B 5/083](#) takes precedence-)}
- U A61B 5/4869
- • {Determining body composition}
- A61B 5/4881
- • • {Determining interstitial fluid distribution or content within body tissue (-measuring analytes in interstitial fluid in-vivo [A61B 5/1451](#)-)}

- U A61B 5/68
- {Arrangements of detecting, measuring or recording means, e.g. sensors, in relation to patient}
- WARNING**
- Group [A61B 5/68](#) and subgroups are not complete pending a reorganisation, see also groups [A61B 5/00](#) , [A61B 5/01](#) , [A61B 5/02](#) , [A61B 5/03](#) , [A61B 5/04](#) , [A61B 5/05](#) , [A61B 5/06](#) , [A61B 5/07](#) , [A61B 5/08](#) , [A61B 5/103](#) , [A61B 5/12](#) , [A61B 5/145](#) , [A61B 5/20](#) , [A61B 5/22](#)
- U A61B 5/6801
- • {specially adapted to be attached to or worn on the body surface}
- A61B 5/6813
- • • {Specially adapted to be attached to a specific body part (~~-[A61B 5/6802](#) takes precedence-~~)}
- A61B 5/683
- • • {Means for maintaining contact with the body (~~-[A61B 5/6802](#) takes precedence-~~)}
- A61B 5/6832
- • • • {using adhesives (~~-[A61B 5/04087](#) takes precedence-~~)}
- U A61B 5/6846
- • {specially adapted to be brought in contact with an internal body part, i.e. invasive}
- U A61B 5/6847
- • • {mounted on an invasive device}
- A61B 5/686
- • • • {Permanently implanted devices, e.g. pacemakers, other stimulators, biochips (~~-[A61B 5/6861](#) takes precedence-~~)}
- A61B 5/6867
- • • {specially adapted to be attached or implanted in a specific body part (~~-[A61B 5/6847](#) takes precedence-~~)}
- A61B 5/6879
- • • {Means for maintaining contact with the body (~~-[A61B 5/6847](#) takes precedence-~~)}
- A61B 5/72
- {Signal processing specially adapted for physiological signals or for diagnostic purposes (~~-algorithms for computer assisted diagnosis [G06F 19/34](#) ; pattern recognition [G06K 9/00-](#)~~)}
- WARNING**
- Group [A61B 5/72](#) and subgroups are not complete pending a reorganisation; see also other subgroups of [A61B 5/00](#)
- A61B 5/7221
- • {Determining signal validity, reliability or quality (~~-[A61B 5/7207](#) and [A61B 5/7217](#) take precedence-~~)}
- A61B 5/7225
- • {Details of analog processing, e.g. isolation amplifier, gain or sensitivity adjustment, filtering, baseline or drift compensation (~~-[A61B 5/04004](#) , [A61B 5/04012](#) , [A61B 5/0428](#) take precedence; transformers for specific applications [H01F 38/00](#) ; amplifiers [H03F-](#))}~~
- A61B 5/7228
- • {Signal modulation applied to the input signal sent to patient or subject; demodulation to recover the physiological signal (modulation [H03C](#))}
- A61B 5/7235
- • • {Details of waveform analysis (~~-[A61B 5/0452](#) takes precedence-~~)}
- A61B 5/725
- • • • {using specific filters therefor, e.g. Kalman or adaptive filters (~~-[A61B 5/04014](#) and [A61B 5/04017](#) take precedence-~~)}
- A61B 5/7264
- • • • {Classification of physiological signals or data, e.g. using neural networks, statistical classifiers, expert systems or fuzzy systems (~~-neural networks per se [G01N 3/00](#) ; expert systems per se [G06N 5/00-](#))}~~
- A61B 5/7271
- • • {Specific aspects of physiological measurement analysis (~~-[A61B 5/04012](#) , [A61B 5/0452](#) and [A61B 5/048](#) take precedence-~~)}
- A61B 5/7278
- • • • {Artificial waveform generation or derivation, e.g. synthesising signals from measured signals (~~-[A61B 5/04028](#) takes precedence-~~)}
- A61B 5/7282
- • • • {Event detection, e.g. detecting unique waveforms indicative of a medical condition (~~-[A61B 5/4094](#) , [A61B 5/4818](#) , [A61B 5/0452](#) , [A61B 5/0823](#) take precedence-~~)}

- A61B 5/7285
- • {for synchronising or triggering a physiological measurement or image acquisition with a physiological event or waveform, e.g. an ECG signal (-[A61B 6/5205](#) , [A61B 6/541](#) , [A61B 8/5207](#) , [A61B 8/543](#) take precedence-)}
- A61B 5/7296
- • for compensation of signal variation due to stress unintentionally induced in the patient, e.g. due to the stress of the medical environment or examination (-deliberately inducing physiological or psychological stress [A61B 5/4884](#)-)
- A61B 5/74
- {Details of notification to user or communication with user or patient (-indicating measured values [G01D 7/00](#)-); user input means(-input or output arrangements for computers [G06F 3/00](#)-)}
- WARNING
Group [A61B 5/74](#) and subgroups are not complete pending a reorganisation; see also other subgroups of [A61B 5/00](#)
- U A61B 5/7405
- {using sound}
- A61B 5/7415
- • {Sound rendering of measured values, e.g. by pitch or volume variation (-[A61B 5/741](#) takes precedence-)}
- A61B 5/742
- {using visual displays (-[A61B 5/044](#) takes precedence-)}
- A61B 5/7425
- • {Displaying combinations of multiple images regardless of image source, e.g. displaying a reference anatomical image with a live image (-geometric transforms for image registration [G06T 3/0068](#) ; enhancement using image fusion [G06T 5/50](#) ; algorithms for registration of images [G06T 7/0024](#)-)}
- A61B 5/746
- {Alarms related to a physiological condition, e.g. details of setting alarm thresholds or avoiding false alarms (alarms per se [G08B](#))}
- A61B 5/7465
- {Arrangements for interactive communication between patient and care services, e.g. by using a telephone network (-telemetry of measured physiological signal [A61B 5/0002](#)-)}
- A61B 6/00**
- Apparatus for radiation diagnosis, e.g. combined with radiation therapy equipment (-analysis of materials using radiation [G01N 23/00](#) , detecting hidden objects by radiation [G01V 5/0008](#) , radiodiagnostic or X-ray contrast preparations [A61K 49/00](#) ; radiation therapy per se [A61N 5/00](#) ; instruments measuring radiation intensity for application in the field of nuclear medicine, e.g. in vivo counting [G01T 1/161](#) ; apparatus for taking X-ray photographs [G03B 42/02](#) ; X-ray photographic processes [G03C 5/16](#) ; irradiation devices [G21K](#); X-ray apparatus or circuits therefor [H05G 1/00](#)-)**
- WARNING
Groups [A61B 6/40](#) to [A61B 6/58](#) do not correspond to former or current IPC groups. Concordance CPC - IPC for these groups is as follows: - [A61B 6/40](#) : [A61B 6/00](#) - [A61B 6/42](#) : [A61B 6/00](#) - [A61B 6/44](#) : [A61B 6/00](#) - [A61B 6/46](#) : [A61B 6/00](#) - [A61B 6/48](#) : [A61B 6/00](#) - [A61B 6/50](#) : [A61B 6/00](#) - [A61B 6/52](#) : [A61B 6/00](#) - [A61B 6/54](#) : [A61B 6/00](#) - [A61B 6/56](#) : [A61B 6/00](#) - [A61B 6/58](#) : [A61B 6/00](#)
- U A61B 6/02
- Devices for diagnosis sequentially in different planes; Stereoscopic radiation diagnosis
- A61B 6/03
- • Computerised tomographs ({ diagnosis by magnetic resonance imaging [A61B 5/055](#) ; echo-tomography [A61B 8/14](#) ; { medical informatics [G06F 19/30](#) })
- A61B 6/037
- • {Emission tomography (-detector details for PET [G01T 1/2985](#) , detector details for SPECT [G01T 1/1644](#)-)}
- A61B 6/04
- Positioning of patients; Tilttable beds or the like (-operating tables [A61G 13/00](#) ; operating chairs [A61G 15/00](#)-)

- A61B 6/06
 - Diaphragms {for particular diagnostic applications, e.g. tomography, i.e. not of general applicability(-diaphragms, e.g. variable, or collimators in general [G21K 1/02-](#))}
- A61B 6/10
 - Application or adaptation of safety means (-protection against dangerous radiation in general [G21F-](#))
- A61B 6/107
 - • {Protection against radiation, e.g. shielding (-techniques for handling radiation not otherwise provided for [G21K-](#))}
- A61B 6/12
 - Devices for detecting or locating foreign bodies (-[A61B 6/02](#) takes precedence; { radio-opaque markers [A61B 19/54](#) })
- U A61B 6/14
 - Applications or adaptations for dentistry
- A61B 6/145
 - • {by intraoral means (-X-ray tubes having a small cross-section to facilitate introduction into small cavities [H01J 35/32-](#))}
- A61B 6/40
 - {with arrangements for generating radiation specially adapted for radiation diagnosis (-X-ray tubes or details thereof [H01J 35/00-](#))}
- A61B 6/4007
 - • {characterised by using a plurality of source units (-circuit arrangements driving apparatuses comprising more than one X ray tube [H05G 1/70-](#))}
- A61B 6/4035
 - • {the source being combined with a filter or grating (-filters for radiation per se [G21K 1/10-](#))}

WARNING
Groups [A61B 6/4035](#) and [A61B 6/4042](#) are not complete pending a reorganisation; see also [A61B 6/06](#)
- A61B 6/405
 - • {Source units adapted to modify characteristics of the beam during the data acquisition process (-[A61B 6/4021](#) , [A61B 6/4035](#) take precedence; arrangements changing the time structure of an already generated radiation beam [G21K 1/043-](#))}
- A61B 6/4057
 - • {by using a source unit in the interior of the body (-[A61B 6/037](#) takes precedence; X-ray tubes with small cross-section [H01J 35/32-](#))}
- A61B 6/42
 - {with arrangements for detecting radiation specially adapted for radiation diagnosis (-details of radiation detection [G01T 1/00-](#))}
- U A61B 6/4208
 - • {characterised by using a particular type of detector}
- A61B 6/4216
 - • • {using storage phosphor screens (-details of stimuable phosphor sheets [G01T 1/2012-](#))}
- A61B 6/4233
 - • • {using matrix detectors (-for semiconductor radiation detectors [G01T 1/24](#) , [G01T 1/2928-](#))}
- A61B 6/4241
 - • • {using energy resolving detectors, e.g. photon counting (-detectors for nuclear medicine [G01T 1/16](#) , [G01T 1/29-](#))}
- A61B 6/425
 - • • {using detectors specifically adapted to be used in the interior of the body (-detector details for in vivo counting [G01T 1/161-](#))}
- A61B 6/4258
 - • • {for detecting non x-ray radiation, e.g. gamma radiation (-[A61B 6/037](#) takes precedence-)}
- A61B 6/4266
 - • {characterised by using a plurality of detector units (-[A61B 6/4014](#) takes precedence-)}
- U A61B 6/44
 - {Constructional features of the device for radiation diagnosis}
- A61B 6/4429
 - • {related to the mounting of source units and detector units (-[A61B 6/02](#) takes precedence-)}
- A61B 6/4488
 - • {Means for cooling (-[A61B 6/045](#) takes precedence-)}
- U A61B 6/46
 - {with special arrangements for interfacing with the operator or the patient}
- U A61B 6/461
 - • {Displaying means of special interest}
- A61B 6/466
 - • • {adapted to display 3D data (-3D image rendering [G06T 15/00](#) ; manipulating 3D models for computer graphics [G06T 19/00-](#))}

- A61B 6/48
- {Diagnostic techniques (-[A61B 6/022](#) , [A61B 6/032](#) , [A61B 6/037](#) take precedence-)}
- A61B 6/50
- {Clinical applications (-dentistry [A61B 6/14](#) takes precedence-)}
- A61B 6/52
- {Devices using data or image processing specially adapted for radiation diagnosis (image processing per se [G06T](#))}
- WARNING**
Groups of [A61B 6/52](#) are not complete pending a reorganisation; see [A61B 6/00](#) , [A61B 6/50](#) , **[A61B6/00F](#)** , [A61B 6/03](#) , [A61B 6/032](#) and [A61B 6/04](#)
- U A61B 6/5211
- {involving processing of medical diagnostic data}
- A61B 6/5217
- • {extracting a diagnostic or physiological parameter from medical diagnostic data (-details of algorithms to analyse biomedical images [G06T 7/0012](#) ; algorithms for computer assisted diagnosis [G06F 19/34](#)-)}
- A61B 6/5229
- • {combining image data of a patient, e.g. combining a functional image with an anatomical image (-details of algorithms for image registration [G06T 7/0024](#)-)}
- A61B 6/5258
- {involving detection or reduction of artifacts or noise (-details of algorithms for image enhancement [G06T 7/0022](#)-)}
- U A61B 6/5264
- • {due to motion}
- A61B 6/527
- • • {using data from a motion artifact sensor (-[A61B 6/5276](#) takes precedence-)}
- U A61B 6/54
- {Control of devices for radiation diagnosis}
- A61B 6/547
- {involving tracking of position of the device or parts of the device (-using an image of a phantom [A61B 6/584](#)-)}
- U A61B 6/56
- {Details of data transmission or power supply, e.g. use of slip rings}
- A61B 6/563
- {involving image data transmission via a network (-transmission or management of patient information [G06F 19/32](#)-)}
- U A61B 6/58
- {Testing, adjusting or calibrating devices for radiation diagnosis}
- U A61B 6/582
- {Calibration}
- A61B 6/583
- • {using calibration phantoms (-models for medical purposes [G09B 23/28](#)-)}
- U A61B 7/00**
- Instruments for auscultation**
- A61B 7/006
- {Detecting skeletal, cartilage or muscle noise (-[A61B 7/003](#) and [A61B 7/008](#) take precedence-)}
- A61B 7/02
- Stethoscopes((-acoustic details thereof [G10K 11/00](#)-)}
- A61B 7/023
- {for introduction into the body, e.g. into the oesophagus (-oesophageal ECG probes [A61B 5/0421](#)-)}
- A61B 7/04
- • Electric stethoscopes (-microphones, acoustic transducers thereof [H04R](#)-)
- A61B 7/045
- • • {Detection of Korotkoff sounds (-[A61B 5/0225](#) takes precedence; measuring blood pressure [A61B 5/021](#)-)}
- A61B 8/00**
- Diagnosis using ultrasonic, sonic or infrasonic waves (-imaging of objects using sonar [G01S 15/00](#)-)**
- WARNING**
Groups [A61B 8/40](#) - [A61B 8/58](#) do not correspond to former or current IPC groups. Concordance CPC : IPC groups is as follows: - [A61B 8/40](#) - [A61B 8/4444](#) : [A61B 8/00](#) - [A61B 8/445](#) : [A61B 8/12](#) - [A61B 8/4455](#) - [A61B 8/46](#) : [A61B 8/00](#) - [A61B 8/48](#) - [A61B 8/52](#) : [A61B 8/08](#) - [A61B 8/54](#) - [A61B 8/58](#) : [A61B 8/00](#)
- A61B 8/06
- Measuring blood flow (-measuring volume flow in general [G01F](#) , e.g. [G01F 1/66](#) , [G01F 1/72](#) ; measuring speed of fluids in general [G01P 5/00](#)-)
- A61B 8/065
- {to determine blood output from the heart (-in general [A61B 5/029](#)-)}

- A61B 8/08
 - Detecting organic movements or changes, e.g. tumours, cysts, swellings (-[A61B 8/02](#) to [A61B 8/06](#) take precedence-)
- A61B 8/0875
 - • {for diagnosis of bone (-[A61B 5/4504](#) takes precedence-)}
- A61B 8/12
 - In body cavities or body tracts, e.g. by using catheters (-catheters per se [A61M 25/00](#)-)}
- A61B 8/13
 - Tomography (-[A61B 8/10](#) , [A61B 8/12](#) take precedence; tomography for radiation diagnosis [A61B 6/02](#)-)
- U A61B 8/44
 - {Constructional features of the ultrasonic, sonic or infrasonic diagnostic device}

WARNING
This subgroup is not complete pending a reorganisation, see [A61B 8/00](#)
- U A61B 8/4483
 - • {characterised by features of the ultrasound transducer}
- A61B 8/4494
 - • • {characterised by the arrangement of the transducer elements (-devices for short-range imaging using particular transducer elements arrangements under [G01S 15/8909](#) ; arrangements of transducers in generation of mechanical vibrations of infrasonic, sonic or ultrasonic frequency [B06B 1/0607](#)-)}
- U A61B 8/46
 - {Ultrasonic, sonic or infrasonic diagnostic devices with special arrangements for interfacing with the operator or the patient}

WARNING
This subgroup is not complete pending a reorganisation, see [A61B 8/00](#)
- U A61B 8/461
 - • {Displaying means of special interest}
- A61B 8/463
 - • • {characterised by displaying multiple images or images and diagnostic data on one display (-composite display in devices for short-range imaging with acoustic waves [G01S 7/52074](#)-)}
- A61B 8/466
 - • • {adapted to display 3D data (-3D imaging and stereoscopic displays in devices for short-range imaging with acoustic waves [G01S 15/8993](#) and [G01S 7/52068](#) , respectively; 3D image rendering [G06T 15/00](#) ; manipulating 3D models for computer graphics [G06T 19/00](#)-)}
- A61B 8/48
 - {Diagnostic techniques (-[A61B 8/13](#) takes precedence-)}

WARNING
This subgroup is not complete pending a reorganisation, see [A61B 8/08](#)
- A61B 8/481
 - • {involving the use of contrast agent, e.g. micro-bubbles introduced into the bloodstream (-analysis of echo signal exploiting properties of a contrast enhancer in devices for short-range imaging with acoustic waves [G01S 7/52039](#)-)}
- A61B 8/52
 - {Devices using data or image processing specially adapted for diagnosis using ultrasonic, sonic or infrasonic waves (image processing per se [G06T](#))}

WARNING
This subgroup is not complete pending a reorganisation, see [A61B 8/08](#) and [A61B 8/14](#)
- A61B 8/5207
 - • {involving processing of raw data to produce diagnostic data, e.g. for generating an image (-reconstruction [G06T 11/00](#)-)}
- U A61B 8/5215
 - • {involving processing of medical diagnostic data}
- A61B 8/5223
 - • • {for extracting a diagnostic or physiological parameter from medical diagnostic data (-for algorithms to analyse biomedical images [G06T 7/0012](#) ; for algorithms for computer assisted diagnosis [G06F 19/34](#)-)}

- A61B 8/5238
- • {for combining image data of patient, e.g. merging several images from different acquisition modes into one image (-for image registration algorithms [G06T 7/0024-](#))}
- A61B 8/5269
- • {involving detection or reduction of artifacts (-for image enhancement algorithms [G06T 5/00-](#))}
- U A61B 8/56
- {Details of data transmission or power supply}
- WARNING
This subgroup is not complete pending a reorganisation, see [A61B 8/00](#)
- A61B 8/565
- • {involving data transmission via a network (-management of patient information using digital computers [G06F 19/32-](#))}
- U A61B 8/58
- {Testing, adjusting or calibrating the diagnostic device}
- WARNING
This subgroup is not complete pending a reorganisation, see [A61B 8/00](#)
- A61B 8/587
- • {Calibration phantoms (-models for medical purposes [G09B 23/28-](#))}
- U **A61B 9/00** **Instruments for examination by percussion; Pleximeters**
- A61B 9/005
- {Electric apparatus for detecting reflex action, e.g. monitoring depth of anaesthesia (-detection of movements [A61B 5/11-](#))}
- A61B 10/00** **Other methods or instruments for diagnosis, e.g. instruments for taking a cell sample, for biopsy, for vaccination diagnosis (-vaccination prophylaxis, vaccination therapy [A61B 17/20-](#)); Sex determination; Ovulation-period determination (-menstruation tables [G06C 3/00-](#)); Throat striking implements**
- NOTE
Attention is drawn to group [A61F 13/15](#) which provides for swabs
- A61B 10/0012
- {Ovulation-period determination (-for animals [A61D 17/002-](#))}
- A61B 10/0038
- {Devices for taking faeces samples; Faecal examination devices (-anal receptacles [A61F 5/451-](#))}
- A61B 10/0041
- {Detection of breast cancer (-mammography by transillumination [A61B 5/0091](#) , by X-rays [A61B 6/502](#) , by ultrasonic means [A61B 8/0825-](#))}
- A61B 10/0045
- {Devices for taking samples of body liquids (-devices for taking blood samples [A61B 5/1405-](#))}
- A61B 10/0051
- • {for taking saliva or sputum samples (-devices for receiving spittle [A61J 9/00-](#))}
- A61B 10/0058
- • {for taking sperm samples (-artificial insemination [A61B 17/43](#) ; for animals [A61D 19/021](#) ; genital receptacles for the male member [A61F 5/453](#) ; massage of the genitals [A61H 19/00-](#))}
- A61B 10/0064
- • {for taking sweat or sebum samples (-measuring sweat production [A61B 5/4266-](#))}
- A61B 10/007
- • {for taking urine samples (-measuring urological functions [A61B 5/20](#) ; genital receptacles [A61F 5/451](#) ; urinals for bed-ridden persons [A61G 9/006-](#))}
- A61B 10/0096
- {Casings for storing test samples (-[A61B 10/0038](#) and [A61B 10/0045](#) take precedence; preservation of living parts of the human or animal body [A01N 1/02](#) ; containers for retaining a material to be analysed [B01L 3/50](#) ; test tubes [B01L 3/14](#) ; containers for enzymology or microbiology [C12M 1/16](#) ; swab-sampler being part of enzymology or microbiology container [C12M 1/30-](#))}
- A61B 10/02
- {Instruments for taking a cell sample or for biopsy (-[A61B 10/0038](#) and [A61B 10/0045](#) take precedence; needle locating or guiding means [A61B 17/3403](#) ; samplers for enzymology or microbiology [C12M 1/26](#) ; sampling or preparing biological specimens [G01N 33/48-](#))}

- U A61B 10/0233 · · {Pointed or sharp biopsy instruments}
- A61B 10/0283 · · · {with vacuum aspiration, e.g. caused by retractable plunger or by connected syringe (-[A61B 10/025](#) , [A61B 10/0266](#) take precedence-)}
- A61B 10/0291 · · {for uterus (-[A61B 10/0045](#) takes precedence-)}
- U A61B 10/04 · · Endoscopic instruments
- A61B 2010/045 · · · {Needles (-pointed biopsy devices with vacuum aspiration [A61B 10/0283](#)-)}
- A61B 10/06 · · Biopsy forceps {e.g. with cup-shaped jaws}
- A61B 13/00 Instruments for depressing the tongue (-combined with illuminating and viewing instruments [A61B 1/24](#)-)**
- A61B 16/00 Devices specially adapted for vivisection or autopsy (similar devices for medical purposes, see the relevant groups for such devices;{ autopsy tables [A61G 13/0027](#))}**
- A61B 17/00 Surgical instruments, devices or methods, e.g. tourniquets (-[A61B 18/00](#) takes precedence; contraceptive devices, pessaries, or applicators therefor [A61F 6/00](#) ; eye surgery [A61F 9/007](#) ; ear surgery [A61F 11/00](#)-)**
- A61B 2017/00004 · {(bio)absorbable, (bio)resorbable, resorptive (-for implantable prostheses [A61F 2210/0004](#)-)}
- A61B 17/00008 · {Vein tendon strippers (-tube strippers [A61M 1/0078](#)-)}
- U A61B 2017/00017 · {Electrical control of surgical instruments}
- A61B 2017/00115 · · {with audible or visual output (-with imaging means [A61B2019/5225](#)-)}
- A61B 2017/00132 · · {Setting operation time of a device (-[A61B 2017/00123](#) takes precedence-)}
- A61B 17/00234 · {for minimally invasive surgery (-[A61B 17/0218](#) , [A61B 17/0469](#) , [A61B 17/12013](#) , [A61B 17/1285](#) , [A61B 17/29](#) , [A61B 17/320016](#) take precedence-)}
- A61B 2017/00238 · · {Type of minimally invasive operation (-[A61B 2017/00805](#) takes precedence-)}
- A61B 2017/00349 · · {Needle-like instruments having hook or barb-like gripping means, e.g. for grasping suture or tissue (-[A61B 17/06066](#) takes precedence-)}
- A61B 2017/00353 · · {one mechanical instrument performing multiple functions, e.g. cutting and grasping (-channel for multiple instruments [A61B 2017/3445](#) ; instrument channel [A61B 2017/22072](#) ; replaceable heads [A61B 2017/2931](#) ; suction [A61M 1/00](#)-)}
- A61B 2017/00362 · · {Packages or dispensers for MIS instruments (-[A61B 2017/0479](#) takes precedence-)}
- A61B 2017/0046 · {with a releasable handle; with handle and operating part separable (-for prosthetic joint-implanting tools [A61F 2002/4624](#)-)}
- A61B 2017/00464 · · {for use with different instruments (-with hole for different instruments [A61B 2017/22072](#)-)}
- A61B 2017/00473 · · {Distal part, e.g. tip or head (-[A61B 2017/00464](#) takes precedence-)}
- A61B 2017/00477 · {Coupling (-[A61B 2017/0046](#) takes precedence-)}
- A61B 17/00491 · {Surgical glue applicators (-surgical adhesives [A61L 24/00](#) ; two-component delivery syringes [A61M 5/19](#)-)}
- A61B 2017/00535 · {pneumatically or hydraulically operated (-[A61B 2017/22051](#) , [A61B 2019/385](#) take precedence-)}
- A61B 2017/00557 · · {inflatable (-[A61B 2017/22051](#) takes precedence-)}
- A61B 17/0057 · {Implements for plugging an opening in the wall of a hollow or tubular organ, e.g. for sealing a vessel puncture or closing a cardiac septal defect (-sutures [A61B 17/04](#) ; closing rectum or urethra near body surface [A61F 2/0009](#)-)}

- A61B 2017/00681 • {Aspects not otherwise provided for (not used)}
- A61B 2017/00743 • {Type of operation; Specification of treatment sites (~~A61B 2017/00238~~ takes precedence-)}
- A61B 2017/00778 • • {Operations on blood vessels (~~A61B 2017/22097~~ , ~~A61B 2017/320741~~ take precedence-)}
- U A61B 2017/00831 • {Material properties}
- A61B 2017/00836 • • {corrosion-resistant (~~A61B 2017/00853~~ takes precedence; preventing galvanic or electrolytic corrosion in prostheses ~~A61F 2210/0009~~-)}
- A61B 2017/0084 • • {low friction (~~A61B 2017/00853~~ takes precedence-)}
- A61B 2017/00853 • • {low friction, hydrophobic and corrosion-resistant fluorocarbon resin coating (~~ptf, ptfe, polytetrafluoroethylene~~)}(~~ptf, ptfe, polytetrafluoroethylene~~)}
- A61B 2017/00858 • • {high friction, non-slip (~~on handles A61B 2017/00429~~-)}
- A61B 2017/00862 • • {elastic or resilient (~~for sutures A61B 2017/0618~~-)}
- A61B 2017/00867 • • {shape memory effect (~~for prostheses A61F 2210/0014~~-)}
- A61B 17/02 • for holding wounds open; Tractors ({ specula ~~A61B 1/32~~ } ; drainage appliances for wounds ~~A61M 27/00~~-)
- A61B 17/0218 • • {for minimally invasive surgery (~~A61B 17/0218~~ , ~~A61B 17/0281~~ , ~~A61B 17/0469~~ , ~~A61B 17/12013~~ , ~~A61B 17/1285~~ , ~~A61B 17/29~~ , ~~A61B 17/320016~~ take precedence-)}
- A61B 2017/0237 • • {for heart surgery (~~endoscopic heart surgery A61B 2017/00243~~ ; endoscopic access devices, i.e. trocars, ~~A61B 17/34~~-)}
- A61B 2017/0243 • • • {for immobilizing local areas of the heart, e.g. while it beats (~~trocars attached to inner organs or inner body tissue A61B 2017/3488~~-)}
- A61B 17/04 • for suturing wounds; Holders or packages for needles or suture materials (~~suture materials A61L 17/00~~-)
- A61B 17/0401 • • {Suture anchors, buttons or pledgets, i.e. means for attaching sutures to bone, cartilage or soft tissue; Instruments for applying or removing suture anchors (~~A61B 17/0642~~ takes precedence; fixation devices for tendons or ligaments ~~A61F 2/0811~~-)}
- A61B 2017/0403 • • • {Dowels (~~other bone dowels 17:68~~; dowels for connecting prosthetic parts ~~A61F 2002/30436~~-)}
- A61B 2017/0408 • • • {Rivets (~~other bone rivets 17:68~~; rivets for connecting prosthetic parts ~~A61F2002/3044~~ , ~~A61F2220/041~~-)}
- A61B 2017/0409 • • • {Instruments for applying suture anchors (~~for applying suture clamps, clips or locks A61B 2017/0488~~-)}
- A61B 2017/0411 • • • {Instruments for removing suture anchors (~~for removing suture clamps, clips or locks A61B 2017/049~~-)}
- A61B 2017/0414 • • • {having a suture-receiving opening, e.g. lateral opening (~~lateral eyelet for attaching suture to needle A61B 2017/06019~~-)}
- A61B 17/0467 • • {Instruments for cutting sutures (~~surgical cutting instruments A61B 17/32~~-)}
- U A61B 17/0469 • • {Suturing instruments for use in minimally invasive surgery, e.g. endoscopic surgery}
- A61B 2017/047 • • • {having at least one proximally pointing needle located at the distal end of the instrument, e.g. for suturing trocar puncture wounds starting from inside the body (~~J-shaped suture needles A61B 2017/0608~~-)}
- A61B 17/0482 • • {Needle or suture guides (~~guides for drills, pins or wire A61B 17/17~~ ; for puncturing needles ~~A61B 17/3403~~-)}
- A61B 17/0483 • • {Hand-held instruments for holding sutures (~~A61B 17/0469~~ takes precedence; other holders for needles or sutures ~~A61B 17/06061~~ ; surgical forceps ~~A61B 17/28~~ ; surgical pincettes ~~A61B 17/30~~-)}

- A61B 17/0487 . . {Suture clamps, clips or locks, e.g. for replacing suture knots; Instruments for applying or removing suture clamps, clips or locks (-suture anchors [A61B 17/0401](#) ; wound clamps or clips [A61B 17/08](#) ; ligaturing clamps or clips [A61B 17/122](#)-)}
- A61B 2017/0488 . . . {Instruments for applying suture clamps, clips or locks (-for applying suture anchors [A61B 2017/0409](#) ; for applying wound clamps [A61B 17/10](#) ; for applying ligaturing clamps or clips [A61B 17/128](#)-)}
- A61B 2017/049 . . . {Instruments for removing suture clamps, clips or locks (-for removing suture anchors [A61B 2017/0411](#) ; for removing wound clamps [A61B 17/10](#) ; for removing ligaturing clamps or clips [A61B 17/128](#)-)}
- A61B 17/06 . . Needles; {Sutures; Needle-suture combinations}; Holders or packages for needles or suture materials (-puncturing needles [A61B 17/34](#) ; nerve needles [A61C 5/02](#) ; hypodermic needles [A61M 5/32](#) ; { sewing needles [D05B 85/00](#) })
- A61B 17/06004 . . . {Means for attaching suture to needle (-tipping [A61B 17/06195](#) ; connecting wire to other metallic objects [B21F 15/00](#)-)}
- A61B 2017/06019 {by means of a suture-receiving lateral eyelet machined in the needle (-lateral opening for attaching suture to suture anchor [A61B 2017/0414](#)-)}
- A61B 2017/06033 {using adhesives (-glue applicators [A61B 17/00491](#) ; for connecting prosthetic parts [A61F 2002/30448](#)-)}
- A61B 2017/06038 {soldered or brazed or welded (-for connecting prosthetic parts [A61F 2002/30451](#), [A61F 2220/0058](#)-)}
- A61B 2017/06052 . . . {Needle-suture combinations in which a suture is extending inside a hollow tubular needle, e.g. over the entire length of the needle (-hollow suture needles [A61B 2017/061](#)-)}
- A61B 17/06061 . . . {Holders for needles or sutures, e.g. racks, stands (-hand-held holding instruments [A61B 17/0483](#) ; holders for articles [A61B 19/0256](#) ; racks for syringes or for hypodermic or infusion needles [A61M 5/008](#)-)}
- A61B 17/06066 . . . {Needles, e.g. needle tip configurations (-making needles [B21G 1/00](#)-)}
- A61B 2017/06076 {helically or spirally coiled (-for sutures [A61B 2017/06171](#)-)}
- A61B 2017/06085 {having a blunt tip (-blunt dissectors [A61B 2017/320044](#)-)}
- A61B 2017/0609 {having sharp tips at both ends, e.g. shuttle needle alternately retained and released by first and second facing jaws of a suturing instrument (-MIS suturing instruments [A61B 17/0469](#) ; jaws of MIS forceps [A61B 2017/2926](#)-)}
- A61B 2017/061 {hollow or tubular (-suture extending inside a hollow needle [A61B 2017/06052](#) ; hollow sutures [A61B 2017/06185](#)-)}
- A61B 17/06114 . . . {Packages or dispensers for needles or sutures (-packages for sharps [A61B 19/0262](#) ; for dental floss [A61C 15/043](#) ; packages for needles in general [B65D 85/24](#)-)}
- A61B 17/06161 . . . {Devices for removing or collecting used needles or sutures (-[A61B 17/0467](#) takes precedence; for sharps [A61B 19/0288](#)-)}
- A61B 17/06166 . . . {Sutures (-suture materials [A61L 17/00](#) ; manufacture of artificial threads [D01D](#) ; treatment of threads [D06M](#)-)}
- A61B 2017/06171 {helically or spirally coiled (-for needles [A61B 2017/06076](#)-)}
- A61B 2017/0618 {elastic, e.g. stretchable (-for prostheses [A61F 2210/0057](#)-)}
- A61B 2017/06185 {hollow or tubular (-hollow suture needles [A61B 2017/061](#)-)}
- A61B 2017/0619 {thermoplastic, e.g. for bonding, welding, fusing or cutting the suture by melting it (-suture cutters [A61B 17/0467](#) ; ultrasonic cutters [A61B 17/320068](#) ; electrically heated instruments [A61B2018/08](#)-)}

- A61B 17/06195
 - . . . {Apparatus or means for preparing the cut end of the suture thread to be attached to the needle, e.g. tipping to prevent brooming (~~A61B 17/06004~~ takes precedence)}
- U A61B 17/062
 - . . . Needle manipulators
- A61B 17/0625
 - {the needle being specially adapted to interact with the manipulator, e.g. being ridged to snap fit in a hole of the manipulator (~~A61B 17/06109~~ takes precedence)}
- A61B 17/068
 - . {Surgical staplers, e.g. containing multiple staples or clamps} (-staplers containing only one staple [A61B 17/10](#) ; magazines or containers for staples [A61B 17/105](#) ; for performing anastomosis [A61B 17/115](#) ; { staplers in general [B25C 5/00](#) })
- A61B 17/076
 - . for removing surgical staples {or wound clamps}
- A61B 17/08
 - . Wound clamps {or clips, i.e. not or only partly penetrating the tissue} (-suture bridges [A61B 17/0466](#)); Devices for bringing together the edges of a wound
- A61B 2017/081
 - . . {Tissue approximator (~~A61B 2017/1103~~ , [A61B 17/8866](#) take precedence)}
- A61B 17/10
 - . for applying or removing wound clamps, {e.g. containing only one clamp or staple (~~A61B 17/076~~ takes precedence; containing multiple wound clamps [A61B 17/068](#))}; Wound clamp magazines (-containers, packaging elements or packages specially adapted for particular articles or with special means for dispensing contents [B65D 83/00](#) , [B65D 85/00](#)-)
- A61B 17/105
 - . . {Wound clamp magazines {for packaging sharps [A61B 19/0262](#)}}
- U A61B 17/11
 - . for performing anastomosis; Buttons for anastomosis
- A61B 2017/1135
 - . . {End-to-side connections, e.g. T- or Y-connections (~~Y-shaped blood vessel prostheses A61F 2002/065~~ ~~Y-shaped blood vessel prostheses A61F 2002/065~~)}
- A61B 17/115
 - . . Staplers {for performing anastomosis in a single operation}
- A61B 17/12
 - . for ligaturing or otherwise compressing tubular parts of the body, e.g. blood vessels, umbilical cord (-specially adapted for vas deferens or fallopian tubes [A61F 6/20](#) ; materials for ligaturing blood vessels [A61L 17/00](#)-)
- A61B 17/12022
 - . . {Occluding by internal devices, e.g. balloons or releasable wires (-plugging an opening in the wall of an organ [A61B 17/0057](#) ; occluders for the cervical canal [A61F 6/146](#) ; vas deferens occluders [A61F 6/20](#)-)}
- A61B 17/12027
 - . . . {Type of occlusion (~~A61B 17/12113~~ takes precedence)}
- U A61B 17/12099
 - . . . {characterised by the location of the occluder}
- A61B 17/12122
 - {within the heart (-for closing a cardiac septal defect [A61B 17/0057](#)-)}
- U A61B 17/12131
 - . . . {characterised by the type of occluding device}
- U A61B 17/1214
 - {Coils or wires}
- A61B 17/12145
 - {having a pre-set deployed three-dimensional shape (-methods of manufacturing [A61B 2017/00526](#)-)}
- A61B 17/12168
 - {having a mesh structure (~~A61B 17/1214~~ takes precedence)}
- A61B 17/12172
 - {having a pre-set deployed three-dimensional shape (-methods of manufacturing [A61B 2017/00526](#)-)}
- A61B 17/122
 - . . Clamps or clips, {e.g. for the umbilical cord (-for the vas deferens [A61F 6/206](#)-)}
- A61B 17/1222
 - . . . {Packages or dispensers therefor (-clip magazines incorporated in a clip-applying instrument [A61B 17/128](#) ; for surgical articles [A61B 19/026](#)-)}
- A61B 17/132
 - . . Tourniquets {(-sphygmometers [A61B 5/02](#)-)}
- A61B 17/1322
 - . . . {comprising a flexible encircling member (~~A61B 17/135~~ takes precedence)}
- A61B 17/1325
 - {with means for applying local pressure (-pressure pads [A61F 5/30](#)-)}

- A61B 17/135
- • • inflatable (for measuring blood pressure [A61B 5/022](#) ; inflatable pressure pads [A61F 5/34](#)-)
- A61B 17/14
- Surgical saws ({ [A61B 17/1637](#) takes precedence } ; tooth saws [A61C 3/12](#) ; { saws for jaw bone [A61C 8/0089](#) } ; cast-cutting saws [A61F 15/02](#)-); {Accessories therefor}
- WARNING
- New subgroups of [A61B 17/14](#) are not complete, pending a reorganisation. See provisionally also group [A61B 17/14](#)
- A61B 17/15
- • Guides therefor({arrangements for guiding straight saw blades in general [B23D 51/025](#)-})
- A61B 17/16
- {Bone cutting, breaking or removal means other than saws, e.g.}Osteoclasts; Drills or chisels for bones; Trepan{{arthroscopic bone cutters [A61B 17/320016](#) ; dental implant drills potentially for other surgical use [A61C 8/0089](#) ; bone grinders [A61F 2/4644](#) , [A22C 17/06](#) ; [A61B 17/1662](#) takes precedence over all other subgroups except [A61B 17/17](#)-})
- WARNING
- New groups [A61B 17/1679](#) , [A61B 17/1682](#) , [A61B 17/1684](#) , [A61B 17/1686](#) , [A61B 17/1688](#) , [A61B 17/1691](#) and [A61B 17/1693](#) are not complete, pending a reorganisation. See provisionally also group [A61B 17/16](#) and subgroups
- A61B 17/1613
- • {Component parts (not used, see subgroups)}
- A61B 17/1622
- • • {Drill handpieces (-[A61B 17/1626](#) , [A61B 17/1628](#) take precedence-)}
- A61B 17/1631
- • • {Special drive shafts, e.g. flexible shafts (-[A61B 17/1642](#) , [A61B 17/164](#) take precedence-)}
- A61B 17/1633
- • • {Sleeves i.e. non-rotating parts surrounding the bit shaft, e.g. the sleeve forming a single unit with the bit shaft (-[A61B 17/1644](#) takes precedence-)}
- A61B 17/1637
- • {Hollow drills or saws producing a curved cut, e.g. cylindrical (-[A61B 10/025](#) , [A61B 17/1695](#) take precedence-)}
- U A61B 17/1662
- • {for particular parts of the body}
- WARNING
- Subgroups [A61B 17/1679](#) , [A61B 17/1682](#) , [A61B 17/1684](#) , [A61B 17/1686](#) , [A61B 17/1688](#) , [A61B 17/1691](#) and [A61B 17/1693](#) are not complete pending a reorganisation. See also [A61B 17/16](#) and subgroups thereof especially [A61B 17/1662](#)
- U A61B 17/1664
- • • {for the hip}
- A61B 17/1668
- • • • {for the upper femur (-[A61B 17/164](#) takes precedence-)}
- A61B 17/17
- • Guides {or aligning means}for drills,{mills, pins or wires}
- A61B 17/1714
- • • {for applying tendons or ligaments (implements for applying tendons or ligaments [A61F 2/0805](#)-)}
- A61B 17/1739
- • • {specially designed for particular parts of the body (-[A61B 17/1703](#) takes precedence-)}
- A61B 17/176
- • • • {for the jaw (-guiding dental drills [A61C 1/082](#)-)}
- A61B 17/20
- for vaccinating or cleaning the skin previous to the vaccination (diagnosis by vaccination{ other than by injuring the skin [A61B 10/0035](#) } ; apparatus for injections [A61M](#)-)
- NOTE
- Cleaning the skin previous to the vaccination is classified in [A61B 19/36](#)

- A61B 17/22
 - Implements for squeezing-off ulcers or the like on {the inside of}inner organs of the body; Implements for scraping-out cavities of body organs, e.g. bones; Calculus removers; Calculus smashing apparatus; {Apparatus for removing obstructions in blood vessels, not otherwise provided for(-dilators [A61M 29/00](#)-)}
- A61B 17/22004
 - • {using mechanical vibrations, e.g. ultrasonic shock waves (-[A61B 17/225](#) takes precedence-)}
- A61B 17/22012
 - • • {in direct contact with, or very close to, the obstruction or concrement (-for removing obstructions in blood vessels by laser [A61B 18/245](#)-)}
- A61B 2017/22014
 - • • • {the ultrasound transducer being outside patient's body; with an ultrasound transmission member; with a wave guide; with a vibrated guide wire (-not applied in [A61B 17/22012](#)-)}
- A61B 2017/22025
 - • • • {applying a shock wave (-[A61B 2017/22091](#) takes precedence-)}
- A61B 17/22031
 - {Gripping instruments, e.g. forceps, for removing or smashing calculi (-[A61B 17/221](#) takes precedence-)}
- A61B 17/22032
 - • • {having inflatable gripping elements (-balloon catheters [A61M 25/10](#)-)}
- A61B 2017/22051
 - • {with an inflatable part, e.g. balloon, for positioning, blocking, or immobilisation (-[A61B 2017/22048](#) , [A61B 2017/3486](#) take precedence-)}
- A61B 2017/22065
 - • • {Functions of balloons (-dilating [A61M 29/02](#)-)}
- A61B 2017/22067
 - • • • {Blocking; Occlusion (-[A61B 2017/22054](#) takes precedence-)}
- A61B 2017/22072
 - • {with an instrument channel, e.g. for replacing one instrument by the other (-in cannulas [A61B 17/3417](#)-)}
- U A61B 2017/22074
 - • • {the instrument being only slidable in a channel, e.g. advancing optical fibre through a channel}
- A61B 2017/22077
 - • • • {with a part piercing the tissue (-[A61B 2017/22044](#) takes precedence-)}
- U A61B 2017/22082
 - • {after introduction of a substance}
- A61B 2017/22085
 - • • {light-absorbing (-[A61B 2017/22087](#) takes precedence-)}
- A61B 17/221
 - • Gripping devices in the form of loops or baskets {for gripping calculi or similar types of obstructions(-surgical snare instruments [A61B 17/32056](#)-)}
- U A61B 17/225
 - • for extracorporeal shock wave lithotripsy (ESWL), e.g. by using ultrasonic waves
- A61B 17/2255
 - • • {Means for positioning patient, shock wave apparatus or locating means, e.g. mechanical aspects, patient beds, support arms, aiming means (-positioning of patients for radiation diagnosis [A61B 6/04](#) ; positioning of locating means inside shock wave apparatus [A61B 17/2256](#)-)}
- A61B 17/2256
 - • • {with means for locating or checking the concrement, e.g. X-ray apparatus, imaging means (-[A61B 17/2255](#) takes precedence-)}
- A61B 17/24
 - for use in the oral cavity, larynx, bronchial passages or nose (-for medical inspection of cavities or tubes in the body [A61B 1/00](#)-); Tongue scrapers
- A61B 17/28
 - Surgical forceps ({ for holding suture needles or materials [A61B 17/0483](#) ; for removing or smashing calculi [A61B 17/221](#) ; surgical scissors [A61B 17/3201](#) } ; obstetrical forceps [A61B 17/44](#) ; for inserting intraocular lenses [A61F 2/1662](#) ; hand-held gripping tools in general [B25B 7/00](#)]-)
- A61B 17/2804
 - • {with two or more pivotal connections (-[A61B 17/29](#) takes precedence-)}
- A61B 17/2812
 - • {with a single pivotal connection (-[A61B 17/29](#) takes precedence-)}
- U A61B 17/29
 - • Forceps for use in minimally invasive surgery
- U A61B 17/295
 - • • combined with cutting implements
- A61B 17/2955
 - • • • {for cutting or punching bone or cartilage, e.g. rongeurs (-[A61B 17/32002](#) takes precedence; forceps for biopsy [A61B 10/06](#) ; non-endoscopic rongeurs [A61B 17/1604](#)-)}

- A61B 17/30
 - Surgical pincettes {without pivotal connections}{ for holding suture needles or materials [A61B 17/0483](#) } ; wound clamps [A61B 17/08](#) ; { hand-held gripping tools without pivotal connections in general [B25B 9/02](#) }
- A61B 17/32
 - Surgical cutting instruments{(-[A61B 18/042](#) takes precedence; suture cutters [A61B 17/0467](#) ; instruments for ligaturing or cutting [A61B 17/128](#) ; instruments for rupturing the amniotic membrane [A61B 17/4208](#) ; specially adapted knives for eye surgery [A61F 9/0133](#)-)}
- A61B 17/320016
 - {Endoscopic cutting instruments e.g. arthroscopes, resectoscopes (-[A61B 10/0233](#) , [A61B 17/29](#) , [A61B 17/3207](#) take precedence-)}
- A61B 2017/320044
 - {Blunt dissectors (-blunt suture needles [A61B 2017/06085](#)-)}
- A61B 2017/320052
 - {Guides for cutting instruments (-by marking [A61B 2019/545](#)-)}
- A61B 17/320068
 - {using mechanical vibrations, e.g. ultrasonic (-[A61B 17/22012](#) , [A61C 3/03](#) and [A61F 9/00745](#) take precedence-)}
- A61B 17/3201
 - Scissors (-for biopsy [A61B 10/02](#)-)
- U A61B 17/3205
 - Excision instruments
- A61B 17/32053
 - {Punch like cutting instruments, e.g. using a cylindrical or oval knife (-[A61B 17/326](#) takes precedence; trepans [A61B 17/1695](#) ; for use on the cornea [A61F 9/007](#)-)}
- A61B 17/32056
 - {Surgical snare instruments (-for removing or smashing calculi [A61B 2017/2212](#) ; tonsillotomes [A61B 17/26](#)-)}
- A61B 17/3207
 - Atherectomy devices {working by cutting or abrading; Similar devices specially adapted for non-vascular obstructions(-[A61B 17/32037](#) takes precedence; endoscopic cutting instruments [A61B 17/320016](#)-)}
- A61B 17/320725
 - {with radially expandable cutting or abrading elements (-[A61B 17/32075](#) takes precedence-)}
- A61B 17/320758
 - {with a rotating cutting instrument, e.g. motor driven (-[A61B 17/320725](#) , [A61B 17/32075](#) and [A61B 17/320783](#) take precedence; for removing intra-ocular material [A61F 9/00763](#) ; endoscopic rotatable cutting instruments [A61B 17/32002](#)-)}
- U A61B 17/3209
 - Incision instruments
- U A61B 17/3211
 - Surgical scalpels, knives; Accessories therefor
- A61B 17/3215
 - Packages or dispensers for scalpel blades{(-for sharps [A61B 19/0262](#)-)}
- A61B 17/3217
 - Devices for removing or collecting used scalpel blades{(-for sharps [A61B 19/0288](#)-)}
- A61B 17/34
 - Trocars; Puncturing needles{(-pointed biopsy instruments [A61B 10/0233](#) ; devices for piercing the ear-lobes [A44C 7/001](#) ; seals or hemostasis valves [A61M 39/06](#)-)}
- A61B 17/3401
 - {Puncturing needles for the peridural or subarachnoid space or the plexus, e.g. for anaesthesia (-local anaesthesia [A61M 19/00](#)-)}
- A61B 17/3403
 - {Needle locating or guiding means (-guides for suture needles [A61B 17/0482](#) ; guiding or tracking by nuclear magnetic resonance [G01R 33/285](#)-)}
- A61B 17/3415
 - {for introducing tubes or catheters, e.g. gastrostomy tubes, drain catheters (-[A61B 17/3417](#) takes precedence; body piercing catheter guide needles [A61M 25/06](#)-)}
- A61B 17/3417
 - {Details of tips or shafts, e.g. grooves, expandable, bendable; Multiple coaxial sliding cannulas, e.g. for dilating (-syringe needles [A61M 5/32](#) ; dilators [A61M 29/00](#)-)}
- U A61B 17/3421
 - {Cannulas}
- A61B 17/3423
 - {Access ports, e.g. toroid shape introducers for instruments or hands (-access sites for liquids [A61M1/00S](#)-)}

- A61B 17/3431 . . . {being collapsible, e.g. made of thin flexible material (-[A61B 17/3423](#) takes precedence-)}
- A61B 17/3439 . . . {with means for changing the inner diameter of the cannula, e.g. expandable (-[A61B 17/3423](#) , [A61B 17/3431](#) take precedence; catheters [A61M 25/0662](#)-)}
- A61B 2017/3445 . . . {used as instrument channel for multiple instruments (-catheters [A61B 2017/22072](#)-)}
- A61B 17/3462 . . {with means for changing the diameter or the orientation of the entrance port of the cannula, e.g. for use with different-sized instruments, reduction ports, adapter seals (-expandable cannulas [A61B 17/3417](#)-)}
- A61B 17/3468 . . {for implanting or removing devices, e.g. prostheses, implants, seeds, wires (-devices for implanting seeds [A61M 37/0069](#)-)}
- A61B 17/3478 . . {Endoscopic needles, e.g. for infusion (-biopsy needles [A61B 10/0233](#) ; catheters with injection needles [A61M 25/0067](#)-)}
- A61B 17/3494 . . {with safety means for protection against accidental cutting or pricking, e.g. limiting insertion depth, pressure sensors (-for the peridural space [A61B 17/3401](#)-)}
- A61B 17/3496 . . . {Protecting sleeves or inner probes; Retractable tips (-for protecting body piercing guide needles [A61M 25/0612](#)-)}
- A61B 17/3498 . . {Valves therefor, e.g. flapper valves, slide valves (-haemostasis valves [A61M 39/06](#) ; check valves [A61M 39/24](#)-)}
- A61B 17/42 . . Gynaecological or obstetrical instruments or methods ({ ligaturing clamps or clips for the umbilical cord [A61B 17/122](#) ; curettage [A61B 17/3207](#) } ; dilators [A61M 29/00](#)-)}
- A61B 2017/4233 . . {Operations on Fallopian tubes, e.g. sterilization (-[A61B 2017/1125](#) takes precedence-)}
- A61B 17/425 . . for reproduction or fertilisation (-specially adapted for use with animals [A61D 19/00](#)-){(not used, see subgroups)}
- A61B 17/435 . . . for embryo {or ova}transplantation
- A61B 17/46 . . Embryotomes (-for animals [A61D 1/10](#)-)}
- A61B 17/50 . . Instruments, other than pincettes or toothpicks, for removing foreign bodies from the human body (-locating otherwise [A61B 5/06](#) ; locating by radiation [A61B 6/00](#) ; { removing calculi [A61B 17/22](#) ; from the eyes [A61F 9/00709](#) })
- A61B 17/54 . . Chiropractors` instruments,{e.g. pedicure(-chiropractic devices [A61H 1/008](#)-)}
- A61B 17/56 . . Surgical instruments or methods for treatment of bones or joints; Devices specially adapted therefor{(-orthopaedic methods or devices for non-surgical treatment of bones or joints [A61F 5/00](#)-)}

NOTE

1. Documents concerning exclusively surgical methods are classified only in this group.
2. Surgical instruments or devices are classified only in the relevant subgroups

- A61B 17/58 . . for osteosynthesis, e.g. bone plates, screws,{setting implements}or the like (-[A61B 17/14](#) , [A61B 17/16](#) take precedence; { splints [A61B 5/01](#) ; traction bandages [A61F 13/10](#) })
- U A61B 17/60 . . . for external osteosynthesis, e.g. distractors, contractors
- A61B 17/62 Ring frames, i.e. devices extending around the bones to be positioned ({ [A61B 17/6433](#) } , [A61B 17/66](#) take precedence-)
- A61B 17/64 Devices extending alongside the bones to be positioned{ not used, see subgroups and [A61B 17/60](#)-}
- A61B 17/6408 {Devices not permitting mobility, e.g. fixed to bed, with or without means for traction or reduction (-without surgery [A61F 5/04](#)-)}

- A61B 17/6416 {with non-continuous, e.g. hinged, pin-clamp connecting element (-[A61B 17/6425](#) , [A61B 17/6441](#) take precedence-)}
- A61B 17/645 {comprising a framework (-[A61B 17/6425](#) , [A61B 17/6441](#) take precedence-)}
- U A61B 17/66 {Alignment}, compression or distraction mechanisms
- A61B 17/663 {for jaw bones, e.g. subcutaneous distractors with external access (-periodontal bone regeneration [A61C 8/0006](#)-)}
- A61B 17/68 . . . Internal fixation devices,{including fasteners and spinal fixators, even if a part thereof projects from the skin(-bone staples [A61B 17/0642](#) ; dental regeneration membranes [A61C 8/0006](#)-)}
- WARNING
Subgroups [A61B 17/686](#) and [A61B 17/688](#) are not complete pending a reorganisation. See also [A61B 17/68](#) , [A61B 17/683](#) and [A61B 17/86](#)
- U A61B 17/70 Spinal positioners or stabilisers;{Bone stabilisers comprising fluid filler in an implant}
- A61B 17/7001 {Screws or hooks combined with longitudinal elements which do not contact vertebrae (-[A61B 17/7058](#) takes precedence-)}
- U A61B 17/7002 {Longitudinal elements, e.g. rods}
- A61B 17/7004 {with a cross-section which varies along its length (-[A61B 17/7019](#) takes precedence-)}
- A61B 17/7008 {with parts of, or attached to, the longitudinal elements, bearing against an outside of the screw or hook heads, e.g. nuts on threaded rods (-[A61B 17/7007](#) takes precedence-)}
- A61B 17/701 {Longitudinal elements with a non-circular, e.g. rectangular, cross-section (-[A61B 17/7005](#) , [A61B 17/7007](#) take precedence-)}
- A61B 17/7011 {Longitudinal element being non-straight, e.g. curved, angled or branched (-adjustable length longitudinal elements [A61B 17/7014](#) ; [A61B 17/7019](#) takes precedence, e.g. coil springs-)}
- A61B 17/7013 {the shape of the element being adjustable before use (-adjustable length plates [A61B 17/7014](#)-)}
- A61B 17/7041 {with single longitudinal rod offset laterally from single row of screws or hooks (-[A61B 17/7044](#) takes precedence-)}
- A61B 17/7046 {the screws or hooks being mobile in use relative to the longitudinal element (-[A61B 17/7035](#) takes precedence-)}
- WARNING
incomplete see [A61B 17/7001](#)
- A61B 17/7049 {Connectors, not bearing on the vertebrae, for rigidly linking longitudinal elements together (-[A61B 17/7055](#) , [A61B 17/7053](#) , [A61B 17/7019](#) take precedence-)}
- A61B 17/7061 {for stabilising vertebrae or discs by improving the condition of their tissues, e.g. using implanted medication or fluid exchange (-intraosseous injection devices [A61B 17/3472](#)-)}
- A61B 17/7062 {Devices acting on, attached to, or simulating the effect of, vertebral processes, vertebral facets or ribs (-rib fixation devices [A61B 17/8076](#)-); Tools for such devices}
- A61B 17/7074 {Tools specially adapted for spinal fixation operations other than for bone removal or filler handling (-[A61B 17/7062](#) , [A61B 17/808](#) , [A61B 17/8858](#) take precedence; for spinal image producing devices [A61B 19/52](#) ; markers [A61B 19/54](#)-)}

- U A61B 17/7076 {for driving, positioning or assembling spinal clamps or bone anchors specially adapted for spinal fixation}
- A61B 17/7082 {for driving, i.e. rotating, screws or screw parts specially adapted for spinal fixation, e.g. for driving polyaxial or tulip-headed screws (-driving other bone screws [A61B 17/8875](#)-)}
- A61B 17/7092 {for checking pedicle hole has correct depth or has an intact wall (-pedicle drill depth limiters [A61B 17/1626](#)-)}
- A61B 17/7097 {Stabilisers comprising fluid filler in an implant, e.g. balloon; devices for inserting or filling such implants (-disc prostheses made of inflatable chambers or pockets filled with fluid [A61F 2/441](#) ; replacing the nucleus pulposus [A61F 2002/444](#)-)}
- A61B 17/7098 {wherein the implant is permeable or has openings, e.g. fenestrated screw (-hollow surgical screws [A61B 17/864](#)-)}
- A61B 17/72 Intramedullary {pins, nails or other} devices{(-[A61B 17/744](#) takes precedence-)}
- A61B 17/7216 {for bone lengthening or compression (-[A61B 17/7258](#) takes precedence-)}
- A61B 17/74 Devices for the head {or neck or trochanter} of the femur{(-trochanteric devices connected to the proximal part of an endoprosthetic femoral shaft [A61F 2/30739](#) ; endoprosthetic internal fixation devices for the head or neck of the femur [A61F 2/3601](#)-)}
- A61B 17/80 Cortical plates {i.e. bone plates; Instruments for holding or positioning cortical plates, or for compressing bone attached to them(-[A61B 17/70](#) takes precedence-)}
- A61B 17/8061 {specially adapted for particular bones (-[A61B 17/70](#) and [A61B 17/74](#) take precedence-)}
- A61B 17/8071 {for the jaw (-prostheses for mandibular reconstruction [A61F 2/2803](#)-)}
- A61B 17/8085 {with pliable or malleable elements or having a mesh-like structure, e.g. small strips for craniofacial surgery (-[A61B 17/8071](#) , [A61B 17/8076](#) take precedence; connecting prostheses with the body [A61F 2/00](#)-)}
- A61B 17/809 {with bone-penetrating elements, e.g. blade or prong for osteotomy (-bone staples [A61B 17/0642](#)-)}
- A61B 17/82 for bone cerclage{(-apparatus for manipulating wires or straps [A61B 17/8861](#) ; wires, bands or straps other than cerclage [A61B 17/842](#)-)}
- A61B 17/84 Fasteners therefor {or fasteners being internal fixation devices}
- A61B 17/842 {Flexible wires, bands or straps (-[A61B 17/72](#) , [A61B 17/82](#) , [A61B 17/86](#) take precedence-)}
- A61B 17/846 {Nails or pins, i.e. anchors without movable parts, holding by friction only, with or without structured surface (-[A61B 17/72](#) , [A61B 17/86](#) take precedence-)}
- A61B 17/86 {Threaded wires}, pins or screws; {Nuts therefor(-[A61B 17/72](#) , [A61B 17/74](#) , [A61F 2/4455](#) take precedence-)}
- WARNING**
Subgroups [A61B 17/861](#) , [A61B 17/865](#), [A61B 17/8665](#), [A61B 17/869](#) and [A61B 17/8695](#) are not complete pending a reorganisation. See also [A61B 17/68](#) , [A61B 17/86](#) , [A61B 17/8605](#) and [A61B 19/026](#)
- A61B 17/8625 {Shanks, i.e. parts contacting bone tissue (-screw-in dental implants [A61C 8/0018](#)-)}
- A61B 17/8695 {Washers (-surrounding screw head in plate hole [A61B 17/8047](#) , between bone plate and bone [A61B 17/8028](#)-)}

- A61B 17/88 . . . {Osteosynthesis instruments;}Methods or means for implanting or extracting internal {or external}fixation devices
- A61B 17/8802 {Equipment for handling bone cement or other fluid fillers (-plugs or restrictors for bone cement [A61F 2/30723](#)-)}
- A61B 17/8805 {for introducing fluid filler into bone or extracting it (-[A61B 17/7097](#) , [A61B 17/8833](#) take precedence; for introducing bone graft [A61F 2/4601](#)-)}
- A61B 17/8819 {characterised by the introducer proximal part, e.g. cannula handle, or by parts which are inserted inside each other, e.g. stylet and cannula (-[A61B 17/8825](#) takes precedence-)}
- A61B 17/8825 {characterised by syringe details (-[A61B 17/8822](#) , [A61B 17/8827](#) take precedence-)}
- A61B 17/8833 {Tools for preparing, e.g. curing, cement or other fluid fillers ([B01F](#) takes precedence); Means for supplying cement or other fluid fillers to an introducing tool, e.g. cartridge handling means}
- A61B 17/8847 {for removing cement from a bone cavity (-using surgical bone chisels, drills, mills, rasps, reamers or scrapers [A61B 17/16](#) ; using laser [A61B 18/20](#) ; using ultrasonic surgical instruments [A61N 7/00](#)-)}
- A61B 17/885 {Tools for expanding or compacting bones or discs or cavities therein (-[A61B 17/8805](#) , [A61B 17/7097](#) take precedence-)}
- U A61B 17/8852 {capable of being assembled or enlarged, or changing shape, inside the bone or disc}
- A61B 17/8858 {laterally or radially expansible (-inflatable [A61B 17/8855](#)-)}
- A61B 17/8872 {Instruments for putting said fixation devices against or away from the bone (-[A61B 17/7074](#) , [A61B 17/808](#) take precedence-)}
- U A61B 17/8875 {Screwdrivers, spanners or wrenches}
- A61B 17/8894 {holding the implant into or through which the screw is to be inserted (-[A61B 17/7082](#) , [A61B 17/7091](#) take precedence-)}
- A61B 17/92 Impactors or extractors, e.g. for removing intramedullary devices{(-insertion or extraction of artificial joints [A61F 2/4603](#)-)}

- A61B 18/00** **Surgical instruments, devices or methods for transferring non-mechanical forms of energy to or from the body (-eye surgery [A61F 9/007](#) ; ear surgery [A61F 11/00](#)-)**
- U A61B 2018/00571 . . {for achieving a particular surgical effect}
- A61B 2018/00613 . . . {Irreversible electroporation (-reversible electroporation [A61N 1/327](#)-)}
- A61B 18/02 . . . by cooling, e.g. cryogenic techniques (-devices for cooling specific reflex points of the body within cell-life limits [A61H 39/06](#)-)
- A61B 18/04 . . . by heating (-by applying electromagnetic radiation [A61B 18/18](#) ; hyperthermia using electric or magnetic fields, radiation or ultrasound [A61N](#)-)
- U A61B 18/12 . . . by passing a current through the tissue to be heated, e.g. high-frequency current
- U A61B 18/14 . . . Probes or electrodes therefor
- U A61B 18/1442 {Probes having pivoting end effectors, e.g. forceps}
- A61B 2018/1452 {including means for cutting (-[A61B 2018/146](#) takes precedence-)}
- A61B 18/1492 {having a flexible, catheter-like structure, e.g. for heart ablation (-[A61B 18/1477](#) takes precedence-)}
- A61B 18/18 . . . by applying electromagnetic radiation, e.g. microwaves (-radiation therapy [A61N 5/00](#)-)
- U A61B 18/20 . . . using laser

- A61B 18/201 . . . {the beam being delivered through a hollow tube, e.g. forming an articulated arm (-through a flexible conduit [A61B 18/22](#)); Hand-pieces therefor}
 - A61B 2018/2035 . . . {Beam shaping; Optical components therefor (-[A61B 2018/2255](#) takes precedence-)}
 - A61B 2018/2065 . . . {Multiwave; Wavelength mixing, e.g. using four or more wavelengths (-pilot laser [A61B 2018/2025](#)-)}
 - U A61B 18/22 . . . the beam being directed along or through a flexible conduit, e.g. an optical fibre;{Couplings}, hand-pieces therefor
 - A61B 2018/2238 {with means for selectively laterally deflecting the tip of the fibre (-with balloon [A61B 2017/22051](#)-)}
 - A61B 2018/225 {Features of handpieces (-[A61B 2018/2255](#) takes precedence-)}
 - U A61B 2018/2255 {Optical elements at the distal end of probe tips}
 - A61B 2018/2272 {with a reflective or refractive surface for deflecting the beam (-[A61B 2018/2261](#) , [A61B 2018/2266](#) take precedence-)}
 - A61B 18/24 with a catheter (-[A61B 18/26](#) , [A61B 18/28](#) take precedence-)
- A61B 19/00** **Instruments, implements or accessories for surgery or diagnosis not covered by any of the groups [A61B 1/00](#) to [A61B 17/00](#) , e.g. for stereotaxis, sterile operation, luxation treatment, wound edge protectors ({ surgeon`s or patient`s gowns or dresses, surgical masks [A41D 13/00](#) } ; devices for carrying-off, for treatment of, or for carrying-over, body liquids [A61M 1/00](#)-)**
- WARNING
- Groups [A61B 19/20](#) - [A61B 19/56](#) do not correspond to former or current IPC groups.
- Concordance CPC : IPC for these groups is as follows: - [A61B 19/20](#) - [A61B 19/56](#) : [A61B 19/00](#)
- A61B 19/02 . . . Protective casings or covers for appliances or instruments, e.g. boxes or sterile covers; Instrument tables or cupboards; Doctors` bags((-cleaning devices for surgical instruments [A61B 19/34](#) ; instrument-protective drapes [A61B 19/081](#) ; for sterilising articles [A61L 2/00](#) ; for cleaning for sterilising hypodermic or infusion needles or syringes [A61M 5/001](#) ; for preservation of living parts of the human or animal body [A01N 1/02](#)-)}
 - U A61B 2019/0202 . . . {with a lid or cover}
 - A61B 2019/0221 {Types of closures or fasteners (-using adhesives [A61B 2019/0201](#)-)}
 - A61B 2019/0225 {Locking clamps (-[A61B 2019/0229](#) takes precedence-)}
 - A61B 2019/0226 {Draw-strings (-ties [A61B 2019/0228](#)-)}
 - A61B 2019/0228 {Ties (-draw-strings [A61B 2019/0226](#)-)}
 - A61B 2019/0229 {Toggle latches or clamps (-locking clamps [A61B 2019/0225](#) ; swingable wire bails [A61B 2019/0231](#)-)}
 - A61B 2019/0231 {Swingable wire bails or handles (-[A61B 2019/0229](#) takes precedence; carrying handles [A61B 2019/0281](#)-)}
 - A61B 2019/0232 {having additional locking means (-permanent closure means [A61B 2019/0245](#)-)}
 - A61B 19/0248 . . . {Furniture specially adapted for surgery or diagnosis, e.g. cabinets, carts, cupboards or tables (-supports for surgeons [A61B 19/28](#) ; medicine cabinets [A47B 67/00](#) ; accommodation for nursing [A61G 12/00](#)-)}
 - U A61B 2019/025 {Carts or trolleys}
 - A61B 2019/0251 {Mayo stands (-other holding stands [A61B 2019/0259](#)-)}

- A61B 19/0256
 - • {Holders for articles, e.g. magnetic holders, racks, stands (-holders for suture needles or materials [A61B 17/06061](#) ; supports as part of surgical instruments [A61B 19/26](#) ; drapes with means to hold surgical instruments [A61B 19/10](#) ; hangers for particular articles [A47F 7/00](#) ; for tooth drills [A61C 3/04](#) ; for receptacles and tubing attached to beds [A61G 7/0503](#) ; for pharmaceutical containers [A61J 1/16](#) ; for irrigation devices [A61M 3/0266](#) ; racks for syringes or for hypodermic or infusion needles [A61M 5/008](#) ; for infusion devices [A61M 5/1414](#) ; for catheters [A61M 25/02](#) ; holding devices for laboratory apparatus [B01L 9/00](#) ; racks for work tools [B25H 3/04](#)-)}
- A61B 2019/0259
 - • • {Stands (-Mayo stands [A61B 2019/0251](#)-)}
- A61B 19/026
 - • {Casings for packaging, protecting or dispensing articles (-for endoscopes [A61B 1/00142](#) ; for test samples [A61B 10/0096](#) ; for sutures [A61B 17/06114](#) ; for ligaturing clips [A61B 17/1222](#) ; for gloves or finger-stalls [A61B 19/045](#) ; for dental floss [A61C 15/043](#) ; for dental instruments [A61C 19/02](#) ; for prostheses [A61F 2/0095](#) ; for contraceptive devices [A61F 6/005](#) ; for bandages or the like [A61F 15/001](#) ; for pharmaceutical products [A61J 1/00](#) ; for catheters [A61M 25/002](#) ; in general [B65D](#) , e.g. with dispensing means [B65D 83/00](#) ; for ampoules [B65D 85/42](#) ; for clinical thermometers [G01K 1/083](#) ; for optical fibres [G02B 6/444](#) ; for X-ray films [G03C 3/003](#)-)}
- A61B 19/0262
 - • • {for sharps (-for suture needles [A61B 17/06114](#) ; for scalpel-blades [A61B 17/3215](#) ; for wound clamps [A61B 17/105](#) ; for used sharps [A61B 19/0288](#) ; for syringes or for hypodermic or infusion needles [A61M 5/002](#) , [A61M 5/1626](#) , [A61M 5/3202](#)-)}
- A61B 2019/0263
 - • • • {including foam blocks for retaining sharps (-for retaining suture needles [A61B 2017/06147](#)-)}
- A61B 19/0264
 - • • {Carrying bags, cases, trusses (-bags for midwives [A61B 17/48](#) ; bags in general [A45C](#) ; first-aid kits [A61F 17/00](#)-)}
- A61B 19/0271
 - • • {Trays (-serving trays [A47G 23/06](#)-)}
- A61B 2019/0274
 - • • {containing a preservative liquid, e.g. an antiseptic liquid (-bactericidal products in casings for used articles [A61B 2019/0293](#)-)}
- A61B 2019/0278
 - • • {having multiple compartments (-multiple flexible pouches [A61B 2019/027](#)-)}
- A61B 2019/0281
 - • • {having carrying handles (-swingable locking handles [A61B 2019/0231](#)-)}
- A61B 2019/0285
 - • • {waterproof (-for prostheses [A61F 2250/0076](#)-)}
- A61B 2019/0286
 - • • {transparent (-for surgical instruments or accessories [A61B 2017/00902](#) ; for prostheses [A61F 2250/0091](#)-)}
- A61B 19/0287
 - • {Casings for removing or collecting used articles (-for sutures [A61B 17/06161](#) ; accessories for operating tables, e.g. for collecting body wastes [A61G 13/10](#) ; combustible sputum cups [A61J 19/06](#) ; sterilising refuse [A61L 11/00](#) ; for destroying hypodermic or infusion needles or syringes [A61M 5/3278](#) ; disposal of medical waste by destroying it or transforming it into something useful or harmless [B09B 3/0075](#) ; for domestic refuse or the like [B65F](#)-)}
- A61B 19/0288
 - • • {for sharps (-for suture needles [A61B 17/06161](#) ; for scalpel-blades [A61B 17/3217](#) ; for syringes or for hypodermic or infusion needles [A61M 5/3205](#)-)}
- A61B 2019/0289
 - • • • {having additional means for destroying used sharps (-for destroying used hypodermic or infusion needles or syringes [A61M 5/3278](#)-)}
- A61B 19/029
 - • • {for absorbent articles, e.g. bandages, cotton balls, covers, drapes, dressings, garments, gauze, gowns, napkins, sponges, swabs or towels (-devices for determining blood loss [A61B 5/02042](#)-)}
- A61B 2019/0291
 - • • • {for sponges (-counting means [A61B 2019/4821](#)-)}
- A61B 2019/0293
 - • • {containing anti-microbial, anti-viral, bactericidal or disinfectant products (-preservative liquid in packages or dispensers [A61B 2019/0274](#)-)}

- A61B 19/04
 - Operating gloves; Finger-stalls for operating; Devices for treating them, e.g. cleaning, powdering (-glove-boxes for manipulating, gloves therefor [B25J 21/02-](#))
- A61B 19/08
 - Surgical drapes (-bandages, dressings or absorbent pads [A61F 13/00-](#))
- A61B 19/081
 - • {for protection of instruments, e.g. microscopes (-for part of endoscope entering the body [A61B 1/00142-](#))}
- A61B 2019/086
 - • {for extremities, e.g. having collection pouch (-[A61B 19/12](#) takes precedence-)}
- A61B 19/10
 - • with means to retain or hold surgical implements{(-holders for articles [A61B 19/0256-](#))}
- A61B 19/12
 - • tubular, e.g. for arms or legs{(-[A61B 19/087](#) takes precedence-)}
- A61B 19/20
 - {for stereotaxic surgery (-using radio-opaque markers [A61B 19/54-](#))}
- A61B 19/201
 - • {with needle or instrument guides, e.g. arcuate slides, ball joints (-needle guiding or locating means [A61B 17/3403-](#))}
- A61B 19/203
 - • {Fixators for body parts, e.g. head fixators, skull clamps or bite blocks (-tables with compression means for mammography [A61B 6/0414](#) ; tables with patient immobilising means for radiation diagnosis [A61B 6/0421-](#); Constructional details thereof, e.g. fixating pins(-bone screws or pins [A61B 17/86-](#))}
- U A61B 19/22
 - {Manipulators specially adapted for use in surgery}
- A61B 2019/2296
 - • {with motion or force scaling (-[A61B 2019/2288](#) takes precedence-)}
- A61B 19/24
 - {Devices for expanding tissue, e.g. skin tissue (-implements for holding wounds open, surgical tractors [A61B 17/02](#) ; implantable mammary prosthesis [A61F 2/12](#) ; dilators [A61M 29/00-](#))}
- A61B 19/26
 - {Supports as part of surgical instruments, e.g. articulated arms, headbands (-[A61B 19/22](#) takes precedence; holders for articles [A61B 19/0256-](#))}
- A61B 19/28
 - {Supports for surgeons, e.g. chairs, hand supports (-seats for the dentist or surgeon associated with dental or operating chairs [A61G 15/00-](#))}
- A61B 19/34
 - {Cleaning devices specially adapted for surgical instruments (-disinfecting [A61L 2/00](#) ; cleaning in general [B08B-](#))}
- A61B 19/36
 - {Implements for cleaning or washing surgeon`s hands or patient`s skin (-hand-held absorbent pads or swabs containing a cleaning liquid, e.g. in a rupturable reservoir, [A61M 35/006-](#))}
- A61B 19/40
 - {Protection of tissue around surgical sites against effects of non-mechanical surgery, e.g. laser surgery (-protection of eyes against laser radiation [A61F 9/022-](#))}
- A61B 19/42
 - {Splash shields for protection of the surgeon, e.g. splash guards connected to the apparatus (-[A41D 13/11](#) takes precedence-)}
- A61B 19/46
 - {Measuring instruments not otherwise provided for (-for implanting artificial joints [A61F 2/4657-](#))}
- A61B 2019/461
 - • {for measuring dimensions, e.g. length (-[A61B 2019/462](#) takes precedence-)}
- U A61B 2019/48
 - {Accessories or related features not otherwise provided for}
- A61B 2019/4805
 - • {Prevention of accidental cutting or pricking (-protective suturing devices [A61B 17/0493](#) , blunt suture needles [A61B 2017/06085](#) , blunt dissectors [A61B 2017/320044-](#))}
- A61B 2019/4873
 - • {Preventing re-use (-for prostheses [A61F 2250/009-](#))}
- A61B 2019/4878
 - • {Implantable devices for insertion in between organs or other soft tissues (-plugging wall openings [A61B 17/0057](#) , retractors [A61B 17/02](#) , tissue expanders [A61B 19/24-](#))}
- U A61B 19/52
 - {Image-producing devices or illumination devices not otherwise provided for, e.g. operation microscopes; Operation lamp handles}

- A61B 19/5212
- • {Image-producing devices, e.g. surgical cameras ([-A61B 19/5223](#) , [A61B 19/5225](#) take precedence-)}
- A61B 19/54
- {Markers, e.g. radio-opaque or breast lesions markers (-mechanical markers for eye-keratomy [A61F 9/0136](#) ; markers in surgical tampons or sponges [A61F 13/44](#) ; markers on catheters [A61M 25/0108](#)-)}
- A61B 2019/5437
- • {visible ([-A61B 2019/446](#) takes precedence-)}
- A61B 2019/5445
- • • {Active visible markers, e.g. light emitting diodes ([-A61B 2019/5441](#) takes precedence-)}
- U A61B 2218/00** **Details of surgical instruments, devices or methods for transferring non-mechanical forms of energy to or from the body**
- A61B 2218/001
- having means for irrigation and/or aspiration of substances to and/or from the surgical site ([-A61B 2018/00029](#) and [A61B 2018/1472](#) take precedence-)
- U A61B 2560/00** **Constructional details of operational features of apparatus; Accessories for medical measuring apparatus**
- U A61B 2560/04
- Constructional details of apparatus
- U A61B 2560/0406
- • specially shaped apparatus housings
- A61B 2560/0425
- • • Ergonomically shaped housings ([-A61B 2560/0418](#) takes precedence-)
- U A61B 2562/00** **Details of sensors; Constructional details of sensor housings or probes; Accessories for sensors**
- U A61B 2562/02
- Details of sensors specially adapted for in-vivo measurements
- A61B 2562/0209
- • Special features of electrodes classified in [A61B 5/04001](#) , [A61B 5/0408](#) , [A61B 5/042](#) , [A61B 5/0478](#) , [A61B 5/0492](#) or [A61B 5/053](#) (-electrodes for stimulation [A61N 1/04](#) ; electrodes for electrosurgery [A61B 18/14](#)-)
- A61B 2562/0233
- • Special features of optical sensors or probes classified in [A61B 5/00](#)
- A61B 2562/0295
- • Strip shaped analyte sensors for apparatus classified in [A61B 5/145](#) or [A61B 5/157](#) (-disposable multilayered or laminated electrodes [G01N 27/307](#) ; details of handling chemical test elements [G01N 33/4875](#)-)
- A61B 2562/16
- Details of sensor housings or probes; Details of structural supports for sensors ([-A61B 2560/0462](#) takes precedence-)
- A61B 2576/00** **Medical imaging apparatus involving image processing or analysis (-[A61B 1/00009](#) , [A61B 6/52](#) and [A61B 8/52](#) take precedence; image processing per se [G06T](#); details of algorithms for analysing medical images [G06T 7/0012](#)-)**

Project: N/A (A61C)

- U A61C 1/00** **Dental machines for boring or cutting; { General features of dental machines or apparatus, e.g. hand-piece design}**
- U A61C 1/02
- characterised by the drive of the dental tools
- U A61C 1/05
- • with turbine drive
- A61C 1/057
- • • {-with means for preventing suction effect in turbine after deactivation of the drive air}
- U A61C 1/08
- Machine parts specially adapted for dentistry
- U A61C 1/18
- • Flexible shafts; Clutches or the like; {Bearings or lubricating arrangements; Drives or transmissions}(flexible shafts in general [F16C](#); clutches in general [F16D](#))
- U A61C 1/185
- • • {Drives or transmissions}
- A61C 1/186
- • • • {-with torque adjusting or limiting means}

- A61C 1/188
- • • {-Means for allowing non driven rotation of the tool relative to the handle, e.g. toolswivel}
- U A61C 3/00** **Dental tools or instruments (implanting tools [A61C 8/00](#); tools for fastening artificial teeth [A61C 13/12](#); visual inspection devices, e.g. dental mirrors, [A61B 1/24](#))**
- A61C 3/005
- {-Brushes for applying dental compositions}
- U A61C 5/00** **Filling or capping teeth**
- A61C 5/002
- {-Facets}
- A61C 5/007
- {-Dental splints; teeth or jaw immobilisation devices; stabilizing retainers bonded to teeth after orthodontic treatments}
- U A61C 5/04**
- Implements for filling natural teeth; Methods or instruments for medication of tooth nerve channels ({rinsing tooth nerve channels [A61C 17/02](#)}; composition of the fillings [A61K 6/02](#))
- A61C 5/045
- • {-with heating means, e.g. for heating gutta percha or filling}
- U A61C 5/06**
- Amalgam presses or mixers ({[A61C 19/005](#) takes precedence)}
- U A61C 5/062**
- • {-Dental composition applicators, e.g. syringes, guns ([A61C 9/0026](#) takes precedence)}
- A61C 5/064
- • • {-Multi-component applicators}
- U A61C 7/00** **Orthodontics, i.e. obtaining or maintaining the desired position of teeth, e.g. by straightening, evening, regulating, separating, or by correcting malocclusions**
- A61C 7/002
- {-Orthodontic computer assisted systems}
- A61C 7/008
- {-using vibrating means}
- U A61C 7/02**
- Tools for manipulating or working with an orthodontic appliance ({tools for placement of brackets [A61C 7/146](#); Instruments for attaching elastic bands [A61C 7/306](#))}
- A61C 7/023
- • {-for debonding or removing orthodontic devices}
- A61C 7/026
- • {-for twisting orthodontic ligature wires}
- U A61C 7/06**
- Extra-oral force transmitting means, i.e. means worn externally of the mouth and placing a member in the mouth under tension
- A61C 7/065
- • {-with a chin cup}
- U A61C 7/12**
- Brackets; Arch wires; Combinations thereof; Accessories therefor
- A61C 7/125
- • {-Mouth tissue protecting means, e.g. bracket caps}
- U A61C 7/14**
- • Brackets ([A61C 7/28](#) takes precedence); Fixing brackets to teeth
- A61C 7/143
- • • {-Brackets with two or more recesses for arch wires}
- A61C 7/145
- • • {-Lingual brackets}
- A61C 7/148
- • • {-with occlusal or gingival archwire slot opening ([A61C 7/145](#) takes precedence)}
- U A61C 8/00** **Means to be fixed to the jaw-bone for consolidating natural teeth or for fixing dental prostheses thereon; Dental implants; Implanting tools (fastening of peg-teeth in the mouth [A61C 13/30](#))**
- U A61C 8/0003**
- {Not used, see subgroups}
- U A61C 8/0004**
- • {Consolidating natural teeth}
- U A61C 8/0006**
- • • {Periodontal tissue or bone regeneration (support means for endoprosthetic bone substitute or bone graft implants [A61F 2/2846](#))}
- A61C 8/0007
- • • • {-Stimulation of growth around implant by electrical means}

- U A61C 8/0012
 - {characterised by the material or composition, e.g. ceramics, surface layer, metal alloy (use of specific materials [A61K 6/00](#))}
- A61C 8/0013
 - • {-with a surface layer, coating}
- A61C 8/0015
 - • • {-being a conversion layer, e.g. oxide layer}
- A61C 8/0016
 - • {-polymeric material}
- U A61C 8/0018
 - {characterised by the shape}
- U A61C 8/0019
 - • {Blade implants}
- A61C 8/0021
 - • • {-with self-incising cutting edge}
- U A61C 8/0022
 - • {Self-screwing ([A61C 8/0028](#) takes precedence)}
- A61C 8/0024
 - • • {-with self-boring cutting edge}
- A61C 8/0025
 - • • {-with multiple threads}
- A61C 8/0034
 - • {-Long implant, e.g. zygomatic implant}
- A61C 8/0036
 - • {-Tooth replica}
- A61C 8/0037
 - • {-Details of the shape}
- A61C 8/0039
 - • • {-in the form of hollow cylinder with an open bottom}
- A61C 8/004
 - • • {-inflatable}
- A61C 8/0042
 - • • {-consisting of two halves}
- A61C 8/0043
 - • • {-having more than one root}
- A61C 8/0045
 - • • {-with a stepped body}
- U A61C 8/0048
 - {Connecting the upper structure to the implant, e.g. bridging bars ([A61C 8/0028](#) takes precedence)}
- U A61C 8/005
 - • {Connecting devices for joining an upper structure with an implant member, e.g. spacers}
- A61C 8/0051
 - • • {-Abutment monobloc with restoration}
- A61C 8/0053
 - • • {-with angular adjustment means, e.g. ball and socket joint}
- A61C 8/0054
 - • • {-having a cylindrical implant connecting part}
- A61C 8/0056
 - • • {-diverging in the apical direction of the implant or abutment}
- A61C 8/0057
 - • • {-with elastic means}
- A61C 8/0059
 - • • {-with additional friction enhancing means}
- A61C 8/006
 - • • {-with polygonal positional means, e.g. hexagonal or octagonal}
- A61C 8/0062
 - • • {-Catch or snap type connection}
- A61C 8/0063
 - • • {-with an internal sleeve}
- A61C 8/0065
 - • • {-with expandable or compressible means}
- A61C 8/0066
 - • • {-with positioning means ([A61C 8/006](#) takes precedence)}
- A61C 8/0068
 - • • {-with an additional screw}
- A61C 8/0069
 - • • {-tapered or conical connection}
- A61C 8/0071
 - • • • {-with a self-locking taper, e.g. morse taper}
- A61C 8/0072
 - • • • {-including male and female conical parts with different angles}
- A61C 8/0074
 - • • {-with external threads}
- A61C 8/0075
 - • {-Implant heads specially designed for receiving an upper structure (if separable from the implant [A61C 8/005](#))}
- A61C 8/0077
 - • {-with shape following the gingival surface or the bone surface}
- A61C 8/0078
 - • {-with platform switching, i.e. platform between implant and abutment}
- U A61C 8/0089
 - {Implanting tools or instruments}
- A61C 8/009
 - • {-for selecting the right implanting element, e.g. templates}

- A61C 8/0092
- A61C 8/0093
- A61C 8/0095
- A61C 8/0096
- A61C 8/0098
- A61C 9/00**
- Impression cups, {i.e. impression trays}; -Impression methods {(computer-assisted sizing [A61C 13/0004](#); instruments for determining occlusion [A61C 19/05](#)-)}**
- U A61C 9/0006
- A61C 9/0013
- A61C 9/004
- A61C 9/0046
- A61C 9/0053
- A61C 9/006
- A61C 9/0066
- A61C 9/0073
- A61C 9/008
- A61C 9/0086
- A61C 9/0093
- U A61C 11/00**
- Dental articulators, i.e. for simulating movement of the temporo-mandibular joints; Articulation forms or mouldings**
- A61C 11/003
- A61C 11/005
- A61C 11/006
- A61C 11/008
- U A61C 11/02
- A61C 11/025
- U A61C 11/08
- A61C 11/081
- A61C 11/082
- A61C 11/084
- A61C 11/085
- A61C 11/087
- A61C 11/088
- U A61C 13/00**
- Dental prostheses; Making same (tooth crowns for capping teeth [A61C 5/08](#); dental implants [A61C 8/00](#))**
- U A61C 13/01
- A61C 13/04
- U A61C 13/225
- A61C 13/26
- U A61C 15/00**
- Devices for cleaning between the teeth**
- U A61C 15/04

- A61C 15/041
- A61C 15/042
- U A61C 15/046
- A61C 15/048
- U **A61C 17/00** **Devices for cleaning, polishing, rinsing or drying teeth, teeth cavities or prostheses (instruments acting like a sandblast machine [A61C 3/025](#); tooth polishing discs or holders therefor [A61C 3/06](#); devices for cleaning between the teeth [A61C 15/00](#)); Saliva removers; Dental appliances for receiving spittle**
- NOTE
- Cleaning of prostheses using ultrasonic techniques similar to those used for natural teeth is classified in this group. Other ultrasonic cleaning of prostheses is classified in group [B08B 3/12](#)
- A61C 17/036
- A61C 17/04
- A61C 17/043
- U A61C 17/16
- U A61C 17/22
- A61C 17/221
- A61C 17/222
- A61C 17/224
- A61C 17/225
- A61C 17/227
- A61C 17/228
- U A61C 17/32
- U A61C 17/34
- A61C 17/3409
- A61C 17/3418
- A61C 17/3427
- A61C 17/3436
- A61C 17/3445
- A61C 17/3454
- A61C 17/3463
- A61C 17/3472
- A61C 17/3481
- A61C 17/349
- U **A61C 19/00** **Dental auxiliary appliances (dental chairs or accessories therefor, working stands whether or not combined with chairs [A61G 15/00](#))**

- U A61C 19/04
 - Measuring instruments specially adapted for dentistry ({[A61C 5/025](#) takes precedence; testing vitality of teeth [A61B 5/0534](#); radiation diagnosis [A61B 6/00](#))
- A61C 19/042
 - · {-for determining the position of a root apex}
- U A61C 19/05
 - · for determining occlusion
- A61C 19/052
 - · · {-with tracing appliances}
- U A61C 19/06
 - Implements for therapeutic treatment (radiation therapy [A61N 5/00](#))
- U A61C 19/063
 - · {Medicament applicators for teeth or gums, e.g. treatment with fluorides}
- A61C 19/066
 - · · {-Bleaching devices; Whitening agent applicators for teeth, e.g. trays or strips}

Project: N/A (A61D)**A61D 17/00**

Devices for indicating trouble during labour of animals; {Methods or instruments for detecting pregnancy-related states of animals (monitoring or measuring activity of animals [A01K 29/005](#))}

U A61D 19/00

Instruments or methods for reproduction or fertilisation

- U A61D 19/02
 - for artificial insemination
- U A61D 19/022
 - · {Containers for animal semen, e.g. pouches or vials ([A61D 19/027](#) takes precedence); Methods or apparatus for treating or handling animal semen containers, e.g. filling or closing}
- A61D 19/025
 - · · {-with means for controlling the temperature, e.g. heating or cooling}
- U A61D 19/027
 - · {Devices for injecting semen into animals, e.g. syringes, guns, probes}
- A61D 19/028
 - · · {-Supporting means thereof, e.g. saddles or belts}

Project: N/A (A61F)**U A61F 2/00**

Filters implantable into blood vessels; Prostheses, i.e. artificial substitutes or replacements for parts of the body; Appliances for connecting them with the body (as cosmetic articles, see the relevant subclasses, e.g. wigs, hair pieces, [A41G 3/00](#), [A41G 5/00](#), artificial nails [A45D 31/00](#); dental prostheses [A61C 13/00](#); materials for prostheses [A61L 27/00](#); artificial hearts [A61M 1/10](#); artificial kidneys [A61M 1/14](#))

WARNING

Groups [A61F 2/07](#), [A61F 2/844](#) - [A61F 2/97](#) correspond to IPC2013.01

- A61F 2/0004
 - {-Closure means for urethra or rectum, i.e. anti-incontinence devices or support slings against pelvic prolapse}
- A61F 2/0031
 - · {-for constricting the lumen; Support slings for the urethra}
- U A61F 2/0036
 - · · {implantable ([A61F 2/0018](#) takes precedence)}
- A61F 2/0045
 - · · · {-Support slings}
- A61F 2/0059
 - {-Cosmetic or alloplastic implants ([A61F 2/10](#) to [A61F 2/16](#), [A61F 2/28](#) take precedence)}
- A61F 2/0063
 - {-Implantable repair or support meshes, e.g. hernia meshes}
- U A61F 2/02
 - Prostheses implantable into the body {(closure means for urethra or rectum or for artificial body openings therefor [A61F 2/0004](#))}
- U A61F 2/08
 - · Muscles; Tendons; Ligaments {(sutures [A61B 17/04](#))}
- A61F 2/0805
 - · · {-Implements for inserting tendons or ligaments}
- A61F 2/0811
 - · · {-Fixation devices for tendons or ligaments}
- U A61F 2/14
 - · Eye parts, e.g. lenses, corneal implants; { Implanting instruments specially adapted therefor}; Artificial eyes

- A61F 2/142 . . . {-Cornea, e.g. artificial corneae, keratoprotheses or corneal implants for repair of defective corneal tissue}
- A61F 2/143 {-Implantation instruments specially adapted therefor}
- A61F 2/145 . . . {-Corneal inlays or onlays for refractive correction}
- A61F 2/146 {-Implantation instruments specially adapted therefor}
- U A61F 2/147 . . . {Implants to be inserted in the stroma for refractive correction, e.g. ring-like implants}
- A61F 2/148 {-Implantation instruments specially adapted therefor}
- U A61F 2/16 Intraocular lenses
- A61F 2/1613 {-having special lens configurations or particular optical properties, e.g. pseudo-accommodative lenses, lenses having variable focus or aberration corrections, multipart lenses, diffractive lenses or lenses for variably absorbing electromagnetic radiation}
- A61F 2/1616 {-Pseudo-accommodative, e.g. multifocal or enabling monovision}
- A61F 2/1618 {-Multifocal lenses}
- A61F 2/1621 {-enabling correction for monovision}
- A61F 2/1624 {-having adjustable focus or power activated variable focus means, e.g. mechanically or electrically by the ciliary muscle or from the outside}
- A61F 2/1627 {-for changing index of refraction e.g. by external means or by tilting}
- A61F 2/1629 {-for changing longitudinal position, i.e. along the visual axis when implanted}
- A61F 2/1632 {-for changing radial position, i.e. perpendicularly to the visual axis when implanted}
- A61F 2/1635 {-for changing shape}
- A61F 2/1637 {-Correcting aberrations caused by inhomogeneities of the cornea or the surface of the natural lens, or correcting intrinsic aberrations, e.g. aspheric, cylindrical, toric lenses}
- A61F 2/1648 {-Multipart lenses}
- A61F 2/1654 {-Diffractive lenses}
- A61F 2/1656 {-Fresnel lenses, prisms or plates}
- A61F 2/1659 {-having variable absorption coefficient for electromagnetic radiation, e.g. photochromic lenses}
- U A61F 2/1662 {Instruments for inserting intraocular lenses into the eye}
- A61F 2/1664 {-for manual insertion during surgery, e.g. forceps-like instruments}
- A61F 2/1667 {-with rotatable plungers}
- A61F 2/167 {-with pushable plungers}
- A61F 2/1672 {-with a two-stage plunger, e.g. rotatable and pushable or rotatable at different speeds}
- A61F 2/1675 {-with a lubricated inner surface, e.g. the lubricant being coated on the inner surface or being injected through a port}
- A61F 2/1678 {-with a separate cartridge or other lens setting part for storage of a lens, e.g. preloadable for shipping}
- U A61F 2/18 {Internal ear or nose parts, e.g. ear-drums {(implants for middle ear ventilation or drainage [A61F 11/002](#))}}
- A61F 2/186 {-Nose parts}
- A61F 2/24 {Heart valves}; {-Vascular valves, e.g. venous valves; Heart implants, e.g. passive devices for improving the function of the native valve or the heart muscle; Transmyocardial revascularisation [TMR]} devices}

- A61F 2/2409
 - • • {-Support rings therefor, e.g. for connecting valves to tissue (annuloplasty rings [A61F 2/2442](#))}
- U A61F 2/2412
 - • • {with soft flexible valve members, e.g. tissue valves shaped like natural valves (check valves with flexible valve members in general [F16K 15/14](#))}
- A61F 2/2418
 - • • • {-Scaffolds therefor, e.g. support stents}
- A61F 2/2427
 - • • {-Devices for manipulating or deploying heart valves during implantation}
- A61F 2/243
 - • • • {-Deployment by mechanical expansion}
- A61F 2/2433
 - • • • • {-using balloon catheter}
- A61F 2/2436
 - • • • • {-Deployment by retracting a sheath}
- A61F 2/2439
 - • • • • {-Expansion controlled by filaments}
- A61F 2/2442
 - • • {-Annuloplasty rings or inserts for correcting the valve shape; Implants for improving the function of a native heart valve}
- A61F 2/2445
 - • • • • {-Annuloplasty rings in direct contact with the valve annulus}
- A61F 2/2448
 - • • • • • {-D-shaped rings}
- A61F 2/2451
 - • • • • {-Inserts in the coronary sinus for correcting the valve shape}
- A61F 2/2454
 - • • • • {-Means for preventing inversion of the valve leaflets, e.g. chordae tendineae prostheses}
- A61F 2/2457
 - • • • • • {-Chordae tendineae prostheses}
- A61F 2/246
 - • • • • {-Devices for obstructing a leak through a native valve in a closed condition}
- A61F 2/2463
 - • • • • • {-Implants forming part of the valve leaflets}
- A61F 2/2466
 - • • • • • {-Delivery devices therefor}
- A61F 2/2475
 - • • • {-Venous valves}
- A61F 2/2478
 - • • • {-Passive devices for improving the function of the heart muscle, i.e. devices for reshaping the external surface of the heart, e.g. bags, strips or bands}
- A61F 2/2481
 - • • • • • {-Devices outside the heart wall, e.g. bags, strips or bands}
- A61F 2/2487
 - • • • • • {-Devices within the heart chamber, e.g. splints}
- A61F 2/2493
 - • • • {-Transmyocardial revascularisation [TMR]} devices}
- A61F 2/2496
 - • • • {-Devices for determining the dimensions of the prosthetic valve to be implanted, e.g. templates, sizers}
- U A61F 2/30
 - • Joints
- A61F 2002/30001
 - • • {Additional features of subject-matter classified in [A61F 2/28](#), [A61F 2/30](#) and subgroups thereof}
- U A61F 2/30721
 - • • {Accessories}
- A61F 2/30749
 - • • • {-Fixation appliances for connecting prostheses to the body}
- U A61F 2/30988
 - • • {Other joints not covered by any of the groups [A61F 2/32](#) to [A61F 2/4425](#)}
- A61F 2/3099
 - • • • • {-for temporo-mandibular [TM, TMJ]} joints (endoprotheses for mandibular reconstruction [A61F 2/2803](#))}
- U A61F 2/46
 - • • Special tools or methods for implanting or extracting artificial joints, accessories, bone grafts or substitutes, or particular adaptations therefor
- A61F 2/4601
 - • • • • {-for introducing bone substitute, for implanting bone graft implants or for compacting them in the bone cavity (for introducing bone cement [A61B 17/8805](#))}
- U A61F 2/50
 - Prostheses not implantable in the body {(closure means for urethra or rectum or for artificial body openings therefor [A61F 2/0004](#))}

- U A61F 2002/501
 - • {having an inflatable pocket filled with fluid, i.e. liquid or gas ([A61F 2/602](#), [A61F 2002/74](#), [A61F 2/7843](#) take precedence; for lubrication [A61F 2002/5086](#))}
- A61F 2002/5013
 - • • {filled with particles (-for joints [A61F 2002/30588](#)-)}
- U A61F 2/82
 - Devices providing patency to, or preventing collapsing of, tubular structures of the body, e.g. stents (stent-grafts for tubular structures of the body other than blood vessels [A61F 2/04](#); stent-grafts for blood vessels [A61F 2/07](#); instruments specially adapted for placement or removal of stents or stent-grafts [A61F 2/95](#); for closing wounds, or holding wounds closed [A61B17/03](#); dilators [A61M 29/00](#))
- U A61F 2/86
 - • Stents in a form characterised by the wire-like elements; Stents in the form characterised by a net-like or mesh-like structure
- A61F 2/88
 - • • the wire-like elements formed as helical or spiral coils (-forming a net-like or mesh-like structure [A61F 2/90](#)-)
- A61F 2/885
 - • • • {-comprising a coil including a plurality of spiral or helical sections with alternate directions around a central axis}
- A61F 4/00**

Methods or devices enabling invalids to operate an apparatus or a device not forming part of the body (operating or control means for prostheses [A61F 2/68](#); {serving devices for one-handed persons [A47G 21/08](#)})
- U **A61F 5/00**

Orthopaedic methods or devices for non-surgical treatment of bones or joints (surgical instruments or methods for treatment of bones or joints, devices specially adapted therefor [A61B 17/56](#)); Nursing devices; {Anti-rape devices}{bandages, dressings or absorbent pads [A61F 13/00](#)}
- A61F 5/0003
 - {-Apparatus for the treatment of obesity; Anti-eating devices (surgical instruments or methods for treatment of obesity, devices specially adapted therefor [A61B 17/00](#); hollow or tubular parts of organs [A61F 2/04](#))}
- A61F 5/0006
 - • {-Diet or mouth appliances}
- A61F 5/0009
 - • {-External belts}
- A61F 5/0013
 - • {-Implantable devices or invasive measures}
- A61F 5/0026
 - • • {-Anti-eating devices using electrical stimulation}
- A61F 5/003
 - • • {-inflatable}
- A61F 5/0033
 - • • • {-with more than one chamber}
- A61F 5/0036
 - • • {-Intragastrical devices}
- A61F 5/004
 - • • • {-remotely adjustable}
- A61F 5/0043
 - • • • • {-using injection ports}
- A61F 5/0046
 - • • • • {-with wireless means}
- A61F 5/005
 - • • {-Gastric bands}
- A61F 5/0053
 - • • • {-remotely adjustable}
- A61F 5/0056
 - • • • • {-using injection ports}
- A61F 5/0059
 - • • • • {-with wireless means}
- A61F 5/0063
 - • • • {-wrapping the stomach}
- A61F 5/0066
 - • • • {-Closing devices for gastric bands}
- A61F 5/0069
 - • • {-in the wall of the stomach}
- A61F 5/0073
 - • • {-in the abdominal cavity, e.g. not attached to the stomach}
- A61F 5/0076
 - • • {-preventing normal digestion, e.g. Bariatric or gastric sleeves}
- A61F 5/0079
 - • • • {-Pyloric or esophageal obstructions}
- A61F 5/0083
 - • • {-Reducing the size of the stomach, e.g. gastroplasty}(surgical interventions [A61B 17/00](#))
- A61F 5/0086
 - • • • {-using clamps, folding means or the like}

- A61F 5/0089
 - • {-Instruments for placement or removal}
- U A61F 5/01
 - Orthopaedic devices, e.g. splints, casts or braces
- U A61F 5/04
 - • Devices for stretching or reducing fractured limbs; Devices for distractions; Splints {(plaster of Paris bandages [A61F 13/04](#); with surgery [A61B 17/60](#))}
- U A61F 5/05
 - • • for immobilising ([A61F 5/0102](#) takes precedence)
- U A61F 5/058
 - • • • Splints
- U A61F 5/05841
 - • • • • {for the limbs ([A61F 5/05816](#), [A61F 5/05833](#) take precedence)}
- A61F 5/05858
 - • • • • • {-for the arms (restraining devices, e.g. slings [A61F 5/37](#))}
- A61F 5/05883
 - • • • • • {-for the neck or head ([A61F 5/05816](#), [A61F 5/05833](#) take precedence; cervical supports [A61F 5/055](#))}
- A61F 5/30
 - • Pressure-pads (corn-pads, corn-rings [A61F 13/06](#); {tourniquets [A61B 17/132](#))}
- U A61F 5/37
 - Restraining devices for the body or for body parts, {e.g. slings}; Restraining shirts {(handcuffs [E05B 75/00](#))}
- A61F 5/3707
 - • {-for the head (cervical supports [A61F 5/055](#); splints [A61F 5/05883](#))}
- U A61F 5/44
 - Devices worn by the patient for reception of urine, faeces, catamenial or other discharge; {Portable urination aids}{absorbent pads, e.g. sanitary towels, [A61F 13/15](#); drainage appliances for wounds [A61M 27/00](#); {emptying devices for urine bags [B65B 69/0016](#)}; Colostomy devices (adhesives for colostomy devices [A61L 24/00](#); materials for colostomy devices [A61L 28/00](#))}
- U A61F 5/4404
 - • {Details or parts}
- A61F 5/4405
 - • • {Valves or valve arrangements specially adapted therefor ([A61F 5/441](#) takes precedence); Fluid inlets or outlets-([A61F 5/4407](#) takes precedence)}
- A61F 5/443
 - • having {adhesive seals for securing to the body, e.g. of}hydrocolloid type, e.g. gels, starches, karaya gums{(adhesives or sealing pads therefor [A61L 24/00](#))}
- U A61F 7/00**
 - Heating or cooling appliances for medical or therapeutic treatment of the human body (heating or cooling means in connection with bedsteads or mattresses [A47C 21/00](#); {massage, therapeutic baths [A61H](#)}; hyperthermia using electric or magnetic fields or ultrasound [A61N](#); electric heating elements [H05B](#))**
- A61F 7/007
 - {-characterised by electric heating}
- A61F 7/0085
 - {-Devices for generating hot or cold treatment fluids}
- A61F 7/0097
 - {-Blankets with active heating or cooling sources (warming mats [A61F 7/08](#))}
- U A61F 7/02
 - Compresses or poultices for effecting heating or cooling
- A61F 7/0241
 - • {-Apparatus for the preparation of hot packs, hot compresses, cooling pads, e.g. heaters or refrigerators}
- U A61F 7/03
 - • Thermophore, i.e. self-heating, { e.g. using a chemical reaction}
- A61F 7/032
 - • • {-using oxygen from the air, e.g. pocket-stoves}
- A61F 7/034
 - • • • {-Flameless}
- U A61F 7/08
 - Warming pads, pans or mats ([A61F 7/02](#) takes precedence); Hot-water bottles
- WARNING
Not complete, see also [A61F 7/02](#)
- A61F 7/086
 - • {-Closures; Filling openings}

- U A61F 9/00** **Method or devices for treatment of the eyes; Devices for putting-in contact lenses; Devices to correct squinting; Apparatus to guide the blind; Protective devices for the eyes, carried on the body or in the hand (caps with means for protecting the eyes [A42B 1/06](#); visors for helmets [A42B 3/22](#); {retractors [A61B 17/02](#); manipulators specially adapted for use in surgery [A61B 19/22](#)}; appliances to aid invalids to move about [A61H 3/00](#); {exercisers for the eyes [A61H 5/00](#)}; eye baths [A61H 35/02](#); sunglasses or goggles having the same features as spectacles [G02C](#))**
- U A61F 9/007 • Methods or devices for eye surgery
- A61F 9/0079 • • {-using non-laser electromagnetic radiation, e.g. non-coherent light or microwaves}
- U A61F 9/008 • • using laser
- A61F 9/00802 • • • {-for photoablation}
- A61F 9/00804 • • • • {-Refractive treatments}
- A61F 9/00806 • • • • • {-Correction of higher orders}
- A61F 9/00808 • • • • • {-Inducing higher orders, e.g. for correction of presbyopia}
- A61F 9/0081 • • • • • {-Transplantation}
- A61F 9/00812 • • • • • {-Inlays; Onlays; Intraocular lenses (IOL)}
- A61F 9/00814 • • • • • {-Laser features or special beam parameters therefor}
- A61F 9/00817 • • • • • {-Beam shaping with masks}
- A61F 9/00819 • • • • • • {-with photoablatable masks}
- A61F 9/00821 • • • • • {-for coagulation}
- A61F 9/00823 • • • • • • {-Laser features or special beam parameters therefor}
- A61F 9/00825 • • • • • • {-for photodisruption}
- A61F 9/00827 • • • • • • • {-Refractive correction, e.g. lenticle}
- A61F 9/00829 • • • • • • • • {-Correction of higher orders}
- A61F 9/00831 • • • • • • • • {-Transplantation}
- A61F 9/00834 • • • • • • • • • {-Inlays; Onlays; Intraocular lenses (IOL)}
- A61F 9/00836 • • • • • • • • • • {-Flap cutting}
- A61F 9/00838 • • • • • • • • • • • {-Correction of presbyopia}
- A61F 9/0084 • • • • • • • • • • • {-Laser features or special beam parameters therefor}
- A61F 9/009 • • • • Auxiliary devices making contact with the eye-ball and coupling in laser light, {e.g. gonioscopes-{apparatus for eye examination [A61B 3/0008](#)}}
- A61F 9/013 • • • {Instruments} for compensation of ocular refraction, ([A61F 9/008](#) takes precedence); {Instruments for use in cornea removal, for reshaping or performing incisions in the cornea}
- A61F 9/0133 • • • • • {-Knives or scalpels specially adapted therefor}
- A61F 9/04 • • • • • Eye-masks; {Devices to be worn on the face, not intended for looking through; Eye-pads for sunbathing-{eye-bandages [A61F 13/12](#); protective face-masks [A41D 13/11](#); protectors for shampooing [A45D](#)}}
- U A61F 13/00** **Bandages or dressings (suspensory bandages [A61F 5/40](#); { contact-avoiding wound protectors [A61F 15/008](#); bandages or dressings with incorporated medicaments [A61L 15/44](#), [A61M 35/006](#); radioactive dressings [A61N 5/1029](#)}); Absorbent pads (chemical aspects of, or use of materials for, bandages, dressings or absorbent pads [A61L 15/00](#); { absorbent pads for tracheostomy [A61M 16/047](#)})**
- A61F 13/00004 • • • • • {-Non-adhesive dressings}
- A61F 13/00008 • • • • • • {-characterized by the material}

- A61F 13/00012 . . . {being made of natural material e.g. cellulose-, protein-, collagen-based}
- A61F 13/00017 . . . {synthetic e.g. polymer based}
- A61F 13/00021 . . {characterized by the structure of the dressing}
- A61F 13/00025 . . . {made of a single layer}
- A61F 13/00029 . . . {made of multiple layers }
- A61F 13/00034 . . {characterized by a property}
- A61F 13/00038 . . . {Flexibility, stretchability or elasticity }
- A61F 13/00042 . . . {Absorbency}
- A61F 13/00046 . . . {Air-vapor permeability}
- A61F 13/00051 . {Accessories for dressings}
- A61F 13/00055 . . {Saturation indicators}
- A61F 13/00059 . . {provided with visual effects e.g. printed or colored}
- A61F 13/00063 . . {comprising medicaments or additives e.g. odor control, PH control, debriding, antimicrobial (drug delivery dressings [A61K 9/70](#); chemical aspect of the additives [A61L 15/00](#))}
- A61F 13/00068 . . {specially adapted for application or removal of fluid e.g. irrigation or drainage of wounds, under-pressure wound-therapy ([A61F 13/0216](#) takes precedence; Drainage appliances for wounds in general [A61M 27/00](#))}
- A61F 13/00072 . . {Packaging of dressings}
- A61F 13/00076 . . . {Packaging of adhesive dressings}
- A61F 13/0008 {having means for facilitating the removal of the packaging and release liner}
- A61F 13/00085 . . {having means for facilitating the application on the skin, e.g. single hand handling facilities ([A61F 13/0259](#) takes precedence; bandage applicators separate from the bandage or the packaging [A61F 15/005](#))}
- U A61F 2013/00089 . {Wound bandages ([A61F 2013/00361](#) takes precedence;)}
- U A61F 2013/0017 . . {possibility of applying fluid }
- U A61F 2013/00174 . . . {possibility of applying pressure }
- A61F 2013/00178 {hand-held [CO2](#) cylinder, e.g. sparklet-}
- A61F 2013/00353 . . {for red nails, in-grown nails or felons (*inflamed digits*)(~~inflamed digits~~)}
- A61F 13/00987 . {Apparatus or processes for manufacturing non-adhesive dressings or bandages}
- A61F 13/00991 . . {for treating webs, e.g. for moisturising, coating, impregnating or applying powder}
- A61F 13/00995 . . . {for mechanical treatments}
- U A61F 13/02 . . Adhesive plasters or dressings ([A61F 13/06](#) to [A61F 13/15](#) take precedence; { for diagnosis, e.g. allergy test patches, [A61B 10/0035](#)}; surgical adhesives or cements [A61L 24/00](#); { for transdermal drug administration [A61M 35/00](#))}
- A61F 13/0203 . . {having a fluid handling member}
- A61F 13/0206 . . . {the fluid handling member being absorbent fibrous layer , e.g. woven or nonwoven absorbent pad, island dressings}
- A61F 13/0209 {comprising superabsorbent material}
- A61F 13/0213 . . . {the fluid handling member being a layer of hydrocolloid, gel forming material}
- A61F 13/0216 . . . {the fluid handling member being non absorbent, e.g. for use with sub- or over-pressure therapy, wound drainage or wound irrigation systems}
- A61F 13/022 . . . {having more than one layer with different fluid handling characteristics}

- A61F 13/0223 . . . {characterized by parametric properties of the fluid handling layer e.g. absorbency, wicking capacity, liquid distribution}
- A61F 13/0226 . . . {characterised by the support layer}
- A61F 13/023 . . . {wound covering film layers without a fluid handling layer}
- A61F 13/0233 . . . {characterised by the occlusive layer skin contacting layer}
- A61F 13/0236 . . . {characterised by the application/handling support layer}
- A61F 13/024 {the application or handling support layer being removable}
- A61F 13/0243 . . . {characterised by the properties of the skin contacting layer, e.g. air-vapor permeability}
- A61F 13/0246 . . . {characterised by the skin adhering layer}
- A61F 13/025 {having a special distribution arrangement of the adhesive}
- A61F 13/0253 {characterized by the adhesive material}
- A61F 13/0256 {characterized by the parametric properties of the adhesive}
- A61F 13/0259 . . . {characterised by the release liner covering the skin adhering layer}
- A61F 13/0263 {especially adapted for island dressings}
- A61F 13/0266 {especially adapted for wound covering/occlusive dressings}
- A61F 13/0276 . . . {Apparatus or processes for manufacturing adhesive dressings or bandages}
- A61F 13/0283 {for making adhesive or cohesive tape or fabrics therefor, e.g. coating or mechanical treatments}
- A61F 13/0286 {manufacturing of non adhesive dressings}
- A61F 13/0289 {manufacturing of adhesive dressings}
- A61F 13/0293 {manufacturing of plaster of Paris}
- A61F 2013/0296 {for making transdermal patches (*chemical processes excluded*)}(*chemical processes excluded*)
- U A61F 13/06 . . . specially adapted for feet or legs; Corn-pads; Corn-rings
- U A61F 13/061 . . . {for knees (incorporating non-textile reinforcing elements, e.g. springs or stays, [A61F 5/0111](#); Patella supports)}
- A61F 13/062 {Openable readjustable}
- U A61F 13/08 . . . Elastic stockings; for contracting aneurisms
- A61F 13/085 {Openable readjustable}
- U A61F 13/10 . . . specially adapted for fingers, hands, or arms; Finger-stalls; Nail-protectors {(restraining devices for arms [A61F 5/37](#); shoulder bandages [A61F 13/14](#))}
- U A61F 13/101 {for the elbow, e.g. decubitus ulcer bandages ([A61F 13/107](#) takes precedence)}
- A61F 13/102 {Openable readjustable}
- U A61F 13/107 {for wrist support (incorporating non-textile reinforcing elements, e.g. springs or metal braces [A61F 5/0118](#)); Compression devices for tennis elbow (epicondylitis)}
- A61F 13/108 {Openable readjustable}
- U A61F 13/12 . . . specially adapted for the head or neck
- A61F 13/122 {specially adapted for the face}
- A61F 13/124 {specially adapted for the eyes}
- A61F 13/126 {specially adapted for the nose}
- A61F 13/128 {specially adapted for the neck}
- U A61F 13/14 . . . specially adapted for the breast or abdomen (corsets or bandages for support of breast or abdomen [A61F 5/03](#))
- A61F 13/141 {Milk breast pads}

- A61F 13/143
 - • {-Thorax bandages or bandaging garments}
- A61F 13/145
 - • • {-specially adapted for the female anatomy}
- A61F 13/146
 - • {-Shoulder bandages or bandaging garments}
- A61F 13/148
 - • {-Abdomen bandages or bandaging garments}
- U A61F 13/15
 - Absorbent pads, e.g. sanitary towels, swabs or tampons for external or internal application to the body (non-absorbent catamenial receptacles [A61F](#)); Supporting or fastening means therefor; Tampon applicators
- A61F 2013/16
 - • {-Sanitary towels; Means for supporting or fastening them }

WARNING
For group **A61F13/16** and subgroups see warning after [A61F 13/00](#)
- U A61F 13/20
 - • Tampons, e.g. catamenial tampons; Accessories therefor

WARNING
For group [A61F 13/20](#) and subgroups see warning after [A61F 13/00](#)
- A61F 13/2002
 - • • {-characterised by the use}
- A61F 13/2005
 - • • • {-specially adapted for the nose cavity}
- A61F 13/2008
 - • • • {-specially adapted for the oral cavity}
- A61F 13/2011
 - • • • {-specially adapted for anal cavity}
- A61F 13/2017
 - • • • {-specially adapted for the ear cavity}
- A61F 13/202
 - • • • {-Catamenial tampons ([A61F 13/2022-A61F 13/34](#) take precedence)}
- A61F 13/2022
 - • • {-characterised by the shape}
- A61F 13/2025
 - • • • {-adapted to change of shape once expelled of the applicator}
- A61F 13/2028
 - • • • {-adapted to change of shape after absorption of liquid}
- A61F 13/2031
 - • • • {-having depressions or elevations, e.g. dots, lines}
- A61F 13/2034
 - • • • {-having grooves or ribs, having a main axis in the longitudinal direction }
- A61F 13/2037
 - • • • {-having grooves or ribs, having a main axis in the radial direction }
- A61F 13/204
 - • • • {-having an external member remaining outside the body cavity e.g. for form fitting or leakage prevention (withdrawal strings persee [A61F 13/34](#))}
- A61F 13/2042
 - • • • {-having a central tubular opening}
- A61F 13/2048
 - • • • {-Ball-shaped tampons}
- A61F 13/2051
 - • • {-characterised by the material or the structure of the inner absorbing core}
- A61F 13/2054
 - • • • {-made by compressing a not-rolled web or pledged}
- A61F 13/2057
 - • • • {-made of foam}
- A61F 13/206
 - • • • {-Tampons made of rolled-up material}
- A61F 13/2071
 - • • {-characterised by the material or the structure of the outer layer}
- A61F 13/2074
 - • • {-impregnated with hydrophobic, hydrophilic, skin enhancers, medicinal etc. substances }
- A61F 13/2077
 - • • {-having a visual effect e.g. printed or embossed}
- A61F 13/208
 - • • {-having means for avoiding leakage e.g. liquid impermeable withdrawal end ([A61F 13/204](#) takes precedence)}
- U A61F 13/2082
 - • • {Apparatus or processes of manufacturing}
- U A61F 13/2085
 - • • • {Catamenial tampons}
- A61F 13/2088
 - • • • • {-shaping the tampon by compressing }
- A61F 13/2091
 - • • • • {-providing grooves on the tampon}
- A61F 13/2094
 - • • • • {-rolling a web material to form a tampon}
- A61F 13/2097
 - • • • • {-method of manufacturing tampon applicators}

- A61F 13/38
 - • Swabs having a stick-type handle, {e.g. cotton tips- (ear cleaners other than cotton tips [A61F 11/006](#); swabs containing a liquid, e.g. in a rupturable reservoir, [A61M 35/006](#))}
- U A61F 13/45
 - • characterised by the shape (cup-shaped type tampons **A61F13/24**)
- A61F 2013/4512
 - • • {folded in special shape during use (-[A61F 13/534](#) , [A61F 13/551](#), [A61F 13/56](#), [A61F 13/15747](#) take precedence)}
- U A61F 13/47
 - • • Sanitary towels, incontinence pads or napkins ([A61F 13/49](#) takes precedence)
- A61F 13/4702
 - • • • {-having a reinforcing member}
- A61F 13/4704
 - • • • {-having preferential bending zones, e.g. fold lines or grooves}
- U A61F 13/472
 - • • • specially adapted for female use {([A61F 13/474](#), [A61F 13/475](#), [A61F 13/476](#) take precedence)}
- A61F 13/47209
 - • • • • {-having only interlabial part, i.e. with no extralabial parts}
- A61F 13/47218
 - • • • • {-with a raised crotch region, e.g. hump}
- A61F 13/47236
 - • • • • {-characterised by an unusual contour}
- A61F 13/47245
 - • • • • • {-with asymmetry around the x or y axis}
- A61F 13/47254
 - • • • • • • {-with a tanga shape}
- A61F 13/47263
 - • • • • {-with activating means, e.g. elastic, heat or chemical activatable means}
- A61F 13/47272
 - • • • • • {-with a longitudinal raised end, e.g. cup-shaped gluteal groove (for edge leakage prevention [A61F 13/494](#))}
- U A61F 13/475
 - • • • characterised by edge leakage prevention means
- A61F 13/4751
 - • • • • {-the means preventing fluid flow in a transversal direction}
- A61F 13/4752
 - • • • • • {-the means being an upstanding barrier}
- A61F 13/4753
 - • • • • • • {-the barrier being not integral with the topsheet or backsheet}
- A61F 13/4755
 - • • • • • • {-the means being a flat barrier on or inside the absorbent article, e.g. backsheet wrapped around the edges}
- A61F 13/4756
 - • • • • • • {-the means consisting of grooves, e.g. channels, depressions or embossments, resulting in a heterogeneous surface level}
- A61F 13/4757
 - • • • • • • {-the means being located outside the perimeter of the absorbent core ([A61F 13/4752](#) takes precedence)}
- A61F 13/4758
 - • • • • • • {-the means preventing fluid flow in a longitudinal direction}
- U A61F 13/49
 - • • Absorbent articles specially adapted to be worn around the waist, e.g. diapers
- A61F 13/49001
 - • • • {-having preferential bending zones, e.g. fold lines or grooves}
- A61F 13/49003
 - • • • • {-Reusable, washable fabric diapers}
- A61F 13/49004
 - • • • • • {-with fastening means}
- A61F 13/49006
 - • • • • • • {-the reusable article being in the form of pants or briefs, e.g. slip or panty for light incontinence}
- A61F 13/49007
 - • • • • {-Form-fitting, self-adjusting disposable diapers}
- A61F 13/49009
 - • • • • • {-with elastic means}
- A61F 13/49011
 - • • • • • • {-the elastic means is located at the waist region}
- A61F 13/49012
 - • • • • • • • {-the elastic means being elastic panels}
- A61F 13/49014
 - • • • • • • • • {-the elastic means is located at the side panels}
- A61F 13/49015
 - • • • • • • • • • {-the elastic means being elastic panels}
- A61F 13/49017
 - • • • • • • • • • • {-the elastic means being located at the crotch region}

- A61F 13/49019 {-the elastic means being placed longitudinally, transversely or diagonally over the article}
- A61F 13/4902 {-characterised by the elastic material}
- A61F 2013/49041 {having a specific location other than covered by groups [A61F 13/49011](#) - [A61F 13/49019](#)}
- A61F 13/49058 {-characterised by the modular concept of constructing the diaper}
- A61F 13/4906 {-the diaper having an outer chassis forming the diaper and an independent absorbent structure attached to the chassis}
- A61F 13/49061 {-the diaper having one or two waist members forming the diaper waist region and an independent absorbent structure attached to the one or two waist members forming the crotch region}
- U A61F 2013/49068 {characterized by the shape of the outline }
- A61F 2013/49082 {being a complex shape not covered by the other groups [A61F 2013/49068-A61F 2013/4908](#)}
- U A61F 13/491 specially adapted for gender distinct urine discharge pattern
- A61F 13/4915 {-specially adapted for male use}
- A61F 13/493 adjustable { by adding or removing material e.g. umbilical cord arrangements-(adjustable by the fastening [A61F 13/5638](#), [A61F 13/5655](#))}
- U A61F 13/494 characterised by edge leakage prevention means
- A61F 13/49406 {-the edge leakage prevention means being at the crotch region}
- A61F 13/49413 {-the edge leakage prevention means being an upstanding barrier}
- A61F 13/4942 {-the barrier not being integral with the top- or back-sheet}
- A61F 13/49426 {-the barrier having an absorbent medium}
- A61F 13/49446 {-the edge leakage prevention means being an impermeable sheet or impermeable part of a sheet placed on or under the top sheet ([A61F 13/49413](#) takes precedence)}
- A61F 13/49453 {-the edge leakage prevention sheet being combined with the impermeable backing sheet, e.g. integral with the backing sheet}
- A61F 13/4946 {-the edge leakage prevention means being an absorbent medium ([A61F 13/49426](#) takes precedence)}
- A61F 13/49466 {-the edge leakage prevention means being at the waist region}
- A61F 13/49473 {-the edge leakage prevention means having a continuous closed form, e.g. circle, ellipse, rectangle}
- U A61F 13/496 in the form of pants or briefs
- A61F 13/4963 {-characterized by the seam}
- U A61F 13/51 characterised by the outer layers {(wicking or transfer layers [A61F 13/537](#))}
- U A61F 13/511 Topsheet, i.e. the permeable cover or layer facing the skin
- A61F 13/51104 {-the top sheet having a three-dimensional cross-section e.g. corrugations, embossments, recesses or projections}
- A61F 13/51108 {-the top sheet having corrugations or embossments having one axis relatively longer than the other axis e.g. forming channels or grooves in a longitudinal direction}
- A61F 13/51113 {-comprising an additive e.g. lotion or odour control [A61F 13/51108](#) takes precedence}
- A61F 13/51121 {-characterised by the material}
- A61F 13/5116 {-being formed of multiple layers ([A61F 13/5123](#) takes precedence)}
- U A61F 13/512 characterised by its apertures, e.g. perforations

- A61F 13/5121 {characterised by the vertical shape of the apertures e.g. three dimensional apertures , e.g. macro-apertures}
- A61F 13/5123 {the apertures being formed on a multilayer top sheet}
- A61F 13/5125 {the apertures not being formed through the complete thickness of the topsheet e.g. blind holes (blind holes in a single layered topsheet [A61F 13/51104](#))}
- A61F 13/5126 {characterised by the planar distribution of the apertures, e.g. in a predefined pattern}
- A61F 13/513 {characterised by its function or properties, e.g. stretchability, breathability, rewet, visual effect;} having areas of different permeability
- A61F 13/51305 {having areas of different permeability}
- A61F 13/51311 {the permeability gradient being in the vertical direction}
- A61F 13/51394 {creating a visual effect, e.g. having a printed or coloured topsheet, printed or coloured sub-layer but being visible from the topsheet, other than embossing for purposes of bonding, wicking, acquisition, leakage-prevention}
- U A61F 13/514 backsheet, i.e. the impermeable cover or layer furthest from the skin
 {{[A61F 13/15211](#), [A61F 13/15252](#) take precedence}}
- A61F 13/51401 {characterised by the material}
- A61F 13/51403 {with activating means, e.g. for closing apertures upon contact with water}
- A61F 13/51405 {treated or coated, e.g. with moisture repellent agent}
- A61F 13/51456 {characterised by its properties}
- A61F 13/51458 {being air-pervious or breathable}
- A61F 13/5146 {having apertures of perforations}
- A61F 13/51462 {being defined by a value or parameter}
- A61F 13/51464 {being stretchable or elastomeric}
- A61F 13/51466 {providing stretchability without the use of elastic material}
- A61F 13/51474 {characterised by its structure}
- A61F 13/51476 {being three-dimensional, e.g. embossed, textured, pleated, or with three-dimensional features, like gathers or loops}
- A61F 13/51478 {being a laminate, e.g. multi-layered or with several layers}
- A61F 13/5148 {having an impervious inner layer and a cloth-like outer layer}
- A61F 13/51484 {being inhomogeneous in the plane of the sheet, i.e. having zones of different properties or structures}
- A61F 13/51496 {having visual effects}
- A61F 13/51498 {Details not otherwise provided for}
- A61F 13/52 Layers coated or treated to decrease absorbency
- U A61F 13/53 characterised by the absorbing medium ([A61F 13/20](#) takes precedence)
- U A61F 13/531 having a homogeneous composition through the thickness of the pad
 ([A61F 13/538](#), [A61F 13/539](#) take precedence)
- U A61F 13/532 inhomogeneous in the plane of the pad
- A61F 13/5323 {having absorbent material located in discrete regions, e.g. pockets}
- U A61F 13/534 having an inhomogeneous composition through the thickness of the pad
 ({[A61F 13/538](#), [A61F 13/539](#) take precedence; homogeneous cores with tissue wrapping [A61F 13/53](#))}
- A61F 13/53409 {having a folded core}
- A61F 13/53418 {having a C-folded cross-section}

- A61F 13/53427 {having an e-folded cross-section}
- A61F 13/53436 {having an undulated or corrugated cross-section}
- U A61F 13/537 characterised by a layer facilitating or inhibiting flow in one direction or plane, e.g. a wicking layer {(A61F 13/538 takes precedence)}
- A61F 13/53704 {the layer having an inhibiting function on liquid propagation}
- A61F 13/53708 {the layer having a promotional function on liquid propagation in at least one direction}
- A61F 13/53713 {the layer having a promotional function on liquid propagation in the vertical direction}
- A61F 13/53717 {the layer having a promotional function on liquid propagation in the horizontal direction}
- A61F 13/53743 {characterised by the position of the layer relative to the other layers}
- A61F 13/53752 {the layer is embedded in the absorbent core}
- A61F 13/53756 {the layer facing the back-sheet}
- A61F 13/5376 {characterised by the performance of the layer, e.g. acquisition rate, distribution time, transfer time}
- U A61F 13/551 Packaging before or after use {(general packaging of absorbent pads [B65D 85/00](#))}
- A61F 13/55105 {packaging of diapers}
- A61F 13/5511 {characterized by the container ([A61F 15/00](#) takes precedence)}
- A61F 13/55115 {characterized by the features before use e.g. how are the diapers folded or arranged in a package}
- A61F 13/5512 {after use}
- A61F 13/5513 {packaging of feminine sanitary napkins}
- A61F 13/55135 {before use}
- A61F 13/5514 {each item packaged single}
- A61F 13/55145 {multiple packaged items}
- A61F 13/5515 {after use}
- A61F 13/5516 {packaging of interlabial absorbing articles}
- A61F 13/55165 {before use}
- A61F 13/5517 {after use}
- A61F 13/55175 {packaging of tampons}
- A61F 13/5518 {after use}
- A61F 13/55185 {in combination with the applicator}
- A61F 13/5519 {packages containing more than one kind of item e.g. tampon and napkin, or diaper and an exchangeable insert}
- U A61F 13/56 Supporting or fastening means
- U A61F 13/5622 {specially adapted for diapers or the like}
- A61F 13/5633 {open type diaper}
- A61F 13/5638 {adjustable open type diapers (adjustable otherwise than by the fasteners [A61F 13/493](#))}
- A61F 13/5644 {having more than one pair of fasteners}
- A61F 13/565 {pants type diaper}
- A61F 13/5655 {adjustable pants type diapers (adjustable otherwise than by the fasteners [A61F 13/493](#))}

- A61F 13/62
- • • {-Mechanical fastening means, ([A61F 13/5611](#), [A61F 13/5616](#), [A61F 13/581](#), [A61F 13/66](#) take precedence);} Fabric strip fastener elements, e.g. hook and loop
- WARNING
See warning after [A61F 13/00](#)
- A61F 13/622
- • • • {-Fabric strip fastener elements, e.g. hook and loop}
- A61F 13/625
- • • • • {-characterised by the hook}
- A61F 13/627
- • • • • {-characterised by the loop}
- U A61F 13/66
- • • Garments, holders or supports not integral with absorbent pads
- WARNING
For group [A61F 13/66](#) and subgroups see warning after [A61F 13/00](#)
- A61F 13/665
- • • • {-Means specific for supporting or fastening sanitary towels; and sanitary towels}
- U A61F 13/84
- • Accessories, not otherwise provided for, for absorbent pads
- A61F 13/8405
- • • {-Additives, e.g. for odour, disinfectant or pH control}
- U A61F 15/00**
- Auxiliary appliances for wound dressings; Dispensing containers for dressings or bandages {(packaging of absorbent articles such as diapers, feminine hygiene absorbing pads or tampons [A61F 13/551](#); packaging of wound dressings [A61F 13/00072](#))}**
- A61F 15/001
- {Packages or dispensers for bandages, cotton balls, drapes, dressings, gauze, gowns, sheets, sponges, swabsticks or towels (-[A61F 15/007](#) takes precedence)}
- A61F 15/002
- • {-dispensers for web or tape like bandages}
- A61F 15/003
- • {-dispensers for catamenial tampons}

Project: N/A (A61G)**A61G**

TRANSPORT OR ACCOMODATION FOR PATIENTS; OPERATING TABLES OR CHAIRS; CHAIRS FOR DENTISTRY; FUNERAL DEVICES (-embalming corpses [A01N 1/00](#) ; { chairs or beds in general [A47C](#); walking aids [A61H 3/00](#) })

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

A61G 3/04	covered by	A61G 3/02
A61G 7/043	covered by	A61G 7/05
A61G 7/12	covered by	A61G 7/10
A61G 7/14	covered by	A61G 7/10
A61G 7/16	covered by	A61G 7/10
A61G 15/04	covered by	A61G 15/02
A61G 15/06	covered by	A61G 15/02
A61G 17/013	covered by	A61G 17/00

U A61G 1/00**Stretchers**

- A61G 1/003
- with facilities for picking up patients or disabled persons, e.g. break-away type or using endless belts{ devices in general for lifting disabled persons [A61G 7/10](#)-}
- A61G 1/007
- with skis or sled runners (-ski vehicles [A63C 5/00](#)-)
- A61G 1/01
- Sheets specially adapted for use as or with stretchers (-restraining devices used in nursing [A61F 5/37](#)-)

- A61G 1/013 · foldable or collapsible (-[A61G 1/017](#) takes precedence-)
- U A61G 1/02 · with wheels
- U A61G 1/0237 · · {having at least one swivelling wheel, e.g. castors}
- A61G 1/0243 · · · {with lockable swivel action, e.g. fixing castor in certain direction (-Locking of castor swivel action in general [B60B 33/02-](#))}
- A61G 1/0287 · · {having brakes, e.g. slowing down and/or holding (-~~Details of brake actuators on castors [B60B 33/0078](#)~~; *Details of brake actuators on castors [B60B 33/0078](#)*; Brakes on hand carts [B62B 5/04](#); Brakes in general [F16D 49/00](#) - [F16D 65/853-](#))}
- A61G 1/0293 · · {stretcher supports with wheels, e.g. used for stretchers without wheels (-Stretcher supports without wheels [A61G 1/06-](#))}
- A61G 1/06 · Supports for stretchers, e.g. to be placed in or on vehicles((-[A61G 1/0293](#) takes precedence; supports fixed to a vehicle [A61G 3/02](#) - [A61G 3/08-](#))}
- U A61G 3/00** **Ambulance aspects of vehicles; Vehicles with special provisions for transporting patients or disabled persons, or their personal conveyances, e.g. for facilitating access of, or for loading, wheelchairs**
- A61G 3/006 · {Means for reducing the influence of acceleration on patients, e.g. suspension systems of platforms (-securing loads against shocks in general [B60P 7/16-](#))}
- A61G 3/008 · {Ventilation, sterilisation or air conditioning aspects (-in general [B60H-](#))}
- U A61G 3/02 · Loading or unloading personal conveyances; Facilitating access of patients or disabled persons to, or exit from, vehicles
- A61G 3/0218 · · {Loading or unloading stretchers (-transfer using ramps, lifts or the like [A61G 3/06](#) - [A61G 3/066](#); accommodating or securing wheelchairs or stretchers [A61G 3/08](#) - [A61G 3/0891-](#))}
- U A61G 3/06 · · Transfer using ramps, lifts or the like
- A61G 2003/067 · · · {with compartment for horizontally storing the ramp or lift (-load transporting vehicles with a ramp being stored under the loading floor when not in use [B60P 1/431-](#))}
- A61G 2003/068 · · · {in combination with folding stairs (-retractable steps or ladders facilitating access to or on a vehicle [B60R 3/02](#); folding steps for railway vehicles [B61D 23/02](#); collapsible stairs in buildings [E04F 11/06-](#))}
- A61G 3/08 · Accommodating or securing wheelchairs {or stretchers}
- A61G 3/0816 · · {Accommodating or securing stretchers (-support for stretchers independent from vehicle [A61G 1/06](#); loading stretchers [A61G 3/02-](#))}
- A61G 5/00** **Chairs or personal conveyances specially adapted for patients or disabled persons, e.g. wheelchairs ({ chairs with toilet conveniences [A47K 11/04](#); } devices enabling patients or disabled persons to operate an apparatus or device not forming part of the body [A61F 4/00](#); {running gear or propulsion features [B60K](#);} bicycles specially adapted for disabled riders [B62K 3/16](#); { Invalid chairs having removable seats specially adapted to be transferred with the invalid to a vehicle and support the invalid during use of the vehicle [A61G 3/02](#) })**
- NOTE**
Invalid chairs having removable seats specially adapted to be transferred with the invalid to a vehicle and support the invalid during use of the vehicle are classified in group [A61G 3/00](#)
- A61G 5/003 · {Wheelchairs attached to a cycle steerable by an attendant (-wheel chairs propelled by the patient [A61G 5/02-](#))}

- A61G 5/04
 - motor-driven (~~A61G 5/06~~ takes precedence; motor-operated rests [A61G 5/12](#) ; for vehicles with handlebars, equipped with three or more wheels [B62K 5/003](#) , [B62K 5/023](#)-)
- U A61G 5/08
 - foldable
- U A61G 2005/0808
 - • {characterised by a particular folding direction}
- U A61G 2005/0816
 - • • {folding left - right, e.g. reducing the overall width of the wheelchair}
- A61G 2005/0825
 - • • • {comprising a scissor-type frame, e.g. having pivoting cross bars for enabling folding (-scissor-type frame for folding front-back [A61G 2005/0841](#) ; scissor-type frame for folding up-down [A61G 2005/0858](#)-)}
- U A61G 2005/0833
 - • • {folding front - back, e.g. reducing the overall depth of the wheelchair}
- A61G 2005/0841
 - • • • {comprising a scissor-type frame, e.g. having pivoting cross bars for enabling folding (-scissor-type frame for folding left-right [A61G 2005/0825](#) ; scissor-type frame for folding up-down [A61G 2005/0858](#)-)}
- U A61G 2005/085
 - • • {folding up - down, e.g. reducing the overall height of the wheelchair}
- A61G 2005/0858
 - • • • {comprising a scissor-type frame, e.g. having pivoting cross bars for enabling folding (-scissor-type frame for folding left-right [A61G 2005/0825](#) ; scissor-type frame for folding front-back [A61G 2005/0841](#)-)}
- U A61G 5/10
 - Parts, details or accessories
- A61G 5/1002
 - • {with toilet facilities (~~room closets, night chairs [A47K 11/04](#)-)}~~
- A61G 5/1005
 - • {Wheelchairs having brakes (-braking mechanisms; locking devices against movement for hand carts [B62B 5/04](#) ; details of brake actuators on castors [B60B 33/0078](#) ; brakes in general [F16D 49/00](#) - [F16D 65/853](#)-)}
- A61G 5/104
 - • {Devices for lifting or tilting the whole wheelchair (~~transfer lifts [A61G 3/06](#) ; arrangements for adjusting the seat height [A61G 5/1059](#)-)}~~
- U A61G 5/1056
 - • {Arrangements for adjusting the seat}
- A61G 5/1075
 - • • {tilting the whole seat backwards (-tilting forwards for standing-up or sitting-down aids [A61G 5/14](#)-)}
- A61G 5/14
 - • Standing-up or sitting-down aids
- A61G 7/00**

Beds specially adapted for nursing; Devices for lifting patients or disabled persons (-equipment for beds, treatment tables, floor frames or the like for extending or stretching [A61F5/045](#) {takes precedence} ; stretchers with facilities for picking up patients or disabled persons [A61G 1/003](#)-)
- U A61G 7/002
 - having adjustable mattress frame
 - NOTE
Combinations of adjustments mentioned in the following subgroups are classified in group [A61G 7/002](#)
- A61G 7/005
 - • tiltable around transverse horizontal axis, e.g. for Trendelenburg position{(-rocking beds for physical therapy [A61H 1/003](#) ; hanging patient inclined downwardly for drawing him out [A61H 2203/0493](#)-)}
- A61G 7/012
 - • raising or lowering of the whole mattress frame (~~-[A61G 7/005](#) , [A61G 7/008](#) take precedence-~~)
- A61G 7/047
 - Beds for special sanitary purposes,{e.g. for giving enemas, irrigations, flushings(-[A61G 7/02](#) takes precedence; means for bathing bed-ridden persons [A61G 7/0005](#)-)}
- A61G 7/05
 - Parts, details or accessories of beds (-devices for prevention against falling out [A47C 21/08](#) , [A47D 7/00](#) ; { mattresses [A47C 27/00](#) })
- A61G 7/0501
 - • {Bed-clothes supports to alleviate the weight of the bed-clothes on the patient (-bed cover holders [A47C 21/02](#)-)}

- A61G 7/0503
 - • {Holders, support devices for receptacles, e.g. for drainage or urine bags (-hanging-up devices for infusion [A61M 5/1418-](#))}
- A61G 7/0504
 - • {Harnesses or restraining devices in order to evacuate a patient with the mattress, e.g. in situations of emergency, disaster or fire (-restraining in general [A61F 5/37-](#))}
- A61G 7/0506
 - • {Head or foot boards (-head or foot boards for comfort or ergonomics [A47C 19/022-](#))}
- A61G 7/0507
 - • {Side-rails (-side-bolsters [A61G 7/0525](#) ; non medical devices for prevention against falling-out [A47C 21/08-](#))}
- A61G 7/0525
 - • {Side-bolsters (-side-rails [A61G 7/0507](#) ; rests specially adapted for beds [A61G 7/065](#) ; non medical devices for prevention against falling-out [A47C 21/08-](#))}
- A61G 7/0526
 - • {Restraining enclosures (-side-rails [A61G 7/0507](#) ; enclosures for maintaining a germ-free environment [A61G 10/005](#) ; restraining device for the body or for body parts [A61F 5/37-](#))}
- A61G 7/057
 - • Arrangements for preventing bed-sores or for supporting patients with burns, e.g. mattresses specially adapted therefor{(-ventilation openings in mattresses [A47C 21/042](#) ; pneumatic or hydraulic mattresses [A47C 27/08-](#))}
- A61G 7/05723
 - • • {with cut-outs or depressions in order to relieve the pressure on a part of the body (-mattresses with cavities [A47C 27/142-](#))}
- A61G 7/0573
 - • • {with mattress frames having alternately movable parts (-adjustable mattress frames [A61G 7/015-](#))}
- U A61G 7/05738
 - • • {with fluid-like particles, e.g. sand, mud, seeds, gel, beads}
- A61G 7/05753
 - • • • {air-evacuated, e.g. in order to adapt to the form of the patient (-air-evacuated splints [A61F 5/05833-](#))}
- U A61G 7/065
 - • Rests specially adapted therefor
- A61G 7/07
 - • • for the head or torso, e.g. special back-rests{(-pillows in general [A47G 9/10-](#))}
- U A61G 7/10
 - Devices for lifting patients or disabled persons, e.g. special adaptations of hoists thereto
- U A61G 7/104
 - • {Devices carried or supported by}
- A61G 7/1042
 - • • {Rail systems (-walking aids with suspension devices [A61H 3/008-](#))}
- A61G 9/00**

Bed-pans, urinals or other sanitary devices for bed-ridden persons; Cleaning devices therefor, e.g. combined with toilet-urinals (-urinals worn by the patient [A61F 5/44-](#))
- A61G 9/02
 - Cleaning devices{(-washing and rinsing machines for crockery and tableware [A47L 15/00-](#))}
- A61G 10/00**

Treatment rooms {or enclosures}for medical purposes (-baby incubators, couveuses [A61G 11/00](#) ; devices for gas baths with ozone, hydrogen or the like [A61H 33/14](#) ; { for isolating individuals from external stimuli [A61M 21/0094](#) } ; containers or portable cabins for affording breathing protection in general [A62B 31/00-](#))
- A61G 10/02
 - with artificial climate; with means to maintain a desired pressure, e.g. for germ-free rooms (-dust-free laboratory rooms [B01L 1/04](#) ; decompression arrangements [B63C 11/32](#) ; arrangements or adaptations in aircraft [B64D 13/00](#) ; air-conditioning in general [F24F-](#))
- A61G 12/00**

Accommodation for nursing, e.g. in hospitals, not covered by groups [A61G 1/00](#) to [A61G 11/00](#) , e.g. trolleys for transport of medicaments or food {(-service or tea-tables, trolleys or wagons [A47B 31/00-](#))}; Prescription lists

- A61G 12/001
- {Trolleys for transport of medicaments, food, linen, nursing supplies (-carts specially adapted for surgery or diagnosis [A61B 19/0248](#) ; hand carts [B62B 3/00](#))}
- A61G 12/002
- {Supply appliances, e.g. columns for gas, fluid, electricity supply (-vertical ducts or channels for receiving utility lines [E04F 17/08](#) ; installations of electric cables or lines, wall trunking [H02G 3/0431](#) ; structural combinations of lighting devices with other articles [F21V 33/0068](#) ; stands or trestles as supports for apparatus or articles [F16M 11/00](#) ; buildings for public purposes [E04H 3/08](#)-)}
- A61G 13/00**
- Operating tables; Auxiliary appliances therefor (illumination of operating tables [F21L](#), [F21S](#) or [F21V](#)){ adjustability of tables in general [A47B 9/00](#) ; tables for radiation diagnosis [A61B 6/04](#) , drainage or irrigation pans, bags, or attachments [A61G 7/02](#) , [A61G 7/0503](#) }**
- A61G 13/0009
- {Obstetrical tables or delivery beds (-chairs for gynaecological purposes [A61G 15/005](#)-)}
- A61G 13/0036
- {Orthopaedic operating tables (-devices for stretching fractured limbs [A61F 5/04](#)-)}
- A61G 13/009
- {Physiotherapeutic tables, beds or platforms; Chiropractic or osteopathic tables (-with incorporated massage means [A61H 2201/0138](#)-)}
- U A61G 13/02
- Adjustable operating tables; Controls therefor
- A61G 13/06
- • raising or lowering of the whole table surface (-[A61G 13/04](#) takes precedence-)
- A61G 13/10
- Parts, details or accessories (-surgical drape sheets [A61B 19/08](#)-)
- A61G 13/101
- • {Clamping means for connecting accessories to the operating table (-supports as part of surgical instruments [A61B 19/26](#)-)}
- A61G 13/102
- • {Fluid drainage means for collecting bodily fluids from the operating table e.g. for blood, urine (-drainage on the patient [A61M 1/00](#)-)}
- A61G 13/105
- • {Portable, foldable or collapsible tables, e.g. for surgery or treatment (-portable, foldable or collapsible chairs for surgery or dental treatment [A61G 15/002](#)-)}
- A61G 13/107
- • {Supply appliances (-supply appliances for dental machines [A61C 1/0007](#)-)}
- A61G 13/108
- • {Means providing sterile air at a surgical operation table or area (-treatment rooms [A61G 10/00](#) ; instruments or implements for sterile operation [A61B 19/00](#) ; sterilisation of air [A61L 9/00](#) ; purification of air in air-conditioning systems [F24F 3/16](#)-)}
- A61G 13/12
- • Rests specially adapted therefor; Arrangements of patient-supporting surfaces{-rests for the surgeon [A61B 19/00](#) ; restraining devices [A61F 5/37](#)-)}
- U A61G 13/1205
- • • {for specific parts of the body}
- U A61G 13/121
- • • • {Head or neck}
- A61G 13/1215
- • • • • {with patient airway positioning devices (-guiding means for tracheal tubes [A61M 16/0488](#)-)}
- U A61G 13/126
- • • {with specific supporting surface}
- A61G 13/1275
- • • • {having air-evacuated chambers in order to adapt to the form of the patient (-for preventing bed-sores [A61G 7/05753](#)-)}
- U A61G 13/128
- • • {with mechanical surface adaptations}
- A61G 13/129
- • • • {having surface parts for adaptation of the size, e.g. for extension or reduction (-tables with different adjustable sections [A61G 13/08](#)-)}
- A61G 15/00**
- Operating chairs; Dental chairs (-barbers` chairs [A47C 1/04](#)-); Accessories specially adapted therefor, e.g. work stands**

- A61G 15/002 · {Foldable, portable or collapsible chairs, e.g. for surgery or dental treatment (-portable, foldable or collapsible tables for surgery or treatment [A61G 13/105-](#))}
- A61G 15/007 · {Physiotherapeutic chairs (-with incorporated massage means [A61H 1/00-](#))}
- A61G 15/10 · Parts, details or accessories (-[A61G 15/14](#) takes precedence; dental instruments [A61C-](#))
- A61G 15/12 · · Rests specially adapted therefor, e.g. for the head or feet{(-[A61G 15/105](#) takes precedence-)}
- U A61G 15/14 · Dental work stands; Accessories therefor
- U A61G 15/16 · · Storage, holding or carrying means for dental handpieces or the like
- A61G 15/18 · · · including retractor for storing flexible hose
- U A61G 17/00** **Coffins; Funeral wrappings; Funeral urns**
- A61G 17/08 · Urns (-columbaria [E04H 13/00-](#))

Project: N/A (A61H)

- A61H 1/00** **Apparatus for passive exercising ([A61H 5/00](#) takes precedence); -Vibrating apparatus {(driving means for vibrating [A61H 23/00](#)); Chiropractic devices, e.g. body impacting devices, external devices for briefly extending or aligning unbroken bones**
NOTE
This group does not cover orthopaedic methods or devices, which are covered by group [A61F 5/00](#)
- A61H 1/001 · {-Apparatus for applying movements to the whole body}
WARNING
Not complete, pending the completion of a reclassification, see also [A61H 1/005](#)
- U A61H 1/02 · Stretching or bending {or torsioning} apparatus for exercising
NOTE
In this group, documents which are of interest for more than one subgroup are classified in the hierarchically higher group only, unless there is a specific group for the combination
- A61H 1/0218 · · {-Drawing-out devices (suspension devices for supporting the patient in upright walking or standing position [A61H 3/008](#); orthopedic devices for non-surgical treatment [A61F 5/01](#); stretching fractured limbs [A61F 5/04](#))}
- A61H 1/0222 · · · {-Traction tables ([A61H 1/0229](#) take precedence)}
- A61H 1/0229 · · · {-by reducing gravity forces normally applied to the body, e.g. by lifting or hanging the body or part of it}
- U A61H 1/0237 · · {for the lower limbs}
- U A61H 1/0255 · · · {Both knee and hip of a patient, e.g. in supine or sitting position, the feet being moved in a plane substantially parallel to the body-symmetrical-plane ([A61H 1/0214](#) takes precedence)}
- A61H 1/0262 · · · · {-Walking movement; Appliances for aiding disabled persons to walk ([A61H 3/00](#) takes precedence)}
WARNING
Not complete, pending the completion of a reclassification

- A61H 3/00** Appliances for aiding patients or disabled persons to walk about (apparatus for helping babies to walk [A47D 13/04](#);{ orthopaedic devices for correcting deformities of, or supporting, limbs [A61F 5/0102](#)}; exercising apparatus for the feet or toes [A63B 23/10](#)};{ stairways or ramps [E04F 11/00](#)})
- U A61H 3/06 · Walking {or guiding} aids for blind persons (walking sticks {in general} [A45B](#); replacing direct visual perception by another kind of perception [A61F 9/08](#))
- A61H 3/061 · · {-with electronic detecting or guiding means}
- A61H 3/066 · · {-Installations on the floor, e.g. special surfaces, to guide blind persons}
- A61H 3/068 · · {-Sticks for blind persons}
- U **A61H 5/00** **Exercisers for the eyes**
- A61H 5/005 · {-Exercisers for training the stereoscopic view}
- U **A61H 7/00** **Devices for suction-kneading massage; Devices for massaging the skin by rubbing or brushing not otherwise provided for (Electro-medical massage devices applying electric current by contact [A61N 1/18](#) { Brushes in general [A46](#); Bathing sponges, brushes, gloves or similar cleaning or rubbing implements not specially for massage [A47K 7/02](#); Suction devices for nursing [A61M 1/06](#), [A61M 1/08](#); Rollers or balls therefore, [A61H 15/00](#)})**
- A61H 7/007 · {-Kneading}
- A61H 7/008 · · {-Suction kneading}
- A61H 9/00** **Pneumatic or hydraulic massage, {e.g. sprays-([A61H 13/00](#) takes precedence; underwater massage, spraying systems acting on a body or body part immersed in water [A61H 33/00](#), [A61H 35/00](#); brushes with fluid supply [A46B 11/00](#); nozzles per se [B05B](#)})**
- A61H 9/0007 · {-Pulsating (percussion massage [A61H 23/006](#); nozzles for pulsating streams in bathing devices [A61H 33/6057](#))}
- U A61H 9/0021 · {-Hand-held devices for spraying and removing liquid while moved on the skin}
- A61H 9/0028 · · {-Hydraulic massage}
- A61H 9/005 · · {-Pneumatic massage}
- A61H 9/0057 · · {-Suction (suction kneading [A61H 7/008](#))}
- A61H 9/0071 · · {-by localized pressure, e.g. air streams or jets}
- A61H 9/0078 · · {-With intermittent or alternately inflated bladders or cuffs (beds with inflatable chambers [A61G 7/05769](#))}
- A61H 9/0085 · · · {-Inflated by user's body movement, e.g. ambulatory devices}
- A61H 9/0092 · · · {-Cuffs therefor}
- A61H 19/00** **Massage for the genitals; { Devices for improving sexual intercourse-(penis erection devices [A61F 5/41](#); vibration or percussion related aspects [A61H 23/00](#))}**
- WARNING
Groups [A61H 19/30](#) to [A61H 19/50](#) do not correspond to former or current IPC groups. Concordance CPC:IPC for these groups is as follows: [A61H 19/30](#) to [A61H 19/50](#): [A61H 19/00](#)
- A61H 19/30 · {-Devices for external stimulation of the genitals}
- WARNING
Not complete, pending the completion of a reclassification, see also [A61H 19/00](#)

- A61H 19/32
- • {-for inserting the genitals therein e.g. vibrating rings for males or breast stimulating devices}
- WARNING
Not complete, pending the completion of a reclassification, see also [A61H 19/00](#)
- A61H 19/34
- • {-For clitoral stimulation}
- A61H 19/40
- {-Devices insertable in the genitals}
- WARNING
Not complete, pending the completion of a reclassification, see also [A61H 19/44](#)
- A61H 19/44
- • {-Having substantially cylindrical shape, e.g. dildos}
- A61H 19/50
- {-Devices for use during sexual intercourse}
- U A61H 23/00** **Percussion or vibration massage, e.g. using supersonic vibration; Suction-vibration massage; Massage with moving diaphragms {(apparatus for passive exercising [A61H 1/00](#); generating or transmitting mechanical vibrations in general [B06B](#))}**
- A61H 23/004
- {-With mechanical drive, e.g. spring mechanism or vibrating unit being hit for starting vibration and then applied to the body of a patient}
- WARNING
Not complete, pending the completion of a reclassification
- A61H 23/006
- {-Percussion or tapping massage (hand percussion [A61H 23/06](#))}
- WARNING
Not complete, pending the completion of a reclassification
- U A61H 23/02
- with electric or magnetic drive
- U A61H 23/0254
- • {with rotary motor}
- A61H 23/0263
- • • {-using rotating unbalanced masses}
- A61H 23/06
- Hand percussion { , i.e. Hand driven{-Chiropractic devices, [A61H 1/008](#), [A61H 1/006](#)}}
- U A61H 31/00** **Artificial respiration or heart stimulation {(blood pumps [A61M 1/10](#);} artificial respiration by treatment with gas or air, e.g. mouth-to-mouth respiration [A61M 16/00](#); applying electric currents by contact electrodes for stimulation, e.g. heart pace-makers [A61N 1/36](#)}; teaching or training models, demonstration models for medical purposes [G09B 23/288](#))}**
- A61H 31/004
- {-Heart stimulation}
- A61H 31/005
- • {-with feedback for the user}
- A61H 31/006
- • {-Power driven}
- A61H 31/007
- • {-Manual driven}
- A61H 31/008
- {-Supine patient supports or bases, e.g. improving air-way access to the lungs}
- U A61H 33/00** **Bathing devices for special therapeutic or hygienic purposes ([A61H 35/00](#) takes precedence; {sprays acting on a body or body part not immersed in water [A61H 9/00](#); means for washing bed-ridden persons [A61G 7/0005](#);} for sub aquatic intestinal cleaning [A61M 9/00](#); {isolation chambers [A61M 21/0094](#); }electric or magnetic baths, applying ionised fluids [A61N 1/44](#)}; heater for bath tubs [F24H 1/0081](#))}**
- A61H 33/005
- {-Electrical circuits therefor}

- U A61H 33/06
- Artificial hot-air or cold-air baths; Steam or gas baths or douches, e.g. sauna or Finnish baths ({artificial climate rooms [A61G 10/02](#)})
- A61H 33/063
- • {-Heaters specifically designed therefor}
- A61H 33/065
- • • {-with steam generators}
- A61H 33/066
- • {-Cabins therefor}
- A61H 33/067
- • • {-Installations for the inside of such cabins, e.g. seats}
- A61H 33/60
- {-Components specifically designed for the therapeutic baths of groups [A61H 33/00](#)-(plumbing [E03C 1/00](#))}
- WARNING
Groups [A61H 33/60](#) to [A61H 33/6021](#) are not complete, pending the completion of a reclassification; see the other groups of [A61H 33/00](#)
- A61H 33/6005
- • {-Special constructive structural details of the bathtub, e.g. of the walls or supporting structure}
- A61H 33/601
- • {-Inlet to the bath}
- A61H 33/6015
- • • {-Cascade massage}
- A61H 33/6021
- • • {-Nozzles}
- A61H 33/6026
- • • • {-Nozzles in the bathtub connected to an outside pump circuit without modification of the walls}
- A61H 33/6031
- • • • {-Extendible or retractable}
- A61H 33/6036
- • • • {-Hand-held connected to a supply hose}
- A61H 33/6042
- • • • {-Used also as outlet}
- A61H 33/6047
- • • • {-With incorporated pump means}
- A61H 33/6052
- • • • {-Having flow regulating means}
- A61H 33/6057
- • • • {-Comprising means producing pulsating or intermittent streams (for massage, [A61H 9/0007](#))}
- A61H 33/6063
- • • • {-Specifically adapted for fitting in bathtub walls}
- A61H 33/6068
- • {-Outlet from the bath}
- A61H 33/6073
- • • {-Intake mouths for recirculation of fluid in whirlpool baths}
- A61H 33/6078
- • • • {-Combined with waste outlets}
- A61H 33/6084
- • • {-For filling to the border or edge of the bath, i.e. no border to be seen}
- WARNING
Not complete, pending the completion of a reclassification
- A61H 33/6089
- • {-Specific construction features for further massaging means, i.e. not for the nozzles}
- WARNING
Not complete, pending the completion of a reclassification
- A61H 33/6094
- • • {-Extending through the wall of the bathing device}
- WARNING
Not complete, pending the completion of a reclassification
- U **A61H 39/00**
- Devices for locating or stimulating specific reflex points of the body for physical therapy, e.g. acupuncture (chiropractors` instruments [A61B 17/54](#); {for radiation therapy [A61N 5/0619](#)})**
- A61H 39/002
- {-Using electric currents (electrotherapy [A61N 1/32](#))}
- U A61H 39/08
- Devices for applying needles to such points, i.e. for acupuncture; { Acupuncture needles or accessories therefor}

- A61H 39/083 . . {-Needle tubes}
- A61H 39/086 . . {-Acupuncture needles}

Project: N/A (A61J)

- U A61J 1/00** **Containers specially adapted for medical or pharmaceutical purposes (capsules or the like for oral use [A61J 3/07](#); boxes for medical appliances, doctors` bags [A61B 19/02](#); antithrombogenic treatment of articles for conditioning blood [A61L 33/00](#); devices for introducing media into or onto the body [A61M](#); containers for radioactive substances [G21F 5/00](#))**
- U A61J 1/05 . for collecting, storing or administering blood, plasma or medical fluids {(multiple bags systems for separating or storing blood components [A61M 1/0209](#)); Infusion or perfusion containers}
- U A61J 1/14 . . Details, { e.g. inlet or outlet ports, provisions for hanging, shape retaining means}; Accessories therefor, { e.g. connections of tubings, valves, caps (plugs or stoppers [B65D 51/00](#))}([A61J 7/00](#) takes precedence; opens [B65D](#), [B67B 7/00](#))
- A61J 1/1406 . . . {-Septums, pierceable membranes}
- A61J 1/1412 . . . {-Containers with closing means, e.g. caps (plugs for containers [B65D 51/00](#))}
- A61J 1/1437 . . . {-Locking means requiring key or combination to open the container}
- A61J 1/1462 . . . {-Containers with provisions for hanging, e.g. integral adaptations of the container (accessories for hanging the container [A61J 1/16](#), [A61M 5/1414](#))}
- A61J 1/1475 . . . {-Inlet or outlet ports}
- A61J 1/1493 . . . {-Containers with shape retaining means, e.g. to support the structure of the container during emptying or filling}
- U A61J 1/20 . . . Arrangements for transferring { or mixing} fluids, e.g. from vial to syringe {(containers in general with provisions for mixing contents [B65D 81/32](#))}
- A61J 1/2089 {-Containers or vials which are to be joined to each other in order to mix their contents (combinations of vial and syringe for mixing their contents [A61J 1/2096](#))}
- A61J 1/2093 {-Containers having several compartments for products to be mixed}
- A61J 1/2096 {-Combination of a vial and a syringe for transferring or mixing their contents}
- U A61J 7/00** **Devices for administering medicines orally, e.g. spoons (calibrated capacity measures for fluids or fluent solid material [G01F 19/00](#); weighing spoons [G01G 19/56](#)); Pill counting devices; Arrangements for time indication or reminder for taking medicine**
- A61J 7/0015 . {-Devices specially adapted for taking medicines}
- A61J 7/0023 . . {-Spoons}
- A61J 7/003 . . {-Sticks, e.g. lollipops with drug release}
- A61J 7/0038 . . {-Straws}
- A61J 7/0046 . . {-Cups, bottles or bags}
- A61J 7/0053 . . {-Syringes, pipettes or oral dispensers}
- A61J 7/0061 . . {-Swallow helping devices, e.g. tongue shields}
- U A61J 9/00** **Feeding-bottles in general (electric heating elements [H05B](#))**
- A61J 9/006 . {-having elongated tubes, e.g. for drinking from bottle in upright position}
- A61J 9/008 . {-having storage compartments, e.g. for storing a teat}
- U A61J 9/08 . Protective covers for bottles
- A61J 9/085 . . {-Lids for closing the bottle}

- U A61J 11/00**
- A61J 11/0005
- A61J 11/001
- A61J 11/0015
- A61J 11/002
- A61J 11/0025
- A61J 11/003
- A61J 11/0035
- A61J 11/004
- A61J 11/0045
- A61J 11/005
- A61J 11/0055
- A61J 11/006
- A61J 11/0065
- A61J 11/007
- A61J 11/0075
- A61J 11/008
- A61J 11/0085
- A61J 11/009
- A61J 11/0095
- Teats**
- {having additional ports, e.g. for connecting syringes or straws (devices for administering medicines orally [A61J 7/00](#))}
 - {having means for regulating the flow rate}
 - • {by size or shape of the opening}
 - • {by using valves}
 - {having filters}
 - {having means for incorporating a mother's scent}
 - {having particular shape or structure}
 - • {angled, e.g. in respect to the bottle}
 - • {Aesthetic properties}
 - • • {for imitating a nipple}
 - • • {for soothing, e.g. toy-like}
 - • {for improving flexibility}
 - • {for improving rigidity, e.g. anti-bite-through or anti-collapsing}
 - {having orthodontic properties, e.g. for promoting correct teeth development}
 - {Accessories therefor}
 - • {Protecting caps}
 - • • {with means for preventing leakage}
 - • {Puncturing tools, e.g. for creating an opening in the teat}
 - • {Seal rupturing means (containers having several compartments for products to be mixed [A61J 1/2093](#))}
- U A61J 11/04**
- A61J 11/045
- with means for fastening to bottles
 - • {with interlocking means, e.g. protrusions or indentations on the teat}
- U A61J 15/00**
- Feeding-tubes for therapeutic purposes (drinking tubes as tableware [A47G 21/18](#))**
- A61J 15/0003
- A61J 15/0007
- A61J 15/0011
- A61J 15/0015
- A61J 15/0019
- A61J 15/0023
- A61J 15/0026
- A61J 15/003
- A61J 15/0034
- A61J 15/0038
- A61J 15/0042
- A61J 15/0046
- A61J 15/0049
- {Nasal or oral feeding-tubes, e.g. tube entering body through nose or mouth}
 - • {inserted by using a guide-wire (guide wires [A61M 25/09](#))}
 - {Feeding-tubes for delivery of nourishment to the mouth; Mouth pieces therefor (breast-nipple shields [A61J 13/00](#); mouth pieces for drinking straws [A47G 21/185](#); straws to take medicine [A61J 7/0038](#), mouthpieces for tracheal tubes [A61M 16/0488](#))}
 - {Gastrostomy feeding-tubes (insertion tools or methods [A61B 17/34](#))}
 - • {inserted by using a pull-wire}
 - • {inserted by using a sheath}
 - {Parts, details or accessories for feeding-tubes (external tubes from the medical container to a connector outside of the body [A61M 39/08](#))}
 - • {Means for fixing the tube inside the body, e.g. balloons, retaining means (holding devices holding in the body [A61M 25/04](#))}
 - • • {Retainers adjacent to a body opening to prevent that the tube slips through, e.g. bolsters}
 - • • • {expandable, e.g. umbrella type}
 - • • • {inflatable}
 - • • {Expandable retainers inside body lumens of the enteral tract, e.g. fixing by radially contacting a lumen wall}
 - • • • {Inflatable Balloons (balloon catheters [A61M 25/10](#))}

- A61J 15/0053
 - • {-Means for fixing the tube outside of the body, e.g. by a special shape, by fixing it to the skin (holding devices, e.g. on the body [A61M 25/02](#), mouthpieces for tracheal tubes [A61M 16/0488](#); transcutaneous access sites [A61M 39/0247](#))}
- A61J 15/0057
 - • • {-fixing a tube end, i.e. tube not protruding the fixing means}
- A61J 15/0061
 - • • {-fixing at an intermediate position on the tube, i.e. tube protruding the fixing means}
- A61J 15/0065
 - • • {-Fixing means and tube being one part}
- A61J 15/0069
 - • {-Tubes feeding directly to the intestines, e.g. to the jejunum}
- A61J 15/0073
 - • {-Multi-lumen tubes}
- A61J 15/0092
 - • {-Valves on feeding tubes (Tube valves [A61M 39/22](#))}
- A61J 15/0096
 - • {-Provisions for venting}

Project: RP0115 (A61K)**A61K****PREPARATIONS FOR MEDICAL, DENTAL, OR TOILET****PURPOSES** (- devices or methods specially adapted for bringing

pharmaceutical products into particular physical or administering forms

[A61J 3/00](#) ; chemical aspects of, or use of materials for deodorisation of

air, for disinfection or sterilisation, or for bandages, dressings, absorbent

pads or surgical articles [A61L](#) ; { compounds per se [C01](#) , [C07](#) , [C08](#) , [C12N](#)} ; soap compositions [C11D](#) ; { micro-organisms per se [C12N](#) }NOTES

This subclass covers the following subject matter, whether set forth as a composition (mixture), process of preparing the composition or process of treating using the composition:

Drug or other biological compositions which are capable of:

- preventing, alleviating, treating or curing abnormal or pathological conditions of the living body by such means as destroying a parasitic organism, or limiting the effect of the disease or abnormality by chemically altering the physiology of the host or parasite ([biocides A01N 25/00](#) to [A01N 65/00](#));
- maintaining, increasing, decreasing, limiting, or destroying a physiological body function, e.g. vitamin compositions, sex sterilants, fertility inhibitors, growth promoters, or the like (sex sterilants for invertebrates, e.g. insects, [A01N](#) ; plant growth regulators [A01N 25/00](#) to [A01N 65/00](#));
- diagnosing a physiological condition or state by an in vivo test, e.g. X-ray contrast or skin patch test compositions (measuring or testing processes involving enzymes or micro-organisms [C12Q](#) ; in vitro testing of biological material, e.g. blood, urine, [G01N](#) , e.g. [G01N 33/48](#))

Body treating compositions generally intended for deodorising, protecting, adorning or grooming the body, e.g. cosmetics, dentifrices, tooth filling materials.

Attention is drawn to the definitions of groups of chemical elements following the title of section C.

Attention is drawn to the notes in class [C07](#) , for example the notes following the title of the subclass [C07D](#) , setting forth the rules for classifying organic

compounds in that class, which rules are also applicable, if not otherwise indicated, to the classification of organic compounds in [A61K](#).

In this subclass, *with the exception of group [A61K 8/00](#), the last place priority rule is applied, i.e. at each hierarchical level*, in the absence of an indication to the contrary, classification is made in the last appropriate place.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

A61K 6/033	covered by	A61K6/06A
A61K 9/133	covered by	
A61K 9/127		
A61K 9/18	covered by	A61K 9/14
A61K 9/22	covered by	A61K 9/20
A61K 9/24	covered by	
A61K 9/209		
A61K 9/26	covered by	A61K 9/2077
,		
	A61K 9/2081	
A61K 9/30	covered by	A61K 9/28
A61K 9/32	covered by	A61K 9/28
A61K 9/34	covered by	A61K 9/28
A61K 9/36	covered by	A61K 9/28
A61K 9/38	covered by	A61K 9/28
A61K 9/40	covered by	A61K 9/28
A61K 9/42	covered by	A61K 9/28
A61K 9/44	covered by	
A61K 9/2072		
A61K 9/46	covered by	
A61K 9/0007		
A61K 9/52	covered by	A61K 9/50
A61K 9/54	covered by	A61K 9/5073
,		
	A61K 9/5078	A61K 9/5084
A61K 9/56	covered by	A61K 9/50
A61K 9/58	covered by	A61K 9/50
A61K 9/60	covered by	A61K 9/50
A61K 9/62	covered by	A61K 9/50
A61K 9/64	covered by	A61K 9/50
A61K 9/66	covered by	A61K 9/48
A61K 9/68	covered by	
A61K 9/0058		
A61K 9/72	covered by	
A61K 9/0073		
A61K 45/08	covered by	A61K 31/00
,		
	A61K 47/00	
A61K 47/04	covered by	
A61K 47/02		
A61K 50/00	covered by	A61K 9/0009
,		
	C09J 9/02	

The following IPC indexing codes are not used in the CPC scheme:

[A61K 101/00](#) - [A61K 135/00](#)

Subgroups of [A61K 48/00](#) are incomplete (Jan. 2003). Documents are being reclassified from [A61K 48/00](#) to its subgroups

Project: N/A (A61K)**A61K 6/00**

Preparations for dentistry (-teeth cleaning preparations [A61K 8/00](#) , [A61Q 11/00](#) ; { dental prostheses [A61C 13/00](#) ; apparatus or methods for oral or dental hygiene [A61C](#) })

NOTE

In groups [A61K 6/00](#) - [A61K 6/0044](#) and [A61K 6/083](#) - [A61K 6/10](#) , the use of specific polymers is indicated by addition of classification symbols of the subclass [C08L](#) preceded by the sign "+", e.g. compositions for taking dental impressions containing alginates are classified in [A61K 6/10](#) + [C08L 5/04](#)

- A61K 6/0029
 - U A61K 6/02
 - A61K 6/027
 - A61K 6/04
 - A61K 6/06
 - A61K 6/0643
 - A61K 6/08
 - A61K 6/10
- {Primers (-adhesive primers [A61K 6/0023](#)-)}
 - Use of preparations for artificial teeth, for filling or for capping teeth
 - • Use of non-metallic elements or compounds thereof, e.g. carbon{(-non-metallic elements per se [C01B](#)-)}
 - • Use of metals or alloys (-alloys per se [C22C](#)-)
 - • Use of inorganic cements (-cements per se [C04B](#)-)
 - • • {Phosphate cements (-apatite [A61K 6/033](#)-)}
 - • Use of natural or synthetic resins (-resins per se [C08](#)-)
 - Compositions for taking dental impressions (-impression methods [A61C 9/00](#)-)

Project: RP0115 (A61K)**A61K 8/00**

Cosmetic or similar toilet preparations (-casings or accessories for storing or handling of solid or pasty toilet or cosmetic substances [A45D 40/00](#)-)

NOTE

Use of cosmetics or similar toilet preparations is further classified in subclass [A61Q](#) .

1. Use of cosmetics or similar toilet preparations is mandatorily further classified in subclass [A61Q](#) . 2. In each of groups [A61K 8/02](#) and [A61K 8/18](#) , in the absence of an indication of the contrary, classification is made in the last appropriate place. 3. Attention is drawn to the Notes in class [C07](#) , for example the notes following the title of subclass [C07D](#) , setting forth the rules for classifying organic compounds in that class, which rules are also applicable, if not otherwise indicated, to the classification of organic compounds in group [A61K 8/00](#) . 4. Salts or complexes of organic compounds are classified according to the base compounds. If a complex is formed between two or more compounds, classification is made for each compound.

1. Use of cosmetics or similar toilet preparations is mandatorily further classified in subclass [A61Q](#) .

2. Attention is drawn to the Notes in class [C07](#) , for example the notes following the title of subclass [C07D](#) , setting forth the rules for classifying organic compounds in that class, which rules are also applicable, if not otherwise indicated, to the classification of organic compounds in group [A61K 8/00](#) .

3 Salts or complexes of organic compounds are classified according to the base compounds. If a complex is formed between two or more compounds, classification is made for each compound.

WARNING

Group [A61K 8/00](#) and subgroups are incomplete. See provisionally also [A61K7/00](#) and subgroups.

- A61K 8/02 · characterised by special physical form

NOTE

In this group, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

Project: N/A (A61K)

- A61K 8/0204 · {-Specific forms not provided for by any of groups [A61K 8/0208](#) to [A61K 8/14](#)-}
- A61K 8/0241 · {Containing particulates characterized by their shape and/or structure (-see also [A61K 8/04](#) , [A61K 8/11](#) , and [A61K 8/14](#) , further aspects are classified in [A61K 2800/40](#) and subcodes-)}
- A61K 8/0245 · · {-Specific shapes or structures not provided for by any of the groups of [A61K 8/0241](#)-}

Project: RP0115 (A61K)

- A61K 8/18 · characterised by the composition

NOTE

In this group, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

Project: N/A (A61K)

- U A61K 8/30 · · containing organic compounds
- A61K 8/40 · · · containing nitrogen (-quinones containing nitrogen [A61K 8/355](#))
- U A61K 8/41 · · · · Amines
- A61K 8/416 · · · · · {Quaternary ammonium compounds (-[A61K 8/35](#) takes precedence-)}
- A61K 8/46 · · · containing sulfur (-[A61K 8/44](#) takes precedence-)
- U A61K 8/67 · · · Vitamins
- U A61K 8/673 · · · · {Vitamin B group}
- A61K 8/675 · · · · · {Vitamin B3 or vitamin B3 active, e.g. nicotinamide, nicotinic acid, nicotinyaldehyde (-tocopheryl nicotinate [A61K 8/678](#)-)}
- U A61K 8/72 · · containing organic macromolecular compounds
- A61K 8/90 · · · Block copolymers (-[A61K 8/89](#) takes precedence-)
- A61K 8/91 · · · Graft copolymers (-[A61K 8/89](#) takes precedence-)

A61K 9/00

Medicinal preparations characterised by special physical form (-nuclear magnetic resonance contrast preparations or magnetic resonance imaging contrast preparations [A61K 49/18](#) ; preparations containing radioactive substances [A61K 51/12](#)-)

NOTE

Among the one-dot groups of [A61K 9/00](#) , classification is not made in the last appropriate place.

[A61K 9/00](#) is subdivided according to the following concepts:

- the drug release technique ([A61K 9/0002](#) and subgroups),
- the site of application ([A61K 9/0012](#) and subgroups), and
- the physical form ([A61K 9/0087](#) to [A61K 9/7023](#)).

Where relevant, documents are classified in more than one of these subdivisions.

- U A61K 9/0002 • {Galenic forms characterised by the drug release technique; Application systems commanded by energy}
- A61K 9/0007 • • {Effervescent (-[A61K 9/0065](#) takes precedence)}
- A61K 9/0009 • • {involving or responsive to electricity, magnetism or acoustic waves; Galenic aspects of sonophoresis, iontophoresis, electroporation or electroosmosis (-microelectromechanical systems [A61K 9/0097](#)-)}
- U A61K 9/0012 • {Galenic forms characterised by the site of application}
- A61K 9/0014 • • {Skin, i.e. galenic aspects of topical compositions (-non-active ingredients are additionally classified in [A61K 47/00](#) ; [A61K 9/0009](#) , [A61K 9/0021](#) , [A61K 9/7015](#), [A61K 9/7023](#) take precedence; cosmetic preparations [A61K 8/00](#) , [A61Q](#) ; preparations for wound dressings or bandages [A61L 26/00](#)-)}
- A61K 9/0019 • • {Injectable compositions; Intramuscular, intravenous, arterial, subcutaneous administration; Compositions to be administered through the skin in an invasive manner (-non-active ingredients are additionally classified in [A61K 47/00](#)-)}
- A61K 9/0021 • • • {Intradermal administration, e.g. through microneedle arrays, needleless injectors (-mechanical aspects [A61M](#)-)}
- A61K 9/0024 • • • {Solid, semi-solid or solidifying implants, which are implanted or injected in body tissue (-compositions for intravenous administration, normal injectable solutions or dispersions for e.g. subcutaneous administration [A61K 9/0019](#) ; brain implants [A61K 9/0085](#) ; (coated) prostheses, catheters or stents [A61L](#)-)}
- A61K 9/0053 • • {Mouth and digestive tract, i.e. intraoral and peroral administration (-rectal administration [A61K 9/0031](#)-)}
- U A61K 9/0056 • • • {Mouth soluble or dispersible forms; Suckable, eatable, chewable coherent forms; Forms rapidly disintegrating in the mouth; Lozenges; Lollipops; Bite capsules; Baked products; Baits or other oral forms for animals}
- A61K 9/0058 • • • • {Chewing gums (-non-medicinal aspects, preparing chewing gum [A23G 4/00](#) ; chewing gum for care of the teeth or oral cavity, e.g. with breath freshener [A61Q 11/00](#)-)}
- U A61K 9/007 • • {Pulmonary tract; Aromatherapy}
- A61K 9/0073 • • • {Sprays or powders for inhalation; Aerolised or nebulised preparations generated by other means than thermal energy; (-nasal sprays [A61K 9/0043](#) ; inhalation of vapours of volatile or heated drugs, e.g. essential oils or nicotine, [A61K 9/007](#) ; devices [A61M](#)-)}
- A61K 9/0087 • {-Galenic forms not covered by [A61K 9/02](#) to [A61K 9/7023](#)-}
- A61K 9/009 • • {Sachets, pouches characterised by the material or function of the envelope (-with gastric retention [A61K 9/0065](#) ; sachets which are not administered but function merely as a container are classified according to the content, e.g. sachets comprising powder for reconstitution of a drink [A61K 9/0095](#)-)}
- A61K 9/0092 • • {Hollow drug-filled fibres, tubes of the core-shell type, coated fibres, coated rods, microtubules, nanotubes (-fibres of the matrix type containing drug [A61K 9/70](#)-)}
- A61K 9/0095 • • {Drinks; Beverages; Syrups; Compositions for reconstitution thereof, e.g. powders or tablets to be dispersed in a glass of water; Veterinary drenches (-[A61K 9/0007](#) takes precedence; eatable gels or foams [A61K 9/0056](#) ; oral mucosa adhesive forms [A61K 9/006](#)-)}
- A61K 9/0097 • • {Micromachined devices; Microelectromechanical systems (MEMS); Devices obtained by lithographic treatment of silicon; Devices comprising chips (-intradermal microneedle arrays [A61K 9/0021](#) ; MEMS in general [B81B 7/02](#)-)}

- A61K 9/06
- Ointments; Bases therefor; {Other semi-solid forms, e.g. creams, sticks, gels (-composition of ointments, creams or gels [A61K 47/00](#)-)}
- WARNING
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#)
- A61K 9/08
- Solutions; {(composition of solutions [A61K 47/00](#)-)}
- WARNING
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#) , [A61K 9/0095](#)
- A61K 9/10
- Dispersions; Emulsions; {(-[A61K 9/06](#) takes precedence; composition of dispersions, emulsions [A61K 47/00](#)-)}
- WARNING
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#) , [A61K 9/0095](#)
- A61K 9/107
- • Emulsions; {Emulsion preconcentrates; Micelles (-composition of emulsions [A61K 47/00](#)-)}
- WARNING
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#) , [A61K 9/0095](#)
- A61K 9/1075
- • • {Microemulsions or submicron emulsions; Preconcentrates or solids thereof; Micelles, e.g. made of phospholipids or block copolymers (-[A61K 9/0026](#) takes precedence-)}
- A61K 9/113
- • • Multiple emulsions, e.g. oil-in-water-in-oil; {(-[A61K 9/0026](#) takes precedence-)}
- A61K 9/12
- • Aerosols; Foams{(-[A61K 9/0043](#) , [A61K 9/0056](#) , [A61K 9/006](#) , [A61K 9/0073](#) take precedence; spray-films [A61K 9/7015](#)-)}
- A61K 9/122
- • • {Foams; Dry foams (-edible foams [A61K 9/0056](#)-)}
- U A61K 9/127
- • Liposomes
- A61K 9/1271
- • • {Non-conventional liposomes, e.g. PEGylated liposomes, liposomes coated with polymers (-see also [A61K 47/48815](#)-)}
- A61K 9/1272
- • • • {with substantial amounts of non-phosphatidyl, i.e. non-acylglycerophosphate, surfactants as bilayer-forming substances, e.g. cationic lipids (-with cholesterol as the only non-phosphatidyl surfactant [A61K 9/127](#) ; cationic lipid/DNA complexes see also [A61K 47/48046](#)-)}
- A61K 9/1273
- • • • {Polymersomes; Liposomes with polymerisable or polymerised bilayer-forming substances (-polymers grafted or coated on phosphatidyl liposomes [A61K 9/1271](#) , on non-phosphatidyl liposomes [A61K 9/1272](#)-)}
- A61K 9/14
- Particulate form, e.g. powders,{Processes for size reducing of pure drugs or the resulting products, Pure drug nanoparticles (-microspheres [A61K 9/16](#) ; microcapsules [A61K 9/50](#) ; nanocapsules, nanoparticles of the matrix type [A61K 9/51](#)-)}
- A61K 9/141
- • {Intimate drug-carrier mixtures characterised by the carrier, e.g. ordered mixtures, adsorbates, solid solutions, eutectica, co-dried, co-solubilised, co-kneaded, co-milled, co-ground products, co-precipitates, co-evaporates, co-extrudates, co-melts; Drug nanoparticles with adsorbed surface modifiers ((co) spray-dried products [A61K 9/16](#) , (co) lyophilised products [A61K 9/19](#) ; the carrier being chemically bound to the active ingredient [A61K 47/48](#)-)}
- A61K 9/148
- • • {with compounds of unknown constitution, e.g. material from plants or animals (-with oils, fats, waxes, shellac [A61K 9/145](#)-)}

- A61K 9/16
 - • Agglomerates; Granulates; Microbeadlets; {Microspheres; Pellets; Solid products obtained by spray drying, spray freeze drying, spray congealing, (multiple) emulsion solvent evaporation or extraction (-[A61K 9/20](#) takes precedence if the final form is a tablet; microspheres with drug-free outer coating, microcapsules [A61K 9/50](#) ; mixture of different granules, microcapsules, (coated) microparticles [A61K 9/5084](#); nanoparticles [A61K 9/51-](#))}
- U A61K 9/1605
 - • • {Excipients; Inactive ingredients}
- U A61K 9/1629
 - • • • {Organic macromolecular compounds}
- A61K 9/1652
 - • • • • {Polysaccharides, e.g. alginate, cellulose derivatives; Cyclodextrin (-homeopathic globules [A61K 9/1623](#))}
- A61K 9/1664
 - • • • • {Compounds of unknown constitution, e.g. material from plants or animals (-oils, fats, waxes, shellac [A61K 9/1617-](#))}
- A61K 9/167
 - • • {with an outer layer or coating comprising drug; with chemically bound drugs or non-active substances on their surface (-with further drug-free outer coating [A61K 9/5073](#))}
- A61K 9/1676
 - • • • {having a drug-free core with discrete complete coating layer containing drug (-adsorbates of liquid drug formulations on inert powders without simultaneous granulation step [A61K 9/141](#); with further drug-free outer coating [A61K 9/5078](#) ; drug conjugated to non-active particles [A61K 47/48853-](#))}
- A61K 9/19
 - • lyophilised, {i.e. freeze-dried, solutions or dispersions (-lyophilised products with subsequent particle size reduction [A61K 9/14](#) ; granules or pellets made by lyophilisation [A61K 9/1682](#); solid oral dosage forms made by lyophilisation [A61K 9/2095](#); lyophilisation additives [A61K 47/00-](#))}
- A61K 9/20
 - Pills, tablets, {discs, rods (-[A61K 9/0004](#) , [A61K 9/0007](#) , [A61K 9/0056](#) , [A61K 9/0065](#) take precedence; for reconstitution of a drink [A61K 9/0095-](#))}
- U A61K 9/2004
 - • {Excipients; Inactive ingredients}
- A61K 9/2068
 - • • {Compounds of unknown constitution, e.g. material from plants or animals (-oils, fats, waxes, shellac [A61K 9/2013-](#))}
- A61K 9/2072
 - • {characterised by shape, structure or size; Tablets with holes, special break lines or identification marks; Partially coated tablets; Disintegrating flat shaped forms (-[A61K 9/0004](#) , [A61K 9/0056](#) , [A61K 9/0065](#) take precedence-)}
- U A61K 9/2077
 - • • {Tablets comprising drug-containing microparticles in a substantial amount of supporting matrix; Multiparticulate tablets}
- A61K 9/2081
 - • • • {-with microcapsules or coated microparticles according to [A61K 9/50-](#)}
- A61K 9/2086
 - • • {Layered tablets, e.g. bilayer tablets; Tablets of the type inert core-active coat (-active cores with a complete drug-free outer coat [A61K 9/28-](#))}
- A61K 9/2095
 - • {Tabletting processes; Dosage units made by direct compression of powders or specially processed granules, by eliminating solvents, by melt-extrusion, by injection molding, by 3D printing (-mechanical aspects [A61J 3/00-](#))}
- A61K 9/28
 - • Dragees; Coated pills or tablets {e.g. with film or compression coating (-[A61K 9/2072](#) takes precedence, e.g. partially coated tablets [A61K 9/2072](#) , coated multilayer tablets [A61K 9/2086](#) , tablets with drug-coated core [A61K 9/209-](#))}
- U A61K 9/2806
 - • • {Coating materials}
- A61K 9/288
 - • • • {Compounds of unknown constitution, e.g. material from plants or animals (-oils, fats, waxes, shellac [A61K 9/282-](#))}
- A61K 9/2886
 - • • {having two or more different drug-free coatings; Tablets of the type inert core-drug layer-inactive layer (-of the type active core-drug layer-inactive layer [A61K 9/209-](#))}

- A61K 9/2893
 - • • {Tablet coating processes (-mechanical aspects [A61J 3/06-](#))}
- A61K 9/48
 - Preparations in capsules, e.g. of gelatin, of chocolate; {([A61K 9/0004](#) takes precedence; bite capsules [A61K 9/0056-](#))}
- A61K 9/4808
 - • {characterised by the form of the capsule or the structure of the filling; Capsules containing small tablets; Capsules with outer layer for immediate drug release (-capsules filled with granules or microparticles [A61K 9/16](#) ; filled with microcapsules or coated microparticles [A61K 9/50](#) ; with mixture of different granules, microcapsules, (coated) microparticles [A61K 9/5084](#))}
- U A61K 9/4816
 - • {Wall or shell material}
- A61K 9/4825
 - • • {Proteins, e.g. gelatin (-gelatin capsule shells with substantial amounts of other macromolecular substances [A61K 9/4816](#))}
- A61K 9/4833
 - • {Encapsulating processes; Filling of capsules (-mechanical aspects [A61J 3/07-](#))}
- U A61K 9/4841
 - • {Filling excipients; Inactive ingredients}
- A61K 9/4875
 - • • {Compounds of unknown constitution, e.g. material from plants or animals (-oils, fats, waxes, shellac [A61K 9/4858-](#))}
- A61K 9/4891
 - • {Coated capsules; Multilayered drug free capsule shells (-with drug coating for immediate release [A61K 9/4808](#); osmotic devices [A61K 9/0004-](#))}
- A61K 9/50
 - • Microcapsules {having a gas, liquid or semi-solid filling; Solid microparticles or pellets surrounded by a distinct coating layer, e.g. coated microspheres, coated drug crystals (-[A61K 9/2081](#) takes precedence; particles with a single coating comprising drug [A61K 9/167](#))}
- U A61K 9/5005
 - • • {Wall or coating material}
- A61K 9/5063
 - • • • {Compounds of unknown constitution, e.g. material from plants or animals (-oils, fats, waxes, shellac [A61K 9/5015-](#))}
- A61K 9/5068
 - • • • • {Cell membranes or bacterial membranes enclosing drugs (-with additional exogenous lipids [A61K 9/127](#) ; virus envelopes [A61K 9/5184-](#))}
- A61K 9/5084
 - • • {Mixtures of one or more drugs in different galenical forms, at least one of which being granules, microcapsules or (coated) microparticles according to [A61K 9/16](#) or [A61K 9/50](#) , e.g. for obtaining a specific release pattern or for combining different drugs (-tablets containing such a mixture [A61K 9/2077-](#))}
- A61K 9/51
 - • • Nanocapsules; {Nanoparticles; (-nanotubes [A61K 9/0092](#) ; polymeric micelles [A61K 9/1075](#) ; polymersomes [A61K 9/1273](#) ; pure drug nanoparticles [A61K 9/14](#) ; drug nanoparticles with adsorbed surface modifiers [A61K 9/141](#) ; conjugates, e.g. between drug and non-active nanoparticles, [A61K 47/48](#) ; preparations for in vivo diagnosis [A61K 49/00](#) ; with radioactive substances [A61K 51/00-](#))}
- U A61K 9/5107
 - • • • {Excipients; Inactive ingredients}
- A61K 9/5176
 - • • • • {Compounds of unknown constitution, e.g. material from plants or animals (-oils, fats, waxes, shellac [A61K 9/5123-](#))}
- A61K 9/5184
 - • • • • • {Virus capsids or envelopes enclosing drugs (-with additional exogenous lipids [A61K 9/127](#) ; bacterial membranes [A61K 9/5068-](#))}
- A61K 9/70
 - Web, sheet or filament bases; {Films; Fibres of the matrix type containing drug; (-hollow drug-filled fibres [A61K 9/0092](#) ; bandages, dressings or absorbent pads [A61F 13/00](#) , chemical aspects thereof [A61L 15/00-](#))}
- A61K 9/7007
 - • {Drug-containing films, membranes or sheets (-[A61K 9/0041](#) , [A61K 9/0043](#) , [A61K 9/006](#) , [A61K 9/0063](#) take precedence)}
- A61K 9/7023
 - • {Transdermal patches and similar drug-containing composite devices, e.g. cataplasms (-galenical aspects of iontophoretic devices [A61K 9/0009](#) ; microneedle arrays [A61K 9/0021](#) ; buccal patches [A61K 9/006-](#))}

U A61K 31/00

Medicinal preparations containing organic active ingredients

NOTE

When classifying in groups [A61K 31/00](#) to [A61K 41/00](#) the symbol [A61K 2300/00](#) may be added, using Combination Sets, to indicate a mixture of active ingredients.

In the preparation of new organic compounds and their use in medicinal preparations, classification is only made in the relevant subclasses [C07C](#) to [C07J](#) according to the type of compound. However, the inventions dealing with medicinal preparations containing at least two active organic ingredients are always classified in this group in addition to the classification for the type of compounds in [C07C](#) to [C07J](#).

Attention is drawn to the notes in class [C07](#), particularly to the definition of steroids given in Note (1) following the title of [C07J](#) and to the definition of carbohydrates and sugars given in the notes following the title of [C07H](#).

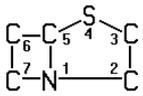
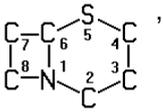
Salts and complexes of organic active compounds are always classified according to the free active compounds. If a complex is formed between two or more active compounds, then they are classified according to all compounds forming the salts or complexes followed by the symbol [A61K 2300/00](#) (i.e. as a mixture of active organic compounds). According to the last place rule, organic active compounds forming salts with heavy metals should be classified in [A61K 33/24](#) to [A61K 33/38](#) and not in subgroups [A61K 31/28](#) to [A61K 31/32](#), [A61K 31/555](#) or [A61K 31/714](#).

This does not apply to complexes, as apparent from the [A61K 31/00](#) scheme, wherein the complexes hemin and hematin are classified in [A61K 31/555](#) and cyanocobalamin in [A61K 31/714](#).

From January 2003 onwards, the EPO copies into CPC the IPC classification of the first document received (family representative). However, blends of active ingredients receive the additional symbol [A61K 2300/00](#) as Combination Set.

- U A61K 31/045 · Hydroxy compounds, e.g. alcohols; Salts thereof, e.g. alcoholates
- A61K 31/07 · · Retinol compounds, e.g. vitamin A (-retinoic acids [A61K 31/203](#)-)
- U A61K 31/095 · Sulfur, selenium, or tellurium compounds, e.g. thiols
- A61K 31/105 · · Persulfides (-thiuram disulfides [A61K 31/145](#); thiosulfonic acids [A61K 31/185](#)-)
- A61K 31/13 · Amines{(-[A61K 31/04](#) takes precedence-)}
- A61K 31/135 · · having aromatic rings {e.g. ketamine, nortriptyline (-methadone [A61K 31/137](#)-)}
- A61K 31/137 · · · Arylalkylamines, e.g. amphetamine, ephedrine, salbutamol, ephedrine {or methadone}
- A61K 31/138 · · · Aryloxyalkylamines, e.g. propanolol, tamoxifen, phenoxybenzamine (-atenolol [A61K 31/165](#); pindolol [A61K 31/404](#); timolol [A61K 31/5377](#)-)
- A61K 31/14 · · Quaternary ammonium compounds, e.g. edrophonium, choline (-betaines [A61K 31/205](#)-)
- A61K 31/145 · · having sulfur, e.g. thiurams (>N-C(S)-S-C(S)-N< and >N-C(S)-S-S-C(S)-N<), Sulfanylamines (-N=SO), Sulfonylamines (-N=SO₂)(-isothiourea [A61K 31/155](#)-)
- U A61K 31/16 · Amides, e.g. hydroxamic acids
- A61K 31/17 · · having the group >N-C(O)-N< or >N-C(S)-N<, e.g. urea, thiourea, carmustine (-isoureas, isothioureas [A61K 31/155](#); sulfonylureas [A61K 31/64](#)-)

- A61K 31/175
- • • having the group >N-C(O)-N=N- or >N-C(O)-N=N- , e.g. carbonhydrazides, carbazones, semicarbazides, semicarbazones; Thioanalogues thereof
- A61K 31/18
- • Sulfonamides (-compounds containing a para-N-benzene-sulfonyl-N- group [A61K 31/63-](#))
- A61K 31/185
- Acids; Anhydrides, halides or salts thereof, e.g. sulfur acids, imidic, hydrazonic, hydroxamic acids (-hydroxamic acids [A61K 31/16](#) ; peroxy acids [A61K 31/327-](#))
- NOTE**
Cyclic anhydrides are considered to be heterocyclic rings
- A61K 31/19
- • Carboxylic acids, e.g. valproic acid (-Salicylic acid [A61K 31/60-](#))
- U A61K 31/195
- • • having an amino group
- A61K 31/197
- • • • the amino and the carboxyl group being attached to the same acyclic carbon chain, e.g. gamma-aminobutyric acid [GABA], beta-alanine, epsilon-aminocaproic acid, pantothenic acid (-carnitine [A61K 31/205-](#))
- A61K 31/198
- • • • • Alpha-aminoacids, e.g. alanine, edetic acids [EDTA], (-betaine [A61K 31/205](#) ; proline [A61K 31/401](#) ; tryptophan [A61K 31/405](#) ; histidine [A61K 31/4172](#) ; peptides not degraded to individual aminoacids [A61K 38/00-](#))
- U A61K 31/20
- • • having a carboxyl group bound to a chain of seven or more carbon atoms, e.g. stearic, palmitic, arachidic acids
- A61K 31/202
- • • • having three or more double bonds, e.g. linolenic (-eicosanoids, e.g. leukotrienes [A61K 31/557-](#))
- A61K 31/203
- • • • Retinoic acids {Salts thereof}
- U A61K 31/21
- Esters, e.g. nitroglycerine, selenocyanates
- U A61K 31/215
- • of carboxylic acids
- U A61K 31/235
- • • having an aromatic ring attached to a carboxyl group
- U A61K 31/24
- • • • having an amino or nitro group
- A61K 31/245
- • • • • Amino benzoic acid types, e.g. procaine, novocaine (-salicylic acid esters [A61K 31/60-](#))
- A61K 31/325
- Carbamic acids; Thiocarbamic acids; Anhydrides or salts thereof (-thiurams [A61K 31/145-](#))
- U A61K 31/33
- Heterocyclic compounds
- U A61K 31/335
- • having oxygen as the only ring hetero atom, e.g. fungichromin
- U A61K 31/34
- • • having five-membered rings with one oxygen as the only ring hetero atom, e.g. isosorbide
- A61K 31/345
- • • • Nitrofurans (-nitrofurantoin [A61K 31/4178-](#))
- U A61K 31/38
- • having sulfur as a ring hetero atom
- A61K 31/382
- • • having six-membered rings, e.g. thioxanthenes (-thiotixene [A61K 31/496-](#))
- A61K 31/395
- • having nitrogen as a ring hetero atom, e.g. guanethidine, rifamycins (-rifampin [A61K 31/496-](#))
- U A61K 31/40
- • • having five-membered rings with one nitrogen as the only ring hetero atom, e.g. sulpiride, succinimide, tolmetin, buflomedil
- A61K 31/409
- • • • having four such rings, e.g. porphine derivatives, bilirubin, biliverdine (-hemin, hematin [A61K 31/555-](#))
- U A61K 31/41
- • • having five-membered rings with two or more ring hetero atoms, at least one of which being nitrogen, e.g. tetrazole
- U A61K 31/425
- • • • Thiazoles
- U A61K 31/429
- • • • • condensed with heterocyclic ring systems

- A61K 31/43 Compounds containing 4-thia-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula
e.g. penicillins, penems
- 
- U A61K 31/435 . . . having six-membered rings with one nitrogen as the only ring hetero atom
- A61K 31/439 the ring forming part of a bridged ring system, e.g. quinuclidine (-8-azabicyclo [3.2.1] octanes [A61K 31/46-](#))
- U A61K 31/44 Non condensed pyridines; Hydrogenated derivatives thereof
- A61K 31/4406 only substituted in position 3, e.g. zimeldine (-nicotinic acid [A61K 31/455-](#))
- A61K 31/4415 Pyridoxine, i.e. Vitamin B6 (-pyridoxal phosphate [A61K 31/675-](#))
- U A61K 31/4427 containing further heterocyclic ring systems
- A61K 31/4439 containing a five-membered ring with nitrogen as a ring hetero atom, e.g. omeprazole (-nicotine [A61K 31/465-](#))
- U A61K 31/445 Non condensed piperidines, e.g. piperocaine
- A61K 31/4515 having a butyrophenone group in position 1, e.g. haloperidol (-pipamperone [A61K 31/4545-](#))
- A61K 31/452 Piperidinium derivatives (-pancuronium [A61K 31/58-](#))
- U A61K 31/47 Quinolines; Isoquinolines
- U A61K 31/4738 ortho- or peri-condensed with heterocyclic ring systems
- A61K 31/4745 condensed with ring systems having nitrogen as a ring hetero atom, e.g. phenantrolines (-yohimbine derivatives, vinblastine [A61K 31/475](#) ; ergoline derivatives [A61K 31/48-](#))
- A61K 31/4748 forming part of bridged ring systems (-strychnine [A61K 31/475](#) ; morphinan derivatives [A61K 31/485-](#))
- A61K 31/475 having an indole ring, e.g. yohimbine, reserpine, strychnine, vinblastine (-vincamine [A61K 31/4375-](#))
- A61K 31/495 having six-membered rings with two {or more}nitrogen atoms as the only ring heteroatoms, e.g. piperazine {or tetrazines}(-[A61K 31/48](#) takes precedence-){(-with three nitrogen atoms [A61K 31/53-](#))}
- A61K 31/53 having six-membered rings with three nitrogens as the only ring hetero atoms, e.g. chlorazaniil, melamine,(-melarsoprol [A61K 31/555-](#)){(-with four nitrogen atoms [A61K 31/495-](#))}
- U A61K 31/54 having six-membered rings with at least one nitrogen and one sulfur as the ring hetero atoms, e.g. sulthiame
- U A61K 31/542 ortho- or peri-condensed with heterocyclic ring systems
- A61K 31/545 Compounds containing 5-thia-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:
- 
- e.g. cephalosporins, {cefaclor, or cephalaxine}
- U A61K 31/55 having seven-membered rings, e.g. azelastine, pentylenetetrazole
- U A61K 31/551 having two nitrogen atoms, e.g. dilazep
- A61K 31/5513 1,4-Benzodiazepines, e.g. diazepam {or clozapine}
- A61K 31/557 Eicosanoids, e.g. leukotrienes {or prostaglandins}

- U A61K 31/56
- Compounds containing cyclopenta[a]hydrophenanthrene ring systems; Derivatives, e.g. steroids
- NOTE
Attention is drawn to Note (1) following the title of subclass [C07J](#) which explains what is covered by the term "steroids"
- U A61K 31/57
- • substituted in position 17 beta by a chain of two carbon atoms, e.g. pregnane, progesterone
- A61K 31/573
- • • substituted in position 21, e.g. cortisone, dexamethasone, prednisone {or aldosterone}
- A61K 31/58
- • containing heterocyclic rings, e.g. danazol, stanozolol, pancuronium or digitogenin{(-digitoxin [A61K 31/7048](#)-)}
- U A61K 31/60
- Salicylic acid; Derivatives thereof
- A61K 31/609
- • Amides, e.g. salicylamide{(-labetalol, metoclopramide [A61K 31/166](#)-)}
- A61K 31/612
- • having the hydroxy group in position 2 esterified, e.g. salicylsulfuric acid (-fosfosal [A61K 31/661](#)-)
- A61K 31/625
- • having heterocyclic substituents, e.g. 4-salicycloylmorpholine,(-sulfasalazine [A61K 31/635](#)-)
- U A61K 31/66
- Phosphorus compounds
- A61K 31/661
- • Phosphorus acids or esters thereof not having P-C bonds, e.g. fosfosal, dichlorvos, malathion {or mevinphos}
- A61K 31/70
- Carbohydrates; Sugars; Derivatives thereof (-sorbitol [A61K 31/047](#)-)
- NOTE
In this group, the expressions are used with the meanings indicated in Note (3) following the title of the subclass [C07H](#)
- A61K 31/7012
- • Compounds having a free or esterified carboxyl group attached, directly or through a carbon chain, to a carbon atom of the saccharide radical, e.g. glucuronic acid, neuraminic acid (-gluconic acid [A61K 31/191](#) ; ascorbic acid [A61K 31/375](#)-)
- A61K 31/7016
- • Disaccharides, e.g. lactose, lactulose (-lactobionic acid [A61K 31/7032](#)-)
- U A61K 31/7028
- • Compounds having saccharide radicals attached to non-saccharide compounds by glycosidic linkages
- U A61K 31/7034
- • • attached to a carbocyclic compound, e.g. phloridzin
- A61K 31/704
- • • • attached to a condensed carbocyclic ring system, e.g. sennosides, thicolchicosides, escin, daunorubicin{(-digitoxin [A61K 31/7048](#)-)}
- U A61K 31/7042
- • Compounds having saccharide radicals and heterocyclic rings
- A61K 31/7048
- • • having oxygen as a ring hetero atom, e.g. leucoglucosan, hesperidin, erythromycin, nystatin {digitoxin or digoxin}
- U A61K 31/715
- • Polysaccharides, i.e. having more than five saccharide radicals attached to each other by glycosidic linkages; Derivatives thereof, e.g. ethers, esters
- A61K 31/726
- • • Glycosaminoglycans, i.e. mucopolysaccharides (-chondroitin sulfate, dermatan sulfate [A61K 31/737](#)-)
- A61K 31/737
- • • Sulfated polysaccharides, e.g. chondroitin sulfate, dermatan sulfate (-[A61K 31/727](#) takes precedence-)
- U A61K 31/74
- Synthetic polymeric materials
- A61K 31/80
- Polymers containing hetero atoms not provided for in groups [A61K 31/755](#) to [A61K 31/795](#)

Project: RP0115 (A61K)

A61K 35/00

Medicinal preparations containing materials or reaction products thereof with undetermined constitutionNOTE

(1) In this group, classification is made for each active component or material. For each active component or material, classification is then made in the last appropriate place.

(2) When classifying in this group, the last place rule (applied throughout A61K) does not apply. Namely, classification is also made for each active component or material in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.

WARNING

Groups A61K 35/13, A61K 35/15, A61K 35/17, A61K 35/19, A61K 35/33, A61K 35/35, A61K 35/51, A61K 35/57, A61K 35/61 do not correspond to former or future IPC. Concordance CPC : IPC for these groups is as follows: - A61K 35/13 : A61K 35/12 - A61K 35/15 : A61K 35/14 - A61K 35/17 : A61K 35/14 - A61K 35/19 : A61K 35/14 - A61K 35/33 : A61K 35/12 - A61K 35/35 : A61K 35/12 - A61K 35/51 : A61K 35/48 - A61K 35/57 : A61K 35/56 - A61K 35/61 : A61K 35/56

Project: N/A (A61K)

A61K 35/02

- from inanimate materials (carbon A61K 33/44)

A61K 35/04

- Tars; Bitumens; Mineral oils; Ammonium bituminisulfonates, e.g. ichthyol bituminosulfonate (-carbon A61K 33/00)

A61K 35/06

- Mineral oils, { e.g. paraffinic oils, or aromatic oils based on aromatic hydrocarbons (-essential oils derived from plants A61K 36/00) }

A61K 35/08

- Mineral waters; {Sea water}

A61K 35/10

- Peat; Amber; {Turf; Humus} (-wood tar, sap or resin A61K 36/00)

Project: RP0115 (A61K)

A61K 35/12

- Materials from mammals; {compositions} comprising non-specified tissues or cells; -Compositions comprising non-embryonic stem cells (-uncharacterized stem cells A61K 35/545); -Genetically modified cells (gene therapy C12N 5/10; uncharacterised stem cells A61K 35/545; vaccines or medicinal preparations containing antigens or antibodies A61K 39/00)

NOTE

When the cells are characterized, classification is given undermade in the group covering the corresponding tissue or tissue of origin.

Project: N/A (A61K)

A61K 35/13

- {Tumor} cells, irrespective of tissue of origin (-tumor vaccines A61K 39/00 -tumour vaccines A61K 39/00)

A61K 35/14

- Blood (-haemoglobin A61K 38/42; umbilical cord blood A61K 35/51); Artificial blood (-perfluorocarbons A61K 31/02; umbilical cord blood A61K 35/51; haemoglobin A61K 38/42)

- A61K 35/15
 - • {Cells of the myeloid line, e.g. granulocytes, basophils, eosinophils, neutrophils, *leucocytes*, monocytes, macrophages or mast cells; -Myeloid precursor cells; -Antigen-presenting cells, e.g. dendritic cells (-presenting a specific antigen [A61K 39/00](#); therapeutic combinations of antibodies, or fragments thereof, and blood-derived cells [A61K 35/15](#), [A61K 39/00](#) or [C07K 16/00](#))}
- A61K 35/16
 - • {Blood plasma; -Blood serum (-umbilical cord blood [A61K 35/51](#))}
- A61K 35/17
 - • {Lymphocytes; -B-cells; -T-cells; -Natural killer cells; -Interferon-*and activated or* cytokine-activated lymphocytes (-when activated by a specific antigen [A61K 39/00](#))}
- A61K 35/18
 - • Erythrocytes{(-*hemoglobin* [A61K 38/42](#) *haemoglobin* [A61K 38/42](#))}
- A61K 35/19
 - • {Platelets; -Megacaryocytes}
- A61K 35/20
 - • Milk; *Colostrum* *Whey*; {*Whey*} *Colostrum*
- A61K 35/22
 - • *Urine*; {Urinary tract, e.g. kidney or bladder; -Intraglomerular mesangial cells; -Renal mesenchymal cells; -Adrenal gland}; *Urine*
- A61K 35/24
 - • Mucus; Mucous glands; Bursa; {Synovial fluid}; Arthral fluid; Excreta; Spinal fluid{(-saliva [A61K 35/38](#))}
- A61K 35/26
 - • Lymph; {Lymph nodes;} Thymus; {Spleen; -Splenocytes; -Thymocytes}
- A61K 35/28
 - • {Bone} marrow; {*Hematopoietic* *Haematopoietic* stem cells; -Mesenchymal stem cells of any origin, e.g. adipose-derived stem cells}
- A61K 35/30
 - • Nerves; Brain; {Eyes; -Corneal cells; -Cerebrospinal fluid; -Neuronal stem cells; -Neuronal precursor cells; -Glial cells; -Oligodendrocytes; -Schwann cells; -Astroglia; *astrocytes*; *Astrocytes*; -Choroid plexus; -Spinal cord tissue}
- A61K 35/32
 - • Bones; {Osteocytes; -Osteoblasts;} Tendons; {Tenocytes;} Teeth; {Odontoblasts;} Cartilage; {Chondrocytes; -Synovial membrane}
- A61K 35/33
 - • {Fibroblasts}
- A61K 35/34
 - • Muscles; {Smooth muscle cells} *Heart*; *Heart*; {Cardiac stem cells; -Myoblasts; -Myocytes; -Cardiomyocytes (-vascular smooth muscle [A61K 35/44](#))}
- A61K 35/35
 - • {Fat tissue; -Adipocytes; -Stromal cells; -Connective tissues of general nature (-adipose-derived stem cells [A61K 35/28](#), *collagen* [A61K 38/39](#); *collagen* [A61K 38/39](#))}

Project: RP0115 (A61K)

- A61K 35/36
 - • Skin; Hair; Nails; *Sebacious* *Sebaceous* glands; Cerumen; {Epidermis; -Epithelial cells; -Keratinocytes; -Langerhans cells; -*Ecdodermal cells* *Ectodermal cells* (-islets of Langerhans [A61K 35/39](#))}

NOTE

Epithelial cells of specific tissues, e.g. lung epithelium, are classified under the respective tissue

Project: N/A (A61K)

- U A61K 35/37
 - • Digestive system
- A61K 35/38
 - • Stomach; Intestine; {Goblet cells; -Oral mucosa; -Saliva}
- A61K 35/39
 - • Pancreas; Islets of Langerhans{(-Langerhans cells of epidermis [A61K 35/36](#))}
- A61K 35/407
 - • Liver; {Hepatocytes}
- A61K 35/413
 - • {*Gallbladder* *Gall bladder*;} Bile
- A61K 35/42
 - • {Respiratory *System*;} *system*, e.g. *Lungs* *lungs*, *bronchi* or *lung cells*; {*Bronchi*; *Lung* cells}

- A61K 35/44
- Vessels~~{e.g. blood vessels or lymphatic vessels}~~; -Vascular smooth muscle cells; -Endothelial cells; -Endothelial progenitor cells}
- U A61K 35/48
- Reproductive organs
- A61K 35/50
- Placenta; *Placental stem cells*; Amniotic fluid; ~~{Amnion; Amniotic stem cells; Placental Amniotic stem cells}~~
- A61K 35/51
- {Umbilical cord; Umbilical cord blood; Umbilical stem cells}
- A61K 35/52
- *Sperm; Prostate; Sperm*~~{Prostate; Seminal fluid; Leydig cells of testes}~~
- A61K 35/54
- *Ovary Ovaries; Ova; Ovules*; Embryos; ~~{Fetal Foetal cells; Germ cells}~~
- A61K 35/545
- {Embryonic stem cells; Pluripotent stem cells; Induced pluripotent stem cells; ~~Uncharacterized Uncharacterised stem cells}~~
- A61K 35/55
- Glands not provided for in ~~any of the preceding subgroups of this main group~~~~{groups A61K 35/22 - A61K 35/545, e.g. thyroidthyroids, parathyroid, parathyroids or pineal gland}~~~~glands~~
- A61K 35/56
- Materials from animals other than mammals.
- A61K 35/57
- ~~{Birds; Materials from birds, e.g. eggs, feathers, egg white, egg yolk or feathers}~~*endothelium corneum gigeriae galli*
- A61K 35/58
- ~~{Reptiles}~~ *(antigens from snakes A61K 39/38)*
- A61K 35/583
- ~~{Snakes Lizards; Chameleons Lizards, e.g. chameleons}~~ (therapeutic use of a snake venom protein [A61K 38/00](#))
- A61K 35/586
- ~~{Turtles, Tortoises}~~; *Tortoises, e.g. terrapins*
- A61K 35/60
- Fish, *e.g. seahorses*; ~~{Seahorses}~~; -Fish eggs}
- D A61K 35/61
- ~~{Sea animals other than those covered by group A61K 35/60}~~
- A61K 35/612
- ~~{Crustaceans, e.g. crabs, lobsters, shrimps, krill or crayfish; Barnacles}~~
- A61K 35/614
- ~~{Cnidaria, e.g. sea anemones, corals, coral animals, or jellyfish}~~
- A61K 35/616
- ~~{Echinodermata, e.g. star fish starfish, sea cucumbers, or sea urchins}~~
- A61K 35/618
- ~~{Molluscs, e.g. fresh-water molluscs, oysters, clams, squids, octopus, cuttlefish, snails or slugs}~~
- A61K 35/62
- Leeches; ~~{Worms, e.g. cestodes or, tapeworms, nematodes, roundworms, earth worms, ascarids, filarias, hookworms, trichinella or taenia}~~
- N A61K 35/63
- Arthropods *(aquatic crustaceans A61K 35/612)*
- A61K 35/64
- ~~{Arthropods}~~*Insects, e.g. bees, wasps or fleas*
- D A61K 35/642
- {Insects, e.g. bees, wasps or fleas}
- A61K 35/644
- {Beeswax; Propolis; Royal jelly; Honey}
- A61K 35/646
- ~~{arachnids Arachnids}~~, e.g. spiders, scorpions, ticks or mites}
- A61K 35/648
- {Myriapods, e.g. centipedes or millipedes}
- A61K 35/65
- {Amphibians, e.g. toads, frogs, salamanders, or newts}
- N A61K 35/655
- Aquatic animals other than those covered by groups [A61K 35/57](#) - [A61K 35/65](#)
- A61K 35/66
- Micro-organisms or materials ~~thereof therefrom~~ (~~mutated microorganisms or microorganisms per se C12R 1/00; microorganisms in food, for nutritional purposes A23L 1/3014; fungi, yeast or candida A61K 36/06 fungi, yeasts or candida A61K 36/06~~)
- NOTE**
Classification is given in this group only the micro-organism is the active ingredient
- A61K 35/68
- Protozoa~~{~~, e.g. flagella, amoebas, sporozoans, plasmodium or toxoplasma}

- A61K 35/74 . . Bacteria{ (-therapeutic use of a bacterial protein [A61K 38/00](#); ~~bacteria per se or mutant bacteria C12R 1/00~~; ~~bacteria in food, for nutritional purposes A23L 1/3014~~)}
- A61K 35/741 . . . {Probiotics (~~as part of food or functional food A23L 1/3014~~; probiotic yeast, *i.e.g.* saccharomyces [A61K 36/06](#))}
- A61K 35/742 {Spore-forming bacteria, e.g. Bacillus coagulans, *Bacillus subtilis*, *clostridium* or Lactobacillus sporogenes}
- A61K 35/744 {Lactic acid bacteria, e.g. enterococci, pediococci, lactococci, streptococci, ~~leuconostoc~~ or *leuconostocs*}
- A61K 35/745 {Bifidobacteria}
- A61K 35/747 {Lactobacilli, e.g. L. acidophilus; or L. brevis}
- A61K 35/748 . . . {Cyanobacteria; Spirulina; Blue-green algae; BlueCyanobacteria, *i.e.* blue-green bacteria or blue-green algae, *e.g.* spirulina (-algae, microalgae or microphytes [A61K 36/00](#) [A61K 36/02](#))}
- A61K 35/76 . . Viruses;{Bacteriophages; (~~viruses per se C12N 7/00~~; ~~viral proteins per se C07K 14/005~~; ~~use of virus as a vector C12N 15/86~~; ~~use of virus or part thereof as vaccine A61K 39/12~~; ~~therapeutic use of a viral protein A61K 38/16~~)};Subviral particles; Bacteriophages
- A61K 35/761 . . . {Adenovirus}
- A61K 35/763 . . . {Herpes virus}
- A61K 35/765 . . . {Reovirus; ~~Rotavirus~~}
- A61K 35/766 . . . {Rhabdovirus, e.g. vesicular stomatitis virus}
- A61K 35/768 . . . {~~Other oncolytic viruses~~ *Oncolytic viruses not provided for in groups [A61K 35/761](#) - [A61K 35/766](#)*}

A61K 36/00

Medicinal preparations of undetermined constitution containing material from algae, lichens, fungi or plants, or derivatives thereof, e.g. traditional herbal medicines{(-antigens from pollen [A61K 39/36](#))}

NOTE

In this group, common names of plants, where given, are presented in brackets following their corresponding Latin names.

A61K 38/00

Medicinal preparations containing peptides (-peptides containing beta-lactam rings [A61K 31/00](#) ; cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, [A61K 31/00](#) ; ergot alkaloids of the cyclic peptide type [A61K 31/48](#) ; containing macromolecular compounds having statistically distributed amino acid units [A61K 31/74](#) ; medicinal preparations containing antigens or antibodies [A61K 39/00](#) ; medicinal preparations characterised by the non-active ingredients, e.g. peptides as drug carriers, [A61K 47/00](#))

NOTES

The terms or expressions used in this group follow exactly the definitions given in Note (1) following the title of subclass [C07K](#) .

Preparations containing fragments of peptides or peptides modified by removal or addition of amino acids, by substitution of amino acids by others, or by combination of these modifications are classified as the preparations containing parent peptides. However, preparations containing fragments of peptides having only four or less amino acids are also classified in groups [A61K 38/05](#) to [A61K 38/07](#) .

Preparations containing peptides prepared by recombinant DNA technology are not classified according to the host, but according to the original peptide

expressed, e.g. preparations containing HIV peptide expressed in E. coli are classified with the preparations containing HIV peptides.

This group covers also medicinal preparation containing DNA or RNA encoding for peptides as active ingredient.

Documents relating to new peptides, e.g. enzymes, or new DNA or RNA encoding for peptides and their use in medicinal preparations are classified in subclass C07K or in group C12N 9/00 according to the peptides, with the appropriate indexing codes relating to their medical uses.

- A61K 38/005
 - {Enzyme inhibitors (-protease inhibitors [A61K 38/55](#)-)}
 - A61K 38/04
 - Peptides having up to 20 amino acids in a fully defined sequence; Derivatives thereof ({ enzyme inhibitors [A61K 38/005](#) }; gastrins{ [A61K 38/2207](#) } somatostatins [A61K 38/31](#) , melanotropins [A61K 38/34](#) ; { protease inhibitors [A61K 38/55](#) })
 - A61K 38/08
 - • Peptides having 5 to 11 amino acids({-[A61K 38/043](#) to [A61K 38/046](#) take precedence-})
 - A61K 38/10
 - • Peptides having 12 to 20 amino acids({-[A61K 38/043](#) to [A61K 38/046](#) take precedence-})
 - A61K 38/12
 - • Cyclic peptides{, e.g. bacitracins; Polymyxins; Gramicidins S, C; Tyrocidins A, B or C (-[A61K 38/043](#) to [A61K 38/046](#) take precedence-)}
 - A61K 38/14
 - • Peptides containing saccharide radicals; Derivatives thereof {e.g. bleomycin, phleomycin, muramylpeptides or vancomycin}
 - A61K 38/16
 - Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof({-enzyme inhibitors [A61K 38/005](#)-})
 - A61K 38/17
 - • from animals; from humans({-enzyme inhibitors [A61K 38/005](#)-})
 - A61K 38/1703
 - • • {from vertebrates (-[A61K 38/1767](#) takes precedence-)}
 - U A61K 38/177
 - • • {Receptors; Cell surface antigens; Cell surface determinants}
 - A61K 38/1796
 - • • • {for hormones (-for neuromediators [A61K 38/1787](#)-)}
 - U A61K 38/19
 - • • Cytokines; Lymphokines; Interferons
 - A61K 38/191
 - • • • {Tumor necrosis factors [TNF]}, e.g. lymphotoxin [LT] i.e. TNF-beta}
 - A61K 38/193
 - • • • {Colony stimulating factors [CSF]}
 - A61K 38/22
 - • • Hormones (-derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [A61K 38/33](#) , e.g. corticotropin [A61K 38/35](#)-)
 - A61K 38/2207
 - • • • {Gastrins; Cholecystokinins [CCK]}
 - A61K 38/30
 - • • • Insulin-like growth factors (somatomedins), e.g. IGF-1, IGF-2{ insulin-like growth factor binding protein [A61K 38/1754](#)-}
 - U A61K 38/43
 - • Enzymes; Proenzymes; Derivatives thereof
- NOTE**
In this group, 1. proenzymes are classified with the corresponding enzymes; 2. enzymes are generally categorised according to the "Nomenclature and Classification of Enzymes" of the International Commission of Enzymes. Where appropriate, this designation appears in the subgroups below in parenthesis. 3. the specific enzyme(s) used are additionally classified in [C12Y](#) .
- A61K 38/54
 - • • Mixtures of enzymes or proenzymes covered by more than a single one of groups [A61K 38/44](#) to [A61K 38/46](#) or [A61K 38/51](#) to [A61K 38/53](#)
 - U A61K 38/55
 - • Protease inhibitors
 - A61K 38/57
 - • • from animals; from humans({-[A61K 38/553](#) , [A61K 38/556](#) take precedence-})

A61K 39/00**Medicinal preparations containing antigens or antibodies (-materials for immunoassay [G01N 33/53](#)-)**NOTES

Groups [A61K 39/002](#) to [A61K 39/295](#) cover preparations containing protozoa, bacteria, viruses, or subunits thereof, e.g. membrane parts.

Preparation of antigen or antibody compositions is also classified in subclass [C12N](#) , if the step of cultivating the micro-organism is of interest.

Documents relating to new peptides, e.g. enzymes, or new DNA or RNA encoding for peptides and their use in medicinal preparations are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their medical uses.

Documents relating to antibodies or DNA or RNA encoding for antibodies and their use in medicinal preparations are classified in group [C07K 16/00](#) or in group [C12N 9/0002](#) according to the antibodies, with the appropriate indexing codes relating to their medical uses.

Documents relating to new therapeutical uses of antibodies or DNA or RNA encoding for antibodies are classified in group [C07K 16/00](#) or in group [C12N 9/0002](#) according to the antibodies, with the appropriate indexing codes relating to their medical uses.

Documents relating to medicinal preparations containing different antibodies as active ingredients are classified in group [C07K 16/00](#) according to the different active antibodies, with the appropriate indexing codes relating to their medical uses. However, documents relating to medicinal preparations containing antibodies and other compounds as active ingredients are classified in groups [A61K 39/395](#) to [A61K 39/42](#) , in association with symbol [A61K 2300/00](#) in Combination Sets.

- A61K 39/0005
 - U A61K 39/02
 - A61K 39/05
 - U A61K 39/12
 - A61K 39/295
- {Vertebrate antigens (-from snakes [A61K 39/38](#)-)}
 - Bacterial antigens
 - • {Actinobacteria, e.g. Actinomyces, Streptomyces, Nocardia, Bifidobacterium, Gardnerella}, Corynebacterium; Propionibacterium{-Mycobacterium [A61K 39/04](#)-}
 - Viral antigens
 - • Polyvalent viral antigens (-vaccinia virus or variola virus [A61K 39/285](#)-); Mixtures of viral and bacterial antigens

WARNING

This group is no longer used for the classification of new documents as from April 1, 2012. The backlog of this group is being continuously reclassified to [A61K 39/0015](#), to subgroups of [A61K 39/0016](#) and of [A61K 39/12](#)

- A61K 39/395
 - U A61K 2039/54
 - U A61K 2039/541
 - A61K 2039/544
 - U A61K 2039/60
 - A61K 2039/6006
- Antibodies (-agglutinins [A61K 38/36](#) ; { as drug carriers [A61K 47/48](#) }); Immunoglobulins; Immune serum, e.g. antilymphocytic serum
 - {characterised by the route of administration}
 - • {Mucosal route}
 - • • {to the airways (-intranasal [A61K 2039/543](#)-)}
 - {characteristics by the carrier linked to the antigen}
 - • {Cells (-recombinantly expressing antigens [A61K 2039/5156](#) , [A61K 2039/523](#)-)}

A61K 41/00**Medicinal preparations obtained by treating materials with wave energy or particle radiation; {Therapies using these preparations} (-[A61K 31/59](#) takes precedence; generation of ultrasonic waves [B06B](#) ; electric discharge tubes [H01J](#)-)**

- U A61K 41/0028 · {Disruption, e.g. by heat or ultrasounds, sonophysical or sonochemical activation; e.g. thermosensitive or heat-sensitive liposomes, disruption of calculi with a medicinal preparation and ultrasounds}
- A61K 41/0033 · · {Sonodynamic cancer therapy with sonochemically active agents or sonosensitizers, having their cytotoxic effects enhanced through application of ultrasounds (-ultrasound therapy per se [A61N 7/00](#)-)}
- A61K 41/0038 · {Radiosensitizing, i.e. administration of pharmaceutical agents that enhance the effect of radiotherapy (-radiotherapy per se [A61N 5/10](#)-)}

A61K 45/00

Medicinal preparations containing active ingredients not provided for in groups [A61K 31/00](#) to [A61K 41/00](#)

U A61K 47/00

Medicinal preparations characterised by the non-active ingredients used, e.g. carriers, inert additives

- U A61K 47/06 · Organic compounds,{e.g. mineral oil, petrolatum, synthetic polyolefins}
- U A61K 47/08 · · containing oxygen,{e.g. ethers, acetals, ketones, quinones, aldehydes, peroxides}
- A61K 47/10 · · · Alcohols; Phenols; Salts thereof,{e.g. glycerol; Polyethylene glycol [PEG]; Poloxamers; PEG/POE alkyl ethers (-sugar alcohols [A61K 47/26](#) ; copolymers containing polyalkylene glycol or poloxamer [A61K 47/34](#)-)}
- A61K 47/14 · · · Esters of carboxylic acids {e.g. fatty acid monoglycerides, medium-chain triglycerides, parabens}
- A61K 47/20 · · containing sulfur,{e.g. DMSO, docusate, sodium lauryl sulfate (-[A61K 47/183](#) , [A61K 47/186](#) take precedence-)}
- A61K 47/22 · · Heterocyclic compounds,{e.g. ascorbic acid, tocopherol, pyrrolidones (-[A61K 47/183](#) , [A61K 47/186](#) take precedence-)}
- A61K 47/26 · · Carbohydrates,{e.g. mono-, di-, oligosaccharides, nucleic acids, sugar alcohols, amino sugars; Derivatives thereof, e.g. polysorbates, sorbitan fatty acid esters, glycyrrhizin (-[A61K 47/183](#) , [A61K 47/186](#) take precedence-)}
- A61K 47/28 · · Steroids,{e.g. cholesterol, bile acids, glycyrrhetic acid (-[A61K 47/183](#) , [A61K 47/186](#) take precedence-)}
- U A61K 47/30 · Macromolecular compounds
- A61K 47/34 · · Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds,{e.g. polyesters, polyamino acids, polysiloxanes, copolymers of polyalkylene glycol or poloxamer (-PEG or poloxamers [A61K 47/10](#)-)}

NOTE

This group does not cover polyalkoxylated compounds, which are classified according to the derivatized compounds. The following list provides examples of such polyalkoxylated compounds together with their relevant group:

- POE alkyl ethers [A61K 47/10](#)
- PEG fatty acid esters [A61K 47/14](#)
- poloxamines [A61K 47/18](#)
- polysorbates [A61K 47/26](#)
- POE castor oil [A61K 47/44](#)

- U A61K 47/36 · · Polysaccharides; Derivatives thereof,{e.g. gums, starch, alginate, dextrin, hyaluronic acid, chitosan, inulin, agar, pectin}
- A61K 47/40 · · · Cyclodextrins; Derivatives thereof{(-cyclodextrin inclusion compounds [A61K 47/48969](#)-)}
- A61K 47/42 · · Proteins; Polypeptides; Degradation products thereof; Derivatives thereof {e.g. albumin, gelatin, zein (-oligopeptides having up to 5 amino acids [A61K 47/183](#) ; polyamino acids [A61K 47/34](#)-)}

- A61K 47/44
- Oils, fats or waxes according to more than one of groups [A61K 47/02](#) to [A61K 47/42](#) ; {Natural or modified natural oils, fats or waxes, e.g. (polyethoxylated) castor oil, montan wax, ozokerite, lignite, shellac, rosin, beeswax, lanolin (-synthetic glycerides, e.g. medium-chain triglycerides [A61K 47/14](#)-)}
- U A61K 47/48
- the non-active ingredient being chemically bound to the active ingredient, e.g. polymer drug conjugates
- U A61K 47/48007
- {the pharmacologically- or therapeutically-active agent being covalently bound or complexed to a modifying agent}
- NOTE
The modifying agent being a macromolecular compound [A61K 47/48169](#), a peptide, protein or polyamino acid [A61K 47/48238](#), an antibody or immunoglobulin [A61K 47/48369](#)
- A61K 47/48015
- {the modifying agent being an inorganic compound; e.g. inorganic ion that being chemically complexed with the pharmacologically- or therapeutically-active agent (-[A61K 47/48161](#) takes precedence-)}
- NOTE
Classic ion pairs of medicinal agents are not classified in [A61K 47/48](#) but in [A61K 31/00](#)
- A61K 47/48023
- {the modifying agent being an organic compound (-[A61K 47/48161](#) takes precedence-)}
- A61K 47/48061
- {the modifying agent being a heterocyclic compound (-[A61K 47/48153](#) takes precedence-)}
- U A61K 47/48169
- {the modifying agent being an organic macromolecular compound, i.e. an oligomeric, polymeric, dendrimeric molecule}
- NOTE
a peptide, protein, polyamino acid being classified in [A61K 47/48238](#) and subgroups; an antibody in [A61K 47/48369](#) and subgroups. In case of block copolymers, the different (large) blocks are classified in the appropriate [A61K 47/48169](#) or [A61K 47/48238](#) subgroups
- U A61K 47/48192
- {the organic macromolecular compound has been obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds, e.g. polyureas, polyurethanes}
- A61K 47/48207
- {the macromolecule is/contains a polyamide, e.g. nylon (-polyamino acids [A61K 47/48238](#)-)}
- U A61K 47/48238
- {the modifying agent being a protein, peptide, polyamino acid}
- NOTE
antibodies or immunoglobulins are classified in [A61K 47/48369](#) subgroups
Special physical or galenic forms modified by covalent attachment or complexation of a protein, peptide or polyamino acid, are given the [A61K 47/48238](#) class in addition to their corresponding [A61K 47/48769](#) subgroup, e.g. a liposome modified on its surface by a peptide being classified in [A61K 47/48815](#) and [A61K 47/48238](#) , a PLGA nanoparticle modified on its surface by a peptide being classified in [A61K 47/48915](#) and in [A61K 47/48238](#) Peptidic linkers used to connect a drug and a modifying agent are classified in [A61K 47/48338](#) , the modifying agent being also classified if it being defined

- A61K 47/48246
- • • {drug-peptide, protein or polyamino acid conjugates, i.e. the modifying agent being a protein, peptide, polyamino acid which being linked/complexed to a molecule that being the pharmacologically or therapeutically active agent} (-peptidic linker are classified in [A61K 47/48338](#)-)

NOTE

The connection of the drug to the peptide, protein or polyamino acid can be by a direct covalent linkage or through a linker Fusion/chimeric proteins genetically produced, e.g. by recombinant DNA technology, are classified in [C07K 2319/00](#) and subgroups, not in [A61K 47/48246](#) and subgroups. [A61K 47/48246](#) and its subgroups only cover the conjugates wherein a peptide or protein being the pharmacologically or therapeutically active agent has been linked to another peptide or protein being the modifying agent via chemical methods. In that latter example of a chemically-produced peptide or protein-peptide or protein conjugate, what being classified in [A61K 47/48246](#) or in one of its subgroups being the peptide or protein used as modifying agent

- A61K 47/48346
- • • {pretargeting systems involving a peptide or protein (-not an antibody [A61K 47/48723](#)-)for targeting specific cells}

NOTE

The concept of "pre-targeting" covers the administration of the modifying agent (which being an agent able to target specific cells in the body), and of the pharmacologically or therapeutically active agent (drug D) in several steps, their "binding" occurring at the in vivo targeted site. It involves administration in at least two steps, for example: (i) a conjugate T-A corresponding to a targeting agent T able to target specific cells or receptors in the body (T) linked to a compound A, and (ii) a conjugate D-M corresponding to the drug D linked to a modifying agent M, able to target the compound A. The sequence involves e.g. the administration of T-A and then D-M. Between step (i) and step (ii), a further compound able to bind to both A and M may also be administered (e.g. during a clearing step). Classification being made according to the nature of T in the subgroups of [A61K 47/4813](#) , [A61K 47/48346](#) and [A61K 47/48723](#) . In [A61K 47/48346](#) and its subgroups, T being a peptide or protein, not being a antibody. If M being biotin and A being a (strept)avidin or a derivative thereof, then [A61K 47/48353](#) being used as classification symbol

- U A61K 47/48369
- • {the modifying part being an antibody, an immunoglobulin, or a fragment thereof, e.g. a Fc-fragment}

- U A61K 47/48507
- • • {the modifying agent being a well defined antibody or immunoglobulin bearing at least one antigen-binding site}

NOTE

According to the nature of the antibody, the appropriate [A61K 47/48515](#) subgroup being given. If the pharmacologically or therapeutically active agent in the antibody conjugate being known, the appropriate [A61K 47/48384](#) subgroup being also given

- A61K 47/48707
- • • • {antibody-chelate conjugate wherein the chelate being used for therapeutic purposes (-when radioabeled and used in radiodiagnosis or radiotherapy [A61K 51/1093](#) and the corresponding [A61K 51/1003](#) subgroup; antibody-chelate used for MRI [A61K 49/14](#)-)}

- U A61K 47/48723
- • • {pretargeting systems involving an antibody for targeting specific cells}

NOTE

The concept of "pre-targeting" covers the administration of the modifying agent (which being an agent able to target specific cells in the body), and of the pharmacologically or therapeutically active agent (drug D)

in several steps, their "binding" occurring at the in vivo targeted site. It involves administration in at least two steps, for example: (i) a conjugate T-A corresponding to a targeting agent able to target specific cells or receptors in the body (T) linked to a compound A, and (ii) a conjugate D-M corresponding to the drug linked to a modifying agent M, able to target the compound A. The sequence involves e.g. the administration of T-A and then D-M. Between step (i) and step (ii), a further compound able to bind to A and M may also be administered (e.g. during a clearing step). Classification being made according to the nature of T in the subgroups of [A61K 47/4813](#) , [A61K 47/48346](#) and [A61K 47/48723](#) . In [A61K 47/48723](#) and its subgroups, T being an antibody. Classification being also made according to the nature of the antibody in the appropriate [A61K 47/48515](#) subgroup. If M and A form a pair of biotin and (strept)avidin (or derivatives of biotin and (strept)avidin), then [A61K 47/48753](#) being used as classification symbol

- A61K 47/4873
- • • {-clearing therapy or enhanced clearance, i.e. wherein an antibody clearing agent being used in addition to T-A and D-M according to the definitions in [A61K 47/48723](#)-}

- U A61K 47/48769
- {the conjugate being characterized by a special physical or galenical form}

NOTE

The conjugates in the [A61K 47/48769](#) subgroups correspond (i) either to a pharmacologically or therapeutically active agent complexed/covalently linked to the special physical or galenical form, e.g. on the surface of a polymeric nanoparticle or liposome, or to polymeric chains in the matrix of a polymeric gel, (ii) or to a special physical or galenical form encapsulating the pharmacologically or therapeutically active agent and modified on its surface or matrix by a modifying agent. In case (i), classification being made according to the nature of the special physical or galenical form in the appropriate [A61K 47/48769](#) subgroup and may be completed by the appropriate [A61K 47/48](#) subgroup defining the compound to which the pharmacologically or therapeutically active agent being linked, e.g. [A61K 47/48053](#) in case of a drug linked to a phospholipid and inserted in the bilayer surface of a liposome. In case (ii), classification being made according to the nature of the modifying agent. Physical or galenical forms not modified by a modifying agent and/or wherein the pharmacologically or therapeutically active agent being not complexed/covalently linked to said forms, are not classified in [A61K 47/48](#) , but in [A61K 9/00](#) and its subgroups

- A61K 47/48776
- • • {-forms of ingredients not provided for by groups [A61K 47/48784](#) to [A61K 47/48992](#) , e.g. cells, cell fragments, viruses, ghosts, red blood cells, viral vectors having the pharmacologically or therapeutically active agent complexed or covalently linked to, or being themselves modified by complexation or covalent linkage by a modifying agent-}

NOTE

Simple encapsulation in cells being isclassified in [A61K 9/5068](#) ; simple encapsulation in a virus capsid is classified in [A61K 9/5184](#)

- U A61K 47/48792
- • • {the form being a colloid, emulsion, i.e. having at least a dispersed/continuous oil phase and a dispersed/continuous aqueous phase, dispersion or suspension}

- A61K 47/488
- • • • {the form being a micro-emulsion, nano-emulsion or micelle (-Simple encapsulation of a drug in micelle: [A61K 9/1075](#)-)}

NOTE

Micro-emulsion means that the dispersed phase being in the form of globules having a diameter above or equal to 1 micrometer. Nano-emulsion means that the dispersed phase being in the form of globules

having a diameter below 1 micrometer. Micelles comprise a monolayer of surfactant molecules that are aggregated head-to-head and tail-to-tail, thus forming a small spherical particle; micelles can be normal, i.e. the surfactant heads are hydrophilic, or inverse. Micelles modified by a polymer because they incorporate a polymer-lipid conjugate are only classified in [A61K 47/488](#) if the polymer modifying the lipid being unusual. Micelles which are pegylated because they incorporate a pegylated lipid are not classified in [A61K 47/488](#) but in [A61K 9/1075](#)

- A61K 47/48815
- • • {the form being a liposome, i.e. a bilayered vesicle, having its surface modified by covalent attachment or complexation of the pharmacologically or therapeutically active agent and/or modifying agent. (-Simple encapsulation of a drug which being not functionalised on its surface by a modifying agent: see [A61K 9/127-](#))}

NOTE

Liposomes modified by a polymer because they incorporate a polymer-lipid conjugate are only additionally classified in [A61K 47/48815](#) if the polymer modifying the lipid being unusual. Liposomes which are pegylated because they incorporate a pegylated lipid are not classified in [A61K 47/48815](#) but in [A61K 9/1271](#). When the surface of the liposome being functionalised by a modifying agent, classification being also made according to the nature of this modifying agent, e.g. a liposome modified on its surface by a peptide being classified in [A61K 47/48815](#) and [A61K 47/48238](#). In case of antibodies, see [A61K 47/48823](#). Liposomes wherein the pharmacologically or therapeutically active agent being linked to a phospholipid of the liposomal surface are classified in [A61K 47/48815](#) and [A61K 47/48053](#)]

- U A61K 47/48853
- A61K 47/48869
- • • {the form being a particulate, powder, adsorbate, bead, sphere}
 - • • {the form being a micro- or nano-capsule or a micro/nano-bubble, i.e. a hollow or gas micro- or nano-particle or sphere, a gas-filled micro- or nano-particle for use in therapy (-Micro- or nano-bubbles used only for ultrasound imaging are classified in [A61K 49/223](#) or [A61K 49/225](#) only-)}

NOTE

Pharmacologically or therapeutically active agents released from a micro- or nano-capsule by acoustic/ultrasound activation are also classified in [A61K 41/0028](#) and [A61K 9/0009](#)

- U A61K 47/48961
- A61K 47/48969
- • • {the conjugate being in the form of a host-guest, i.e. being an inclusion complex, e.g. clathrate, cavitate, fullerene}
 - • • • {inclusion being performed with a cyclodextrin (-cyclodextrins used as simple excipients [A61K 47/40-](#))}

U A61K 49/00

Preparations for testing in vivo

- U A61K 49/001
- U A61K 49/0013
- U A61K 49/0017
- U A61K 49/0019
- A61K 49/0021
- {Preparation for luminescence or biological staining}
 - • {Luminescence}
 - • • {Fluorescence in vivo}
 - • • • {characterised by the fluorescent group}
 - • • • • {the fluorescent group being a small organic molecule (-oligomeric, polymeric, dendritic molecules: [A61K 49/0019-](#))}

NOTE

if this fluorescent group is complexed or covalently linked to a carrier, classification is also made according to the nature of the carrier in the appropriate [A61K 49/005](#) subgroup

- A61K 49/0023 {Di- or triarylmethane dye (-xanthene dyes [A61K 49/0041](#)-)}
- U A61K 49/0032 {Methine dyes, e.g. cyanine dyes}
- A61K 49/0034 {Indocyanine green, i.e. ICG, cardiogreen} üC1206}}
- A61K 49/0036 {Porphyrins (-used in photodynamic therapy [A61K 41/0071](#) or [A61K 41/0076](#) ; used as targeting group or modifying agent for targeting a therapeutic compound [A61K 47/48069](#)-)}
- A61K 49/0041 {Xanthene dyes, used in vivo, e.g. administered to a mice, e.g. rhodamines, rose Bengal (-in vivo [G01N](#)-)}
- U A61K 49/005 {characterised by the carrier molecule carrying the fluorescent agent}
- NOTE
Classification is also made according to the nature of the fluorescent group in the appropriate subgroup of [A61K 49/0019](#)
- A61K 49/0052 {Small organic molecules (-oligomers, polymers, dendrimers [A61K 49/0054](#)-)}
- U A61K 49/06 {Nuclear magnetic resonance (NMR) contrast preparations; Magnetic resonance imaging (MRI) contrast preparations}
- NOTE
characterised only by the (inorganic) MRI-active nucleus, e.g. 129Xe
- U A61K 49/18 {characterised by a special physical form, e.g. emulsions, microcapsules, liposomes}
- NOTE
Classification being also made according to the molecule complexing or bearing the MRI-active nucleus
- U A61K 49/1818 {particles, e.g. uncoated or non-functionalised microparticles or nanoparticles}
- NOTE
For nanoparticles, i.e. having a size or diameter smaller than 1 micrometer, the subgroups [B82Y 5/00](#) and [B82Y 15/00](#) are also given
- U A61K 49/1821 {coated or functionalised microparticles or nanoparticles}
- A61K 49/1824 {coated or functionalised nanoparticles (-liposomes [A61K 49/1812](#) ; nano-emulsions [A61K 49/1806](#) ; micelles [A61K 49/1809](#)-)}
- U A61K 49/1827 {having a (super)(para)magnetic core, being a solid MRI-active material, e.g. magnetite, or composed of a plurality of MRI-active, organic agents e.g. Gd-chelates, or nuclei, e.g. Eu3+, encapsulated or entrapped in the core of the coated or functionalised nanoparticle}
- A61K 49/1833 {having a (super)(para)magnetic core coated or functionalised with a small organic molecule (-oligomeric, polymeric, dendrimeric [A61K 49/1851](#)-)}
- A61K 49/1851 {having a (super)(para)magnetic core coated or functionalised with an organic macromolecular compound, i.e. oligomeric, polymeric, dendrimeric organic molecule (-peptide or protein [A61K 49/1866](#) ; polyamino acid [A61K 49/1872](#) ; antibody [A61K 49/1875](#)-)}
- NOTE
In case of block copolymers, the different (large) blocks are classified in the appropriate [A61K 47/48169](#) or [A61K 47/48238](#) subgroups
- A61K 49/20 {containing free radicals {e.g. trityl radical for overhauser}}

- A61K 49/22 · Echographic preparations; Ultrasound imaging preparation {Optoacoustic imaging preparations}
- U A61K 49/222 · · {characterised by a special physical form, e.g. emulsions, liposomes}
- A61K 49/225 · · · {Microparticles, microcapsules (-gas-filled to be classified in [A61K 49/223](#)-)}
- U A61K 51/00 Preparations containing radioactive substances for use in therapy or testing in vivo**
- U A61K 51/02 · characterised by the carrier, {i.e. characterised by the agent or material covalently linked or complexing the radioactive nucleus}
- U A61K 51/04 · · organic compounds
- NOTE
Organic compounds used as carriers
- A61K 51/0402 · · · {carboxylic acid carriers, fatty acids (-amino acids [A61K 51/0406](#)-)}
- A61K 51/0404 · · · {Lipids, e.g. triglycerides; Polycationic carriers (-fatty acids [A61K 51/0402](#) ; cholesterol [A61K 51/0493](#) ; polycationic carriers being oligomers, polymers, dendrimers [A61K 47/48169](#)-)}
- A61K 51/0408 · · · · {Phospholipids (-liposomes encapsulating the radioactive probe or having no radiolabelled phospholipids [A61K 51/1231](#)-)}
- U A61K 51/041 · · · {Heterocyclic compounds.}
- NOTE
Under this group, the last place rule is followed
- U A61K 51/0429 · · · · {having sulfur as a ring hetero atom}
- A61K 51/0434 · · · · · {having six-membered rings, e.g. thioxanthenes (-thiotixene [A61K 51/0459](#)-)}
- A61K 51/044 · · · · {having nitrogen as a ring hetero atom, e.g. guanethidine, rifamycins (-rifampin [A61K 51/0459](#)-)}
- U A61K 51/0446 · · · · · {having five-membered rings with one nitrogen as the only ring hetero atom, e.g. sulphiride, succinimide, tolmetin, buflomedil}
- A61K 51/0451 · · · · · · {having four such rings, e.g. porphine derivatives, bilirubin, biliverdine (-hemin, hematin [A61K 51/0472](#)-)}
- NOTE
Porphyrins or texaphyrins used as complex-forming compounds, i.e. wherein the nitrogen atoms forming the central ring system complex the radioactive metal, are classified in [A61K 51/0485](#)
- A61K 51/0461 · · · · · {having six-membered rings with three nitrogens as the only ring hetero atoms, e.g. chlorazaniil, melamine (-melarsoprol [A61K 51/0472](#)-)}
- A61K 51/0489 · · · {Phosphates or phosphonates, e.g. bone-seeking phosphonates; (-phospholipids: [A61K 51/0408](#) ; nucleotides or nucleic acids: [A61K 51/0491](#)-)}
- A61K 51/06 · · · Macromolecular compounds, {carriers being organic macromolecular compounds, i.e. organic oligomeric, polymeric, dendrimeric molecules (-peptides, proteins, polyamino acids [A61K 51/08](#) ; antibodies [A61K 51/10](#)-)}
- U A61K 51/08 · · · Peptides, e.g. proteins, {carriers being peptides, polyamino acids, proteins}
- A61K 51/088 · · · · {conjugates with carriers being peptides, polyamino acids, proteins (-antibodies [A61K 51/10](#)-)}
- NOTE
The compound which bears, complexes or chelates the radioactive nucleus, is covalently linked/complexed to the carrier being a peptide,

polyamino acid, protein (not being an antibody). Classification is also made according to the nature of the peptide or protein (e.g. if it is BSA, then [A61K 51/081](#) is also indicated). In case of a conjugate comprising a complex-forming compound (chelating group) complexing a radioactive metal linked to the carrier (peptide, protein, polyamino acid in [A61K 51/088](#)), the nature of this complex-forming compound is not classified except if it is the real contribution of the claimed invention and it is an uncommon complexing or chelating group, e.g. 111In-DTPA-interleukin 2 is classified in [A61K 51/088](#); new DTPA-like derivatives conjugated to interleukin 2 and complexing 111In for use in vivo is classified in [A61K 51/0478](#) and [A61K 51/088](#)

U A61K 51/10 Antibodies or immunoglobulins; Fragments thereof, {the carrier being an antibody or an immunoglobulin, or a fragment thereof, e.g. a camelised human single domain antibody, or the Fc fragment of an antibody}

U A61K 51/1093 {conjugates with carriers being antibodies}

NOTE

The compound which bears, complexes or chelates the radioactive nucleus, being covalently linked or complexed to the carrier being an antibody Classification being also made according to the appropriate [A61K 51/1003](#) subclass. In case of a conjugate comprising a complex-forming compound (chelating group) complexing a radioactive metal linked to the carrier (antibody in [A61K 51/1093](#)), the nature of this complex-forming compound being not classified except if it being the real contribution of the claimed invention and it being an uncommon complexing/chelating group, e.g. 111In-DTPA-herceptin being classified in [A61K 51/1093](#) and [A61K 51/1051](#), new DTPA-like derivatives conjugated to herceptin and complexing 111In for use in vivo being classified in [A61K 51/0478](#), [A61K 51/1093](#) and [A61K 51/1051](#)

A61K 51/1096 {-radioimmunotoxins, i.e. conjugates being structurally as defined in [A61K 51/1093](#), and including a radioactive nucleus for use in radiotherapeutic applications-}

A61K 51/12 . characterised by a special physical form, e.g. emulsion, microcapsules, liposomes, {characterized by a special physical form, e.g. emulsions, dispersions, microcapsules (-liposomes [A61K 51/1234-](#))}

A61K 51/1203 . {-in a form not provided for by groups [A61K 51/1206](#) to [A61K 51/1296](#), e.g. cells, cell fragments, viruses, virus capsides, ghosts, red blood cells, viral vectors-}

U A61K 2236/00 Isolation or extraction methods of medicinal preparations of undetermined constitution containing material from algae, lichens, fungi or plants, or derivatives thereof, e.g. traditional herbal medicine

NOTE

If the isolation or extraction method is considered relevant, at least one symbol of [A61K 36/30](#) should always be given. The method can be further characterized by additional [A61K 36/10](#) and/or [A61K 36/50](#) symbols. The last place priority rule does not apply in this part of the scheme

U A61K 2236/10 . Preparation or pretreatment of starting material

A61K 2236/19 . . involving fermentation using yeast, bacteria or both; enzymatic treatment (-fermentation or enzyme-using processes in general [C12P-](#))

U A61K 2236/30 . Extraction of the material

U A61K 2236/33 . . involving extraction with hydrophilic solvents, e.g. lower alcohols, esters or ketones

A61K 2236/331 · · · using water, e.g. cold water, infusion, tea, steam distillation, decoction (-subcritical water extraction [A61K 2236/37-](#))

A61K 2300/00 **Mixtures or combinations of active ingredients, wherein at least one active ingredient is fully defined in groups [A61K 31/00](#) to [A61K 41/00](#) .**

NOTE

This code is meant to be allocated in combination with the CPC classification symbol of the active ingredients, and replaces the former +M Combi symbols used in this subclass

A61K 2800/00 **Properties of cosmetic compositions or active ingredients thereof or formulation aids used therein and process related aspects**

NOTE

This subclass is a secondary classification, e.g. obligatory supplementary classification when already classified in group [A61K 8/00](#) or subclass [A61Q](#)

- U A61K 2800/40 · Chemical, physico-chemical or functional or structural properties of particular ingredients
- U A61K 2800/59 · · Mixtures
- A61K 2800/591 · · · Mixtures of compounds not provided for by any of the codes [A61K 2800/592](#) to [A61K 2800/596](#)
- U A61K 2800/592 · · · Mixtures of compounds complementing their respective functions
- A61K 2800/5922 · · · · At least two compounds being classified in the same subclass of [A61K 8/18](#)
- U A61K 2800/80 · Process related aspects concerning the preparation of the cosmetic composition or the storage or application thereof
- A61K 2800/805 · · Corresponding aspects not provided for by any of codes [A61K 2800/81](#) to [A61K 2800/95](#)

Project: N/A (A61L)

A61L

METHODS OR APPARATUS FOR STERILISING MATERIALS OR OBJECTS IN GENERAL; DISINFECTION, STERILISATION, OR DEODORISATION OF AIR; CHEMICAL ASPECTS OF BANDAGES, DRESSINGS, ABSORBENT PADS, OR SURGICAL ARTICLES; MATERIALS FOR BANDAGES, DRESSINGS, ABSORBENT PADS, OR SURGICAL ARTICLES (-preservation of bodies or disinfecting characterised by the agent employed [A01N](#) ; preserving, e.g. sterilising, food or foodstuffs [A23](#) ; preparations for medical, dental or toilet purposes [A61K](#) ; preparation of ozone [C01B 13/10-](#))

WARNINGS

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[A61L 33/10](#) covered by [A61L 33/0011](#)

[A61L 33/14](#) covered by [A61L 33/0011](#)

[A61L 33/16](#) covered by [A61L 33/0047](#)

IPC7 groups [A61L 2/07](#) and subgroups, and [A61L 9/012](#) to [A61L 9/014](#) might be incomplete as relevant documents might still be classified in the hierarchical higher groups

- A61L 2/00** **Methods or apparatus for disinfecting or sterilising materials or objects other than foodstuffs or contact lenses; Accessories therefor** (for contact lenses [A61L 12/00](#) ; atomisers for disinfecting agents [A61M](#) ; sterilisation of packages or package contents in association with packaging [B65B 55/00](#) ; treatment of water, waste water, sewage or sludge [C02F](#) ; disinfecting paper [D21H 21/36](#) ; disinfecting devices for water closets [E03D](#) ; articles having provision for disinfection, see the relevant subclasses for these articles, e.g. [H04R 1/12](#))
- U A61L 2/02 • using physical phenomena
- A61L 2/04 • • Heat (-[A61L 2/08](#) takes precedence-)
- U A61L 2/16 • using chemical substances
- A61L 2/18 • • Liquid substances {or solutions comprising solids or dissolved gases}
- A61L 2/22 • • Phase substances, e.g. smokes, aerosols {or sprayed or atomised substances}
- A61L 2/26 • Accessories {or devices or components used for biocidal treatment}
- A61L 2/28 • • Devices for testing the effectiveness or completeness of sterilisation, e.g. indicators which change colour (-apparatus involving enzymes or micro-organisms [C12M 1/34](#) ; methods involving enzymes or micro-organisms [C12Q 1/00](#)-)
- A61L 9/00** **Disinfection, sterilisation or deodorisation of air** (-body deodorants [A61Q 15/00](#) ; purifying air by respirators [A62B](#) , [A62D 9/00](#) ; separating dispersed particles from gases or vapours [B01D 45/00](#) to [B01D 51/00](#) , [B03C 3/00](#) ; chemical or biological purification of waste gases [B01D 53/34](#) ; production of ozone [C01B 13/10](#) ; air-conditioning systems incorporating sterilisation [F24F 3/16](#))
- A61L 9/01 • Deodorant compositions{(-compositions released by contact with a liquid [A61L 9/05](#)-)}
- A61L 9/012 • • characterised by being in a special form, e.g. gels, emulsions{(-[A61L 9/048](#) takes precedence-)}
- A61L 9/015 • using gaseous or vaporous substances, e.g. ozone (-[A61L 9/20](#) takes precedence; { evaporation in general [B01B 1/005](#) })
- U A61L 9/04 • • using substances evaporated in the air without heating
- A61L 9/042 • • • {with the help of a macromolecular compound as a carrier or diluent (-[A61L 9/048](#) takes precedence-)}
- A61L 9/14 • using sprayed or atomised substances {including air-liquid contact processes}
- U A61L 9/16 • using physical phenomena
- A61L 9/18 • • Radiation (-[A61L 9/22](#) takes precedence-)
- A61L 11/00** **Methods specially adapted for refuse**{(-desintegrating medical waste [B02C19/12M](#) ; disposal of medical waste [B09B 3/0075](#))}
- U **A61L 12/00** **Methods or apparatus for disinfecting or sterilising contact lenses; Accessories therefor**
- U A61L 12/02 • using physical phenomena, e.g. electricity, ultrasonics or ultrafiltration
- A61L 12/04 • • Heat (-[A61L 12/06](#) takes precedence-)
- U A61L 12/08 • using chemical substances
- A61L 12/12 • • Non-macromolecular oxygen-containing compounds, e.g. hydrogen peroxide or ozone (-[A61L 12/10](#) takes precedence-)
- A61L 12/14 • • Organic compounds not covered by groups [A61L 12/10](#) or [A61L 12/12](#)
- A61L 12/147 • • • {Alcohols or derivatives thereof (-aldehydes [A61L 12/146](#)-)}

**A61L 15/00 -
A61L 33/00** **Chemical aspects of, or use of materials for, bandages, dressings or absorbent pads {comprising a solid support or backing}{-for liquid bandages [A61L 26/00](#) ; radioactive dressings { [A61N 5/1029](#) }{ transdermal delivery devices [A61K 9/7023](#) }**

A61L 15/00 **Chemical aspects of, or use of materials for, bandages, dressings or absorbent pads (-for liquid bandages [A61L 26/00](#) ; radioactive dressings { [A61N 5/1029](#) })**

NOTES

In each set of groups [A61L 15/08](#) to [A61L 15/12](#) and [A61L 15/18](#) to [A61L 15/40](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.

When classifying in groups [A61L 15/08](#) to [A61L 15/12](#) , classification is also made in group [A61L 15/14](#) if the use of materials characterised by their function or physical properties is of interest.

When classifying in groups [A61L 15/18](#) to [A61L 15/40](#) , classification is also made in groups [A61L 15/42](#) to [A61L 15/64](#) if the use of materials characterised by their function or physical properties is of interest.

U A61L 15/16 • Bandages, dressings or absorbent pads for physiological fluids such as urine or blood, e.g. sanitary towels, tampons

U A61L 15/22 • • containing macromolecular materials

NOTE

In groups [A61L 15/22](#) to [A61L 15/30](#) , the use of specific polymers is indicated using the relevant combination set symbol, adding, after the symbol in [A61L](#) , the correspondent symbol of the polymer in subclass [C08L](#) , e.g. absorbent pad containing starch [A61L 15/22](#) , [C08L 3/02](#)

A61L 15/24 • • • Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds; Derivatives thereof{(-[A61L 15/225](#) takes precedence-)}

A61L 15/26 • • • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds; Derivatives thereof{(-[A61L 15/225](#) takes precedence-)}

A61L 15/28 • • • Polysaccharides or their derivatives{(-[A61L 15/225](#) takes precedence-)}

A61L 15/30 • • • Rubbers or their derivatives{(-[A61L 15/225](#) takes precedence-)}

A61L 15/32 • • • Proteins, polypeptides; Degradation products or derivatives thereof, e.g. albumin, collagen, fibrin, gelatin{(-[A61L 15/225](#) takes precedence-)}

A61L 15/34 • • • Oils, fats, waxes or natural resins{(-[A61L 15/225](#) takes precedence-)}

A61L 15/42 • • Use of materials characterised by their function or physical properties {(-liquid bandages [A61L 26/00](#)-)}

A61L 17/00 **Materials for surgical sutures or for ligaturing blood vessels (-surgical adhesives [A61L 24/00](#) ; surgical instruments, devices or methods for suturing or ligaturing [A61B 17/04](#) , [A61B 17/12](#) ; supports or packages for suture materials [A61B 17/04](#)); {Materials for prostheses or catheters (-bone cements or surgical adhesives for soft body tissues [A61L 24/00](#) ; shape or structure of prostheses [A61F 2/00](#) ; shape or structure of catheters [A61M 5/00](#)-)}**

NOTES

In groups [A61L 17/04](#) to [A61L 17/145](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.

When classifying in group [A61L 17/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.

- U A61L 17/06 · At least partially resorbable materials
- U A61L 17/10 · · containing macromolecular materials
- A61L 17/105 · · · {-Polyesters not covered by [A61L 17/12](#)-}

U A61L 24/00 Surgical adhesives or cements; Adhesives for colostomy devices

NOTES

In groups [A61L 24/00](#) to [A61L 24/12](#) , the use of specific polymers is indicated using the relevant combination set symbol, adding, after the symbol in [A61L](#) , the correspondent symbol of the polymer in subclass [C08L](#) , e.g. surgical adhesives based on polymethylmethacrylate: [A61L 24/06](#) , [C08L 33/12](#)

In groups [A61L 24/02](#) to [A61L 24/12](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.

When classifying in group [A61L 24/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.

- U A61L 24/0047 · {Composite materials, i.e. containing one material dispersed in a matrix of the same or different material}
- U A61L 24/0052 · · {with an inorganic matrix}
- A61L 24/0068 · · · {-Inorganic materials not covered by groups [A61L 24/0057](#) or [A61L 24/0063](#)-}
- U A61L 24/0073 · · {with a macromolecular matrix}
- A61L 24/0089 · · · {-containing inorganic fillers not covered by groups [A61L 24/0078](#) or [A61L 24/0084](#)-}
- U A61L 24/04 · containing macromolecular materials
- A61L 24/046 · · {obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds (-[A61L 24/043](#) takes precedence-)}
- A61L 24/06 · · obtained by reactions only involving carbon-to-carbon unsaturated bonds{(-[A61L 24/043](#) , [A61L 24/046](#) take precedence-)}
- A61L 24/08 · · Polysaccharides{(-[A61L 24/043](#) takes precedence-)}
- A61L 24/10 · · Polypeptides; Proteins{(-[A61L 24/043](#) takes precedence-)}
- A61L 24/108 · · · {-Specific proteins or polypeptides not covered by groups [A61L 24/102](#) to [A61L 24/106](#)-}
- A61L 24/12 · · Ionomer cements, e.g. glass-ionomer cements{(-[A61L 24/043](#) takes precedence-)}

A61L 26/00 Chemical aspects of, or use of materials for,{wound dressings or}bandages {in liquid, gel or powder form}

NOTES

When classifying in group [A61L 26/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.

In groups [A61L 26/00](#) to [A61L 26/0095](#), the use of specific polymers is indicated using the relevant combination set symbol, adding, after the symbol in [A61L](#) , the correspondent symbol of the polymer in subclass [C08L](#) , e.g. liquid bandages on alginates: [A61L 26/0023](#) , [C08L 5/04](#)

- U A61L 26/0009 · {containing macromolecular materials}
- U A61L 26/0028 · · {Polypeptides; Proteins; Degradation products thereof}
- A61L 26/0047 · · · {-Specific proteins or polypeptides not covered by groups [A61L 26/0033](#) to [A61L 26/0042](#)-}

A61L 27/00

Materials for {grafts or}prostheses or for coating {grafts or}prostheses (-dental prostheses [A61C 13/00](#) ; shape or structure of prostheses [A61F 2/00](#) ; use of preparations for artificial teeth [A61K 6/02](#) ; artificial kidneys [A61M 1/14](#)-)

NOTES

In groups [A61L 27/02](#) to [A61L 27/48](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place

When classifying in groups [A61L 27/02](#) to [A61L 27/48](#) , classification is also made in groups [A61L 27/50](#) to [A61L 27/60](#) if the use of materials characterised by their function or physical properties is of interest

When classifying in group [A61L 27/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic

In group [A61L 27/00](#) , the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. prosthesis based on polyvinylchloride [A61L 27/16](#) , [C08L 27/06](#)

- U A61L 27/02
 - Inorganic materials
- A61L 27/025
 - • {Other specific inorganic materials not covered by [A61L 27/04](#) to [A61L 27/12](#)}
- U A61L 27/04
 - • Metals or alloys
- A61L 27/047
 - • • {Other specific metals or alloys not covered by [A61L 27/042](#) to [A61L 27/045](#) or [A61L 27/06](#)}
- U A61L 27/14
 - Macromolecular materials
- U A61L 27/22
 - • Polypeptides or derivatives thereof,{e.g. degradation products}
- A61L 27/227
 - • • {Other specific proteins or polypeptides not covered by [A61L 27/222](#) , [A61L 27/225](#) or [A61L 27/24](#)}
- U A61L 27/28
 - Materials for coating prostheses
- U A61L 27/30
 - • Inorganic materials
- A61L 27/306
 - • • {Other specific inorganic materials not covered by [A61L 27/303](#) to [A61L 27/32](#)}
- A61L 27/36
 - containing ingredients of undetermined constitution or reaction products thereof,{e.g. transplant tissue, natural bone, extracellular matrix (-isolated natural compounds, e.g. collagen [A61L 27/24](#)-)}
- U A61L 27/3604
 - • {characterised by the human or animal origin of the biological material, e.g. hair, fascia, fish scales, silk, shellac, pericardium, pleura, renal tissue, amniotic membrane, parenchymal tissue, fetal tissue, muscle tissue, fat tissue, enamel}
- A61L 27/3608
 - • • {Bone, e.g. demineralised bone matrix [DBM]}, bone powder}
- A61L 27/3641
 - • {characterised by the site of application in the body (-materials for artificial blood vessels [A61L 27/507](#) ; materials for use in artificial skin [A61L 27/60](#)-)}
- U A61L 27/3645
 - • • {Connective tissue}
- U A61L 27/3654
 - • • • {Cartilage, e.g. meniscus}
- A61L 27/3658
 - • • • • {Intervertebral discs (-mechanical aspects and structures of intervertebral discs [A61F 2/442](#)-)}
- U A61L 27/3683
 - • {subjected to a specific treatment prior to implantation, e.g. decellularising, demineralising, grinding, cellular disruption/non-collagenous protein removal, anti-calcification, crosslinking, supercritical fluid extraction, enzyme treatment}
- A61L 27/3695
 - • • {characterised by the function or physical properties of the final product, where no specific conditions are defined to achieve this (-[A61L 27/3687](#) , [A61L 27/3691](#) take precedence)}

- A61L 27/38
- • {containing added animal cells (-organs or tissue containing native cells [A61L 27/36](#)-)}
- A61L 27/3839
- • • {characterised by the site of application in the body (-materials for artificial blood vessels [A61L 27/507](#) ; materials for use in artificial skin [A61L 27/60](#)-)}
- U A61L 27/3843
- • • • {Connective tissue}
- U A61L 27/3852
- • • • • {Cartilage, e.g. meniscus}
- A61L 27/3856
- • • • • • {Intervertebral discs (-mechanical aspects and structures of intervertebral discs [A61F 2/442](#)-)}
- U A61L 27/40
- Composite materials, i.e. containing one material dispersed in a matrix of the same or different material
- U A61L 27/42
- • having an inorganic matrix
- A61L 27/427
- • • {-of other specific inorganic materials not covered by [A61L 27/422](#) or [A61L 27/425](#)-}
- U A61L 27/44
- • having a macromolecular matrix
- A61L 27/446
- • • {-with other specific inorganic fillers other than those covered by [A61L 27/443](#) or [A61L 27/46](#)-}
- U A61L 27/50
- Materials characterised by their function or physical properties, {e.g. injectable or lubricating compositions, shape-memory materials, surface modified materials}
- A61L 27/507
- • {for artificial blood vessels (-apparatus for applying cells on a blood vessel prosthesis [A61F 2/062](#)-)}
- A61L 27/54
- • Biologically active materials, e.g. therapeutic substances ({ [A61L 27/227](#) takes precedence })
- A61L 28/00**
- Materials for colostomy devices (-adhesives for colostomy devices [A61L 24/00](#)-)**
- NOTE
- When classifying in group [A61L 28/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.
- U A61L 28/0073
- {Composite materials, i.e. containing one material dispersed in a matrix of the same or different material}
- U A61L 28/008
- • {with a macromolecular matrix}
- A61L 28/0092
- • • {-containing inorganic fillers not covered by groups [A61L 28/0084](#) or [A61L 28/0088](#)-}
- A61L 29/00**
- Materials for catheters, {medical tubing, cannulae, or endoscopes} or for coating catheters (-shape or structure of catheters [A61M 25/00](#)-)**
- NOTES
- In groups [A61L 29/02](#) to { [A61L 29/126](#) } , in the absence of an indication to the contrary, classification is made in the last appropriate place
- When classifying in groups [A61L 29/02](#) to { [A61L 29/126](#) } , classification is also made in groups [A61L 29/14](#) to [A61L 29/18](#) if the use of materials characterised by their function or physical properties is of interest
- When classifying in group [A61L 29/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic
- In group [A61L 29/00](#) , the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the combination set, e.g. a catheter based on polyvinylchloride [A61L 29/041](#), [C08L 27/06](#)
- U A61L 29/04
- Macromolecular materials
- U A61L 29/044
- • {Proteins; Polypeptides; Degradation products thereof}

- A61L 29/048
- • • {-Other specific proteins or polypeptides not covered by [A61L 29/045](#) to [A61L 29/047](#)-}
- U A61L 29/14
- Materials characterised by their function or physical properties,{e.g. lubricating compositions}
- A61L 29/16
- • Biologically active materials, e.g. therapeutic substances ({ [A61L 29/048](#) takes precedence })
- A61L 31/00**
- Materials for other surgical articles,{e.g. stents, stent-grafts, shunts, surgical drapes, guide wires, materials for adhesion prevention, occluding devices, surgical gloves, tissue fixation devices (-shape or structure of stent-grafts [A61F 2/07](#) , of stents [A61F 2/82](#) , of surgical gloves [A61B 19/04](#) , of surgical drapes [A61B 19/08](#) , of occluding devices [A61B 17/12022](#)-)}**
- NOTES
- In groups [A61L 31/02](#) to { [A61L 31/129](#) } , in the absence of an indication to the contrary, classification is made in the last appropriate place
- When classifying in groups [A61L 31/02](#) to { [A61L 31/129](#) } , classification is also made in groups [A61L 31/14](#) to [A61L 31/18](#) if the use of materials characterised by their function or physical properties is of interest
- When classifying in group [A61L 31/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic
- In group [A61L 31/00](#) , the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. surgical clamp based on polyvinylchloride [A61L 31/048](#), [C08L 27/06](#)
- U A61L 31/02
- Inorganic materials
- A61L 31/028
- • {-Other inorganic materials not covered by [A61L 31/022](#) to [A61L 31/026](#)-}
- U A61L 31/04
- Macromolecular materials
- U A61L 31/043
- • {Proteins; Polypeptides; Degradation products thereof}
- A61L 31/047
- • • {-Other specific proteins or polypeptides not covered by [A61L 31/044](#) to [A61L 31/046](#)-}
- A61L 31/048
- • {obtained by reactions only involving carbon-to-carbon unsaturated bonds (-[A61L 31/041](#) takes precedence-)}
- A61L 31/06
- • obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds{(-[A61L 31/041](#) takes precedence-)}
- U A61L 31/08
- Materials for coatings
- U A61L 31/082
- • {Inorganic materials}
- A61L 31/088
- • • {-Other specific inorganic materials not covered by [A61L 31/084](#) or [A61L 31/086](#)-}
- U A61L 31/12
- Composite materials, i.e. containing one material dispersed in a matrix of the same or different material
- U A61L 31/121
- • {having an inorganic matrix}
- A61L 31/124
- • • {-of other specific inorganic materials not covered by [A61L 31/122](#) or [A61L 31/123](#)-}
- U A61L 31/125
- • {having a macromolecular matrix}
- A61L 31/128
- • • {-containing other specific inorganic fillers not covered by [A61L 31/126](#) or [A61L 31/127](#)-}
- U A61L 31/14
- Materials characterised by their function or physical properties,{e.g. injectable or lubricating compositions, shape-memory materials, surface modified materials}
- A61L 31/16
- • Biologically active materials, e.g. therapeutic substances{ [A61L 31/047](#) takes precedence-}

- U A61L 33/00 Antithrombogenic treatment of surgical articles, e.g. sutures, catheters, prostheses, or of articles for the manipulation or conditioning of blood; Materials for such treatment**
- NOTES**
- In groups [A61L 33/0076](#) to [A61L 33/0094](#) and [A61L 33/02](#) to [A61L 33/122](#), in the absence of an indication to the contrary, classification is made in the last appropriate place
- When classifying in groups [A61L 33/02](#) to [A61L 33/122](#), classification is also made in group [A61L 33/0005](#) if of interest
- In group [A61L 33/00](#), the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. antithrombogenic treatment with the help of polyvinylchloride [A61L 33/064](#), [C08L 27/06](#)
- U A61L 33/0005** • {Use of materials characterised by their function or physical properties}
- U A61L 33/0011** • • {Anticoagulant, e.g. heparin, platelet aggregation inhibitor, fibrinolytic agent, other than enzymes, attached to the substrate}
- A61L 33/0041** • • • {characterised by the choice of an antithrombotic agent other than heparin (-heparinoid [A61L 33/08](#); polypeptides [A61L 33/12](#)-)}
- U A61L 33/02** • Use of inorganic materials
- A61L 33/027** • • {-Other specific inorganic materials not covered by [A61L 33/022](#) or [A61L 33/025](#)-}
- A61L 33/06** • Use of macromolecular materials (-grafting of a monomer onto the substrate [A61L 33/0088](#)-)
- A61L 33/064** • • {obtained by reactions only involving carbon-to-carbon unsaturated bonds (-[A61L 33/062](#) takes precedence-)}
- A61L 33/068** • • {obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds (-[A61L 33/062](#) takes precedence-)}
- U A61L 33/12** • • Polypeptides, proteins or derivatives thereof, {e.g. degradation products thereof}
- A61L 33/128** • • • {-Other specific proteins or polypeptides not covered by [A61L 33/122](#) to [A61L 33/126](#)-}
- U A61L 2300/00 Biologically active materials used in bandages, wound dressings, absorbent pads or medical devices**
- U A61L 2300/40** • characterised by a specific therapeutic activity or mode of action
- A61L 2300/432** • • Inhibitors, antagonists (-[A61L 2300/402](#) to [A61L 2300/43](#) take precedence-)
- U A61L 2430/00 Materials or treatment for tissue regeneration**
- A61L 2430/36** • for embolization or occlusion, e.g. vaso-occlusive compositions or devices (-artificial blood vessels [A61L 27/507](#)-)

Project: N/A (A61M)**A61M**

DEVICES FOR INTRODUCING MEDIA INTO, OR ONTO, THE BODY (-introducing media into or onto the bodies of animals [A61D 7/00](#); means for inserting tampons [A61F 13/26](#); devices for administering food or medicines orally [A61J](#); containers for collecting, storing or administering blood or medical fluids [A61J 1/05](#)-); **DEVICES FOR TRANSDUCING BODY MEDIA OR FOR TAKING MEDIA FROM THE BODY** (surgery [A61B](#); chemical aspects of surgical articles [A61L](#)); **DEVICES FOR PRODUCING OR ENDING SLEEP OR STUPOR**

NOTE

This subclass covers suction, pumping or atomising devices for medical use (e.g. cups, breast relievers, irrigators, sprays, powder insufflators, atomisers, inhalers), apparatus for general or local anaesthetics, devices or methods for causing a change in the state of consciousness, catheters, dilators, apparatus for introducing medicines into the body other than orally

Void

When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[A61M 1/18](#) covered by [B01D 63/02](#) , [B01D 63/04](#)

[A61M 1/20](#) covered by [B01D 63/06](#)

[A61M 1/22](#) covered by [B01D 63/08](#)

[A61M 1/24](#) covered by [B01D 63/10](#)

[A61M 3/04](#) covered by [A61M 3/02](#)

[A61M 5/175](#) covered by [A61M 5/168](#)

[A61M 5/303](#) covered by [A61M 5/30](#)

[A61M 5/307](#) covered by [A61M 5/30](#)

[A61M 23/00](#) covered by [A61M 25/01](#) , [A61M 29/00](#)

[A61M 25/08](#) covered by [A61M 25/0105](#)

[A61M 25/082](#) covered by [A61M 25/0116](#)

[A61M 25/085](#) covered by [A61M 25/0122](#)

[A61M 25/088](#) covered by [A61M 25/01](#)

[A61M 25/092](#) covered by [A61M 25/0133](#)

[A61M 25/095](#) covered by [A61M 25/01](#) , [A61B 5/00](#) , [A61N 1/056](#) [A61M 25/098](#) covered by [A61M 25/0108](#)

[A61M 25/12](#) covered by [A61M 25/10](#) , [A61M 29/02](#)

[A61M 25/14](#) covered by [A61M 25/0021](#)

[A61M 25/16](#) covered by [A61M 25/0009](#)

[A61M 25/18](#) covered by [A61M 25/0014](#)

[A61M 29/04](#) covered by [A61M 29/02](#)

[A61M 36/00](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/02](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/04](#) covered by [A61M 37/0069](#), [A61N 5/10](#) , [A61M 15/02](#) [A61M 36/06](#)

covered by [A61M 37/0069](#), [A61N 5/10](#) ; [A61M 15/02](#) [A61M 36/08](#) covered by [A61M 5/1785](#)

[A61M 36/10](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/12](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/14](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

A61M 1/00

Suction or pumping devices for medical purposes; Devices for carrying-off, for treatment of, or for carrying-over, body-liquids; Drainage systems ({ [A61M 3/00](#) to [A61M 5/00](#) , [A61M 11/00](#) to [A61M 16/00](#) , [A61M 27/00](#) to [A61M 35/00](#) take precedence } ; catheters [A61M 25/00](#) ; tube connectors, tube couplings, valves or branch units specially adapted for medical use [A61M 39/00](#) ; devices for taking samples of blood [A61B 5/14](#) ; implements for holding wounds open [A61B 17/02](#) ; { saliva removers for dentists [A61C 17/04](#) } ; filters implantable into blood vessels [A61F 2/01](#) ; pumps in general [F04](#))

WARNINGS

Groups [A61M 1/0007](#), [A61M 1/0015](#), [A61M 1/0017](#), [A61M 1/0025](#) - [A61M 1/0029](#), [A61M 1/0033](#), [A61M 1/0035](#), [A61M 1/0045](#), [A61M 1/005](#) - [A61M 1/0054](#), [A61M 1/006](#), [A61M 1/0068](#) - [A61M 1/0072](#), [A61M 1/0082](#), [A61M 1/0086](#),

[A61M 1/009](#) - [A61M 1/0098](#), [A61M 1/0204](#), [A61M 1/0213](#) - [A61M 1/0236](#), [A61M 1/0254](#), [A61M 1/0277](#), [A61M 1/0286](#), [A61M 1/0295](#), [A61M 1/062](#) - [A61M 1/068](#), [A61M 1/1001](#) - [A61M 1/1008](#), [A61M 1/1012](#) - [A61M 1/1036](#), [A61M 1/1039](#) - [A61M 1/1044](#), [A61M 1/1048](#) - [A61M 1/1051](#), [A61M 1/1055](#) - [A61M 1/1058](#), [A61M 1/1062](#) - [A61M 1/1065](#), [A61M 1/1074](#) - [A61M 1/1075](#), [A61M 1/1082](#), [A61M 1/1084](#), [A61M 1/1087](#) - [A61M 1/1089](#), [A61M 1/1096](#) - [A61M 1/1098](#), [A61M 1/122](#) - [A61M 1/125](#), [A61M 1/1601](#) - [A61M 1/1652](#), [A61M 1/166](#) - [A61M 1/1676](#), [A61M 1/1682](#) - [A61M 1/1684](#), [A61M 1/1688](#), [A61M 1/262](#) - [A61M 1/267](#), [A61M 1/281](#) - [A61M 1/284](#), [A61M 1/288](#), [A61M 1/301](#) - [A61M 1/309](#), [A61M 1/322](#) - [A61M 1/327](#), [A61M 1/3403](#) - [A61M 1/341](#), [A61M 1/3417](#), [A61M 1/3424](#) - [A61M 1/3437](#), [A61M 1/3444](#) - [A61M 1/3451](#), [A61M 1/3458](#), [A61M 1/3465](#), [A61M 1/3468](#), [A61M 1/3475](#) - [A61M 1/3493](#), [A61M 1/3601](#) - [A61M 1/362](#), [A61M 1/3629](#) - [A61M 1/3632](#), [A61M 1/3635](#) - [A61M 1/3638](#), [A61M 1/3641](#), [A61M 1/3644](#) - [A61M 1/3652](#), [A61M 1/3656](#) - [A61M 1/3661](#), [A61M 1/3667](#), [A61M 1/3673](#), [A61M 1/3676](#), [A61M 1/3678](#), [A61M 1/3683](#), [A61M 1/3686](#), [A61M 1/3689](#), [A61M 1/3692](#), [A61M 1/3695](#) - [A61M 1/3698](#) are incomplete pending reclassification of documents from group [A61M 1/00](#) or respective subgroup.

Until reclassification is complete, groups [A61M 1/00](#) or respective subgroup and [A61M 1/0007](#), [A61M 1/0015](#), [A61M 1/0017](#), [A61M 1/0025](#) - [A61M 1/0029](#), [A61M 1/0033](#), [A61M 1/0035](#), [A61M 1/0045](#), [A61M 1/005](#) - [A61M 1/0054](#), [A61M 1/006](#), [A61M 1/0068](#) - [A61M 1/0072](#), [A61M 1/0082](#), [A61M 1/0086](#), [A61M 1/009](#) - [A61M 1/0098](#), [A61M 1/0204](#), [A61M 1/0213](#) - [A61M 1/0236](#), [A61M 1/0254](#), [A61M 1/0277](#), [A61M 1/0286](#), [A61M 1/0295](#), [A61M 1/062](#) - [A61M 1/068](#), [A61M 1/1001](#) - [A61M 1/1008](#), [A61M 1/1012](#) - [A61M 1/1036](#), [A61M 1/1039](#) - [A61M 1/1044](#), [A61M 1/1048](#) - [A61M 1/1051](#), [A61M 1/1055](#) - [A61M 1/1058](#), [A61M 1/1062](#) - [A61M 1/1065](#), [A61M 1/1074](#) - [A61M 1/1075](#), [A61M 1/1082](#), [A61M 1/1084](#), [A61M 1/1087](#) - [A61M 1/1089](#), [A61M 1/1096](#) - [A61M 1/1098](#), [A61M 1/122](#) - [A61M 1/125](#), [A61M 1/1601](#) - [A61M 1/1652](#), [A61M 1/166](#) - [A61M 1/1676](#), [A61M 1/1682](#) - [A61M 1/1684](#), [A61M 1/1688](#), [A61M 1/262](#) - [A61M 1/267](#), [A61M 1/281](#) - [A61M 1/284](#), [A61M 1/288](#), [A61M 1/301](#) - [A61M 1/309](#), [A61M 1/322](#) - [A61M 1/327](#), [A61M 1/3403](#) - [A61M 1/341](#), [A61M 1/3417](#), [A61M 1/3424](#) - [A61M 1/3437](#), [A61M 1/3444](#) - [A61M 1/3451](#), [A61M 1/3458](#), [A61M 1/3465](#), [A61M 1/3468](#), [A61M 1/3475](#) - [A61M 1/3493](#), [A61M 1/3601](#) - [A61M 1/362](#), [A61M 1/3629](#) - [A61M 1/3632](#), [A61M 1/3635](#) - [A61M 1/3638](#), [A61M 1/3641](#), [A61M 1/3644](#) - [A61M 1/3652](#), [A61M 1/3656](#) - [A61M 1/3661](#), [A61M 1/3667](#), [A61M 1/3673](#), [A61M 1/3676](#), [A61M 1/3678](#), [A61M 1/3683](#), [A61M 1/3686](#), [A61M 1/3689](#), [A61M 1/3692](#), [A61M 1/3695](#) - [A61M 1/3698](#) should be considered in order to perform a complete search.

- U [A61M 1/0001](#) • {Containers for suction drainage, e.g. rigid containers}
- [A61M 1/0009](#) • • {incorporating a movable wall to create suction, e.g. syringes (-with a flexible member creating suction [A61M 1/0011](#) ; cupping glasses [A61M 1/08-](#))}
- [A61M 1/0019](#) • {Drainage containers not being adapted for subjection to vacuum, e.g. bags (-devices worn by the patient for reception of urine [A61F 5/44](#) ; emptying devices for drainage bags [B65B 69/0016-](#))}
- [A61M 1/0021](#) • {Gravity drainage systems (-[A61M 1/0019](#) takes precedence-)}
- [A61M 1/0023](#) • {Suction drainage systems (-containers therefor [A61M 1/0001](#) ; suction-irrigation systems [A61M 1/0058-](#))}
- [A61M 1/0031](#) • • {Suction control (-[A61M 1/0013](#) , [A61M 1/0041](#) take precedence-)}
- [A61M 1/0033](#) • • • {by changing the size of a vent (-[A61M 1/0047](#) takes precedence-)}
- [A61M 1/0037](#) • • {Intermittent or pulsating suction (-[A61M 1/0005](#) , [A61M 1/0062](#) take precedence-)}
- [A61M 1/0039](#) • • {Handpieces (-aspiration tips [A61M 1/008-](#))}
- [A61M 1/0041](#) • • • {with means for varying suction manually (-suction control [A61M 1/0031-](#))}

- A61M 1/0047
 - • • {by changing the size of a vent (-in combination with changing the section of the line [A61M 1/0043](#)-)}
- A61M 1/0049
 - {Means preventing overflow or contamination of the pumping systems (-combined with rigid drainage containers [A61M 1/0001](#)-)}
- A61M 1/0056
 - {Filters for solid matter (-similar devices for dental use [A61C 17/046](#)-)}
- A61M 1/0058
 - {Suction-irrigation systems (-aspiration tips supplying fluids [A61M 1/0084](#) ; combined with tracheal tubes [A61M 16/0463](#)-)}
- A61M 1/0062
 - • {operating alternately (-[A61M 1/0064](#) takes precedence-)}
- A61M 1/0066
 - {Suction pumps (-[A61M 1/0003](#) , [A61M 1/0011](#) , [A61M 1/0023](#) , [A61M 1/10](#) take precedence-)}
- A61M 1/0078
 - {Tube strippers, i.e. for clearing the contents of the tubes (-vein strippers [A61B 17/00008](#)-)}
- U A61M 1/008
 - {Drainage tubes; Aspiration tips}
- A61M 1/0084
 - • {With gas or fluid supply means, e.g. for supplying rinsing fluids, anticoagulants (-for irrigation without suction [A61M 3/0279](#) ; combined with tracheal tubes [A61M 16/0463](#) ; dental instruments with combined rinsing and aspirating [A61C 17/0208](#)-)}
- A61M 1/02
 - Blood transfusion apparatus (-blood infusion by syringes [A61M 5/14](#)-)}
- A61M 1/025
 - • {Means for agitating or shaking blood containers (-[A61M 1/0245](#) takes precedence; shaking in general [B01F 11/00](#)-)}
- A61M 1/0259
 - • {Apparatus for treatment of blood or blood constituents not otherwise provided for (-for agitating [A61M 1/025](#) ; for separating blood components present in distinct layers in a container [A61M 1/029](#)-)}
- A61M 1/029
 - • {Separating blood components present in distinct layers in a container, not otherwise provided for (-containers for storing blood or blood components [A61J1/00T](#) ; sampling or analysing blood by separating blood components [G01N 33/491](#)-)}
- A61M 1/06
 - Milking pumps (-feeding-bottles [A61J 9/00](#)-)}
- A61M 1/10
 - Blood pumps; Artificial hearts; Devices for mechanical circulatory assistance, e.g. intra-aortic balloon pumps (-artificial heart valves [A61F 2/24](#) ; heart stimulation [A61H 31/00](#)-)}
- U A61M 1/1001
 - • {General aspects of blood pumps irrespective of pump type}
- A61M 1/1005
 - • • {with means for making a blood flow pulsatile (-moving filter membranes used for pumping [A61M 1/267](#) ; piston pumps [A61M 1/1081](#)-)}
- U A61M 1/1037
 - • {Pumps having flexible elements, e.g. with membranes, diaphragms, or bladder pumps}
- A61M 1/1067
 - • • {using a blood vessel as flexible element (not used, see subgroups)}
- A61M 1/14
 - Dialysis systems; Artificial kidneys; Blood oxygenators; {Reciprocating systems for treatment of body fluids, e.g. single needle systems for haemofiltration, pheris (-haemofiltration using non reciprocating systems [A61M 1/34](#) ; extracorporeal blood circuit aspects [A61M 1/36](#)-)}; (-processes of separation using semi-permeable membranes [B01D 61/00](#) ; semi-permeable membranes characterised by the material, manufacturing processes therefor [B01D 71/00](#)-)}
- A61M 1/16
 - • with membranes(-[A61M 1/30](#) takes precedence; membranes per se [B01D 69/00](#) , [B01D 71/00](#)-)}
- U A61M 1/1654
 - • • {Dialysates therefor}
- A61M 1/1656
 - • • • {Apparatus for preparing dialysates (-with regeneration of dialysates [A61M 1/1696](#)-)}
- A61M 1/1658
 - • • • • {Degasification (-in general [B01D 19/00](#)-)}
- A61M 1/166
 - • • • • {Heating (for sterilisation [A61M 1/1686](#)-)}

- A61M 1/1678
 - A61M 1/168
 - A61M 1/1692
 - A61M 1/1698
 - U A61M 1/28
 - A61M 1/288
 - A61M 1/34
 - A61M 1/342
 - A61M 1/3496
 - U A61M 1/36
 - A61M 1/3621
 - A61M 1/3626
 - A61M 1/3627
 - A61M 1/3663
 - A61M 1/367
 - A61M 1/3672
 - A61M 1/3679
 - A61M 1/3687
 - A61M 1/369
 - A61M 1/38
 - A61M 3/00 -
A61M 9/00**
 - A61M 3/00**
- • • {intracorporal (-[A61M 1/28](#) and [A61F 2/022](#) take precedence-)}
 - • • {Sterilisation or cleaning before or after use (-sterilisation of materials in general [A61L](#) ; cleaning or sterilisation of membrane modules apart from the machine [B01D 65/02-](#))}
 - • • {Detection of blood traces in dialysate (-testing of the membrane modules [B01D 65/10](#) ; investigating fluid-tightness of structures in general [G01M 3/00-](#))}
 - • • {Blood oxygenators with or without heat-exchangers (-[A61M 1/1678](#) takes precedence; membranes therefor [B01D 67/00](#) , [B01D 69/00](#) , [B01D 71/00-](#))}
 - • Peritoneal dialysis;{Other peritoneal treatment, e.g. oxygenation}
 - • • {Priming (-priming in extracorporeal blood circuits [A61M 1/3643-](#))}
 - Filtering material out of the blood by passing it through a membrane, i.e. haemofiltration, diafiltration{(-[A61M 1/30](#) takes precedence; extracorporeal blood circuit aspects [A61M 1/36-](#))}
 - • {Adding solutions to the blood, e.g. substitution solutions (-for preventing coagulation [A61M 1/3672-](#))}
 - • {Plasmapheresis; Leucopheresis; Lymphopheresis (-[A61M 1/3472](#) takes precedence; single-needle processes [A61M 1/30-](#))}
 - Other treatment of blood in a by-pass of the natural circulatory system, e.g. temperature adaptation, irradiation;{Extra-corporeal blood circuits}
 - • {Extra-corporeal blood circuits (-single-needle circuits [A61M 1/30-](#))}
 - • • {Gas bubble detectors (-blood leak detection by change of transparency of dialysate [A61M 1/1692](#) ; in infusion devices [A61M 5/365](#) ; observing bubbles in a liquid pool for leak detection, in general [G01M 3/06-](#))}
 - • • {Degassing devices; Buffer reservoirs; Drip chambers; Blood filters (-priming [A61M 1/3643](#) ; blood filters for infusion [A61M 5/165-](#))}
 - • • {Flow rate transducers; Flow integrators (measuring the flow in general [G01F](#))}
 - • • {-Circuit parts not covered by the preceding subgroups of group [A61M 1/3621-](#)}
 - • {Means preventing coagulation (-aspiration tips with anticoagulant delivery [A61M 1/0084-](#))}
 - • {by absorption (-[A61M 1/3675](#) takes precedence-)}
 - • {Chemical treatment (-[A61M 1/3675](#) takes precedence-)}
 - • {Temperature treatment (-heating or cooling infusion media [A61M 5/44-](#))}
 - • Removing constituents from donor blood and (-storing or) returning remainder to body,{e.g. for transfusion}
- Syringes; Irrigators; Baths for subaquatic intestinal cleaning (-other apparatus for introducing medicines into the body [A61M 29/00](#) to [A61M 37/00-](#))**
- Medical syringes, e.g. enemata; Irrigators (-[A61M 5/00](#) takes precedence; pistons [A61M 5/315-](#))**
- WARNINGS**
- Groups [A61M 3/0204](#) - [A61M 3/022](#) are incomplete pending reclassification of documents from group [A61M 3/02](#).
- Until reclassification is complete, groups [A61M 3/02](#) and [A61M 3/0204](#) - [A61M 3/022](#) should be considered to perform a complete search.
- U A61M 3/02
- Enemata; Irrigators

- A61M 3/0225
- {Devices on which the patient can sit, e.g. mounted on a toilet bowl (-combined with bidets [A61M 3/06-](#)); Devices containing liquid pumped by the patient's weight}
- U A61M 3/0233
- {characterised by liquid supply means, e.g. from pressurised reservoirs}
- A61M 3/025
- • {supplied directly from the pressurised water source, e.g. with medicament supply (-combined with bidets [A61M 3/06-](#))}
- A61M 3/0254
- • {the liquid being pumped (-by the patient's weight [A61M 3/0225-](#))}
- A61M 3/0266
- {Stands, holders or storage means for irrigation devices (-containers with storage means for cannula [A61M 3/0245-](#))}
- A61M 3/027
- {Devices for holding the cannula in position, e.g. belts (-cannula details [A61M 3/0279-](#))}
- A61M 5/00**
- Devices for bringing media into the body in a subcutaneous, intra-vascular or intramuscular way; Accessories therefor, e.g. filling or cleaning devices, arm-rests ({ vaccination appliances for veterinary use [A61D 1/025](#) } ; tube connectors, tube couplings, valves or branch units specially adapted for medical use [A61M 39/00](#) ; containers specially adapted for pharmaceutical purposes [A61J 1/00](#) ; { combinations of vial and syringe for mixing or transferring their contents [A61J 1/20](#) ; holders for containers for collecting, storing or administering blood or medical fluids [A61J 1/16](#) })**
- A61M 5/002
- {Packages specially adapted therefor, e.g. for syringes or needles, kits for diabetics (-needle protection, e.g. caps, [A61M 5/3202](#) ; for sharps [A61B 19/0262-](#))}
- A61M 5/008
- {Racks for supporting syringes or needles (-[A61M 5/001](#) takes precedence-)}
- A61M 5/14
- Infusion devices, e.g. infusing by gravity; Blood infusion; Accessories therefor (-suction in pumping blood transfusion [A61M 1/02](#) ; { infusion containers [A61J1/00T](#) })
- U A61M 5/1407
- {Infusion of two or more substances}
- A61M 5/1408
- • {in parallel, e.g. manifolds, sequencing valves (-access sites [A61M 39/02](#) ; tube connectors [A61M 39/10-](#))}
- A61M 5/1409
- • {in series, e.g. first substance passing through container holding second substance, e.g. reconstitution systems (-needle sets [A61M 5/162-](#))}
- A61M 5/1411
- {Drip chambers (-[A61M 5/162](#) , [A61M 5/1689](#) , [A61M 5/40](#) take precedence-)}
- A61M 5/1412
- • {Burettes, measuring cylinders (-for laboratory use [B01L 3/02-](#))}
- U A61M 5/142
- • Pressure infusion, e.g. using pumps
- NOTE
- In this group, the following expression is used with the meaning indicated:
- "pressure infusion" includes powered injection working at a controlled rate
- A61M 2005/14288
- • • {Infusion or injection simulation (-simulation of surgery in general [A61B 19/50](#) ; training for or simulation of use of injection or infusion devices [G09B 23/285](#) ; computer simulations for diagnosis or treatment in general [G06F 19/3437-](#))}
- U A61M 5/145
- • • using pressurised reservoirs, e.g. pressurised by means of pistons
- A61M 5/148
- • • • flexible, {e.g. independent bags} (-[A61M 5/155](#) takes precedence-)
- A61M 5/152
- • • • pressurised by contraction of elastic reservoirs (-containers for dispensing contents by contraction of an elastic bag provided therein, in general [B65D 83/0061-](#))}
- A61M 5/155
- • • • pressurised by gas {introduced into the reservoir}

- A61M 5/158
 - • Needles {for infusions; Accessories therefor, e.g. for inserting infusion needles, or for holding them on the body}
- A61M 2005/1586
 - • • {Holding accessories for holding infusion needles on the body holding devices for catheters [A61M 25/02](#)-}
- A61M 5/162
 - • Needle sets, i.e. connections by puncture between reservoir and tube; {Connections between reservoir and tube (-in jet-action syringes [A61M 5/30](#) ; connectors for tubes having sealed ends and a needle for piercing them [A61M 39/14](#)-)}
- A61M 5/1626
 - • • {Needle protectors therefor (-in combination with syringes [A61M 5/3202](#) ; protectors for sharps [A61B 19/0262](#)-)}
- A61M 5/165
 - • Filtering accessories, e.g. blood filters, filters for infusion liquids ({ [A61M 1/14](#) } , [A61M 1/34](#) , { [A61M 1/3627](#) , [A61M 1/3679](#) , [A61M 1/3687](#) }take precedence;{ needle sets with incorporated air inlet filters [A61M 5/162](#) })
- A61M 5/168
 - • Means for controlling media flow to the body or for metering media to the body, e.g. drip meters, counters; {Monitoring media flow to the body (-flow control in general [G05D 7/00](#)-)}
- U A61M 5/16804
 - • • {Flow controllers}
- A61M 5/16809
 - • • • {by repeated filling and emptying of an intermediate volume (-pressure infusion using positive displacement pumps [A61M 5/142](#)-)}
- A61M 5/16822
 - • • • {by controlling air intake into infusion reservoir (-needle sets with air inlet [A61M 5/162](#)-)}
- A61M 5/16827
 - • • • {controlling delivery of multiple fluids, e.g. sequencing, mixing or via separate flow-paths (-infusion of multiple fluids without using a controller [A61M 5/1407](#)-)}
- A61M 5/16831
 - • • {Monitoring, detecting, signalling or eliminating infusion flow anomalies (-low-level float-valves causing cut-off [A61M 5/40](#) ; indicating or recording presence, absence or direction of flow in general [G01P 13/0066](#)-)}
- A61M 5/16836
 - • • • {by sensing tissue properties at the infusion site, e.g. for detecting infiltration (-detecting tissue temperature for diagnostic purposes [A61M 39/0247](#)-)}
- U A61M 5/16877
 - • • {Adjusting flow; Devices for setting a flow rate}
- A61M 5/16881
 - • • • {Regulating valves (-on-off valves, e.g. clamps [A61M 39/28](#)-)}
- A61M 5/172
 - • • electrical or electronic((-[A61M 5/16804](#) and [A61M 5/16831](#) take precedence-)}
- A61M 5/1723
 - • • • {using feedback of body parameters, e.g. blood-sugar, pressure (-measurement of body parameters [A61B 5/00](#)-)}
- U A61M 5/178
 - Syringes
- A61M 5/1782
 - • {Devices aiding filling of syringes in situ (-combination of a vial and a syringe for transferring or mixing their contents [A61J 1/2096](#), filling of medical containers in general [B65B 3/003](#))}
- A61M 5/1785
 - • {comprising radioactive shield means (-syringe shields or holders for storage of radioactive sources [G21F 5/018](#)-)}
- A61M 5/19
 - • having more than one chamber,{e.g. including a manifold coupling two parallelly aligned syringes through separate channels to a common discharge assembly (-surgical glue applicators [A61B 17/00491](#))}
- A61M 5/20
 - • Automatic syringes, e.g. with automatically actuated piston rod, with automatic needle injection, filling automatically (-[A61M 5/142](#) { , [A61M 5/46](#) }take precedence;{ hypodermic projectiles [F42B 12/54](#) })
- A61M 5/2033
 - • • {Spring-loaded one-shot injectors with or without automatic needle insertion (-multishot dosing syringes [A61M 5/31525](#) , needle insertion only [A61M 5/3287](#)-)}

- A61M 5/2053
 - . . . {Media being expelled from injector by pressurised fluid or vacuum (-for infusion [A61M 5/145](#) , [A61M 5/155](#)-)}
- A61M 5/24
 - . . . Ampoule syringes, i.e. syringes with needle for use in combination with replaceable ampoules or carpules, e.g. automatic (-ampoules or carpules [A61J 1/06](#)-)
- A61M 5/2422
 - . . . {-not used, see subgroups and [A61M 5/24](#)-}
- U A61M 5/2455
 - . . . {with sealing means to be broken or opened}
- A61M 5/2459
 - {upon internal pressure increase, e.g. pierced or burst (-[A61M 5/2429](#) takes precedence-)}
- A61M 5/2466
 - {by piercing without internal pressure increase (-[A61M 5/2429](#) takes precedence-)}
- U A61M 5/28
 - . . . Syringe ampoules or carpules, i.e. ampoules or carpules provided with a needle
- A61M 5/281
 - . . . {-Not used, see subgroups and [A61M 5/28](#)-}
- A61M 5/285
 - . . . {with sealing means to be broken or opened (not used, see subgroups)}
- A61M 5/286
 - {upon internal pressure increase, e.g. pierced or burst (-[A61M 5/283](#) takes precedence-)}
- A61M 5/288
 - {by piercing without internal pressure increase (-[A61M 5/283](#) takes precedence-)}
- U A61M 5/30
 - . . . Syringes for injection by jet action, without needle, e.g. for use with replaceable ampoules or carpules
- A61M 5/3015
 - . . . {for injecting a dose of particles in form of powdered drug, e.g. mounted on a rupturable membrane and accelerated by a gaseous shock wave or supersonic gas flow (-cell injection devices [C12M 3/006](#)-)}
- A61M 2005/3022
 - . . . {Worn on the body, e.g. as patches (-pressure infusion of the skin patch type [A61M 5/14248](#)-)}
- U A61M 5/31
 - . . . Details
- A61M 5/3129
 - . . . {Syringe barrels (-[A61M 5/3205](#) and [A61M 5/50](#) take precedence-)}
- A61M 5/315
 - . . . Pistons; Piston-rods; Guiding, blocking or restricting the movement of the rod {or piston}; Appliances on the rod for facilitating dosing; {Dosing mechanisms}
- A61M 5/31501
 - {Means for blocking or restricting the movement of the rod or piston (-[A61M 5/5013](#) takes precedence-)}
- A61M 5/31511
 - {Piston or piston-rod constructions, e.g. connection of piston with piston-rod (-[A61M 5/5066](#) takes precedence-)}
- A61M 5/31525
 - {Dosing (-burettes, pipettes [B01L 3/02](#)-)}
- A61M 5/31533
 - {Dosing mechanisms, i.e. setting a dose (-administering mechanisms [A61M 5/31565](#)-)}
- A61M 5/31565
 - {Administration mechanisms, i.e. constructional features, modes of administering a dose (-dosing mechanisms for setting a dose [A61M 5/31533](#)-)}
- U A61M 5/31566
 - {Means improving security or handling thereof}
- A61M 5/3157
 - {Means providing feedback signals when administration is completed (-[A61M 5/20](#) takes precedence-)}
- A61M 5/31571
 - {Means preventing accidental administration (-for automatic syringes [A61M 5/20](#)-)}

- A61M 5/32
 - . . . Needles; Details of needles pertaining to their connection with syringe or hub (~~infusion needles [A61M 5/158](#)~~); Accessories for bringing the needle into, or holding the needle on, the body(~~-[A61M 5/42](#) , [A61M 5/46](#) take precedence; guide needles for catheters [A61M 25/065](#)~~); Devices for protection of needles(~~-apparatus specially adapted for cleaning or sterilising needles [A61M 5/001](#)~~)
- A61M 5/3202
 - {Devices for protection of the needle before use, e.g. caps (~~-[A61M 5/50](#) takes precedence; for infusion spikes [A61M 5/1626](#) ; protectors for sharps [A61B 19/0262](#)~~)}
- A61M 5/3205
 - {Apparatus for removing or disposing of used needles or syringes, e.g. containers; Means for protection against accidental injuries from used needles (~~for sharps [A61B 19/0288](#) ; disintegrating apparatus in general [B02C](#) , e.g. [B02C19/12M](#) , [B23H 9/001](#) ; disposal of medical waste in general [B09B 3/0075](#) ; receptacles for refuse disposal in general [B65F 1/00](#)~~)}
- U A61M 5/321
 - {Means for protection against accidental injuries by used needles}
- A61M 5/3213
 - {Caps placed axially onto the needle, e.g. equipped with finger protection guards (~~axially-extensible protective sleeves [A61M 5/3243](#)~~)}
- A61M 5/322
 - {Retractable needles, i.e. disconnected from and withdrawn into the syringe barrel by the piston (~~devices for protecting guide needles in combination with catheters [A61M 25/0612](#)~~)}
- A61M 5/3243
 - {being axially-extensible, e.g. protective sleeves coaxially slidable on the syringe barrel (~~devices for protecting guide needles in combination with catheters [A61M 25/0612](#)~~)}
- A61M 5/3278
 - {Apparatus for destroying used needles or syringes (~~needle resheathing means destroying the needle [A61M 5/321](#)~~)}
- A61M 5/3287
 - {Accessories for bringing the needle into the body; Automatic needle insertion (~~-[A61M 5/20](#) , [A61M 5/31525](#) take precedence~~)}
- A61M 5/34
 - Constructions for connecting the needle,{e.g. to syringe nozzle or needle hub (~~connecting catheter tubes to hubs [A61M 25/0014](#)~~)}
- A61M 5/343
 - {Connection of needle cannula to needle hub, or directly to syringe nozzle without a needle hub (~~-[A61M 5/322](#) takes precedence~~)}
- A61M 5/346
 - {friction fit (~~-[A61M 5/344](#) takes precedence~~)}
- A61M 5/347
 - {rotatable, e.g. bayonet or screw (~~-[A61M 5/344](#) takes precedence~~)}
- A61M 5/348
 - {snap lock, i.e. upon axial displacement of needle assembly (~~-[A61M 5/344](#) takes precedence~~)}
- A61M 5/36
 - . with means for eliminating or preventing injection or infusion of air into body (~~dialysis systems, blood oxygenators [A61M 1/14](#) ; haemofiltration equipment [A61M 1/34](#) ; { automatic tube cut-off [A61M 39/281](#) }~~)
- A61M 5/365
 - . {Air detectors (~~-[A61M 5/1684](#) takes precedence; in extracorporeal blood circuits [A61M 1/3626](#)~~)}
- A61M 5/40
 - . . using low-level float-valve to cut off media flow from reservoir(~~position detection of a floating member [A61M 5/1685](#)~~)}
- A61M 5/42
 - . having means for desensitising skin, for protruding skin to facilitate piercing, or for locating point where body is to be pierced {not used, see subgroups}
- A61M 5/48
 - . having means for varying, regulating, indicating or limiting injection pressure (~~-[A61M 5/142](#) takes precedence; { monitoring pressure in infusion systems [A61M 5/16854](#) }~~)
- A61M 5/50
 - . Having means for preventing re-use, or for indicating if defective, used, tampered with or unsterile(~~retractable needles or needle protectors with means for preventing re-use [A61M 5/321](#)~~)}

- A61M 11/00** **Sprayers or atomisers specially adapted for therapeutic purposes (-in general [B05B](#) ; { aerosol containers [B65D 83/14](#) })**
- WARNINGS**
- Groups [A61M 11/001](#) - [A61M 11/008](#), [A61M 11/042](#) - [A61M 11/048](#), [A61M 11/065](#) are incomplete pending reclassification of documents from group [A61M 11/00](#) or respective subgroup.
- Until reclassification is complete, groups [A61M 11/00](#) or respective subgroup and [A61M 11/001](#) - [A61M 11/008](#), [A61M 11/042](#) - [A61M 11/048](#), [A61M 11/065](#) should be considered in order to perform a complete search.
- A61M 11/005
- {using ultrasonics (-spraying or atomising liquids using ultrasonic vibrations in general [B05B 17/06](#)-)}
- A61M 11/02
- operated by air {or other gas}pressure applied to the liquid {or other product}to be sprayed or atomised{{-sprayers for horticulture [A01G](#) , [A01H](#) ; killing insects [A01M](#) ; air humidifying by nozzles [F24F 6/14](#) , [F24F 6/18](#) ; cooling by spraying [F28B](#) , [F28C](#)-}}
- A61M 11/04
- operated by the vapour pressure of the liquid to be sprayed or atomised{{(-air-humidification, e.g. "room humidifiers" [F24F 6/00](#)-)}
- U A61M 11/06
- of the injector type
- A61M 11/08
- • Pocket atomisers of the injector type{{(-aerosol cans [A61M 15/009](#)-)}
- A61M 13/00** **Insuflators for therapeutic or disinfectant purposes,{i.e. devices for blowing a gas, powder or vapour into the body (-hand-held units in which gas flow is produced by muscular energy at the moment of use [B05B 11/062](#)-)}**
- A61M 15/00** **Inhalators{{(-drug delivery in endotracheal tubes [A61M 16/04](#)-)}**
- WARNINGS**
- Groups [A61M 15/0001](#) - [A61M 15/0026](#), [A61M 15/003](#) - [A61M 15/0043](#), [A61M 15/0046](#) - [A61M 15/0063](#), [A61M 15/0066](#) - [A61M 15/0083](#), [A61M 15/0088](#), [A61M 15/0093](#) - [A61M 15/0098](#), [A61M 15/025](#), [A61M 15/085](#) are incomplete pending reclassification of documents from group [A61M 15/00](#) or respective subgroup.
- Until reclassification is complete, groups [A61M 15/00](#) or respective subgroup and [A61M 15/0001](#) - [A61M 15/0026](#), [A61M 15/003](#) - [A61M 15/0043](#), [A61M 15/0046](#) - [A61M 15/0063](#), [A61M 15/0066](#) - [A61M 15/0083](#), [A61M 15/0088](#), [A61M 15/0093](#) - [A61M 15/0098](#), [A61M 15/025](#), [A61M 15/085](#) should be considered in order to perform a complete search.
- A61M 15/0065
- {Inhalators with dosage or measuring devices (-[A61M 15/0028](#) takes precedence; dosage devices incorporated in aerosol cans [B65D 83/52](#)-)}
- A61M 15/0085
- {using ultrasonics (-spraying or atomising liquids using ultrasonic vibrations in general [B05B 17/06](#)-)}
- A61M 15/009
- {using medicine packages with incorporated spraying means, e.g. aerosol cans (-pocket atomiser of the injector type [A61M 11/08](#)-)}
- A61M 15/02
- with activated or ionised {fluids, e.g. electrohydrodynamic (EHD) or electrostatic devices}; Ozone-inhalators {with radioactive tagged particles}
- A61M 15/06
- Inhaling appliances shaped like cigars, cigarettes or pipes{{(-simulated smoking devices, e.g. imitation cigarettes, [A24F 47/002](#)-)}

A61M 16/00

Devices for influencing the respiratory system of patients by gas treatment, e.g. mouth-to-mouth respiration; Tracheal tubes (-stimulating the respiratory movement by mechanical, pneumatic or electrical means, iron lungs combined with gas breathing means [A61H 31/00](#) ; { supine patient supports therefor [A61H 31/008](#) } ; respiratory apparatus in general [A62B](#); respirators for working under water [B63C 11/00](#)-)

WARNINGS

Groups [A61M 16/0003](#) - [A61M 16/0012](#), [A61M 16/006](#) - [A61M 16/0063](#), [A61M 16/0069](#), [A61M 16/0081](#) - [A61M 16/0084](#), [A61M 16/0093](#), [A61M 16/0402](#) - [A61M 16/0431](#), [A61M 16/0436](#) - [A61M 16/0438](#), [A61M 16/0443](#) - [A61M 16/0459](#), [A61M 16/0475](#) - [A61M 16/0486](#), [A61M 16/049](#) - [A61M 16/0495](#), [A61M 16/0605](#) - [A61M 16/0655](#), [A61M 16/0672](#) - [A61M 16/0677](#), [A61M 16/0688](#) - [A61M 16/0694](#), [A61M 16/0825](#) - [A61M 16/0866](#), [A61M 16/0883](#) - [A61M 16/0891](#), [A61M 16/1005](#) - [A61M 16/1015](#), [A61M 16/106](#) - [A61M 16/107](#), [A61M 16/108](#) - [A61M 16/1095](#), [A61M 16/122](#) - [A61M 16/127](#), [A61M 16/142](#) - [A61M 16/147](#), [A61M 16/161](#), [A61M 16/164](#) - [A61M 16/168](#), [A61M 16/201](#) - [A61M 16/207](#), [A61M 16/209](#) are incomplete pending reclassification of documents from group [A61M 16/00](#) or respective subgroup.

Until reclassification is complete, groups [A61M 16/00](#) or respective subgroup and [A61M 16/0003](#) - [A61M 16/0012](#), [A61M 16/006](#) - [A61M 16/0063](#), [A61M 16/0069](#), [A61M 16/0081](#) - [A61M 16/0084](#), [A61M 16/0093](#), [A61M 16/0402](#) - [A61M 16/0431](#), [A61M 16/0436](#) - [A61M 16/0438](#), [A61M 16/0443](#) - [A61M 16/0459](#), [A61M 16/0475](#) - [A61M 16/0486](#), [A61M 16/049](#) - [A61M 16/0495](#), [A61M 16/0605](#) - [A61M 16/0655](#), [A61M 16/0672](#) - [A61M 16/0677](#), [A61M 16/0688](#) - [A61M 16/0694](#), [A61M 16/0825](#) - [A61M 16/0866](#), [A61M 16/0883](#) - [A61M 16/0891](#), [A61M 16/1005](#) - [A61M 16/1015](#), [A61M 16/106](#) - [A61M 16/107](#), [A61M 16/108](#) - [A61M 16/1095](#), [A61M 16/122](#) - [A61M 16/127](#), [A61M 16/142](#) - [A61M 16/147](#), [A61M 16/161](#), [A61M 16/164](#) - [A61M 16/168](#), [A61M 16/201](#) - [A61M 16/207](#), [A61M 16/209](#) should be considered in order to perform a complete search.

- A61M 16/0048 • {Mouth-to-mouth respiration} (-teaching or training models [G09B 23/288](#)-)}
- A61M 16/01 • specially adapted for anaesthetising{(-[A61M 16/104](#) , [A61M 16/18](#) take precedence-)}
- A61M 16/04 • Tracheal tubes} (-catheters in general [A61M 25/00](#)-)
- U A61M 16/0434 • • {Cuffs}
- A61M 16/0443 • • • {Special cuff-wall materials} ([A61M 16/0481](#), [A61M 16/0422](#) take precedence)}
- U A61M 16/0465 • • {Tracheostomy tubes; Devices for performing a tracheostomy; Accessories therefor, e.g. masks, filters}
- A61M 16/0468 • • • {with valves at the proximal end limiting exhalation, e.g. during speaking or coughing} (-air passages from trachea to oesophagus or to pharynx, artificial epiglottis [A61F 2/203](#)-)}
- A61M 16/0488 • • {Mouthpieces; Means for guiding, securing or introducing the tubes} (-guiding or introducing with laryngoscopes [A61B 1/267](#) ; holding devices on the body [A61M 25/02](#)-)}
- U A61M 16/06 • Respiratory or anaesthetic masks
- A61M 16/0666 • • {Nasal cannulas or tubing} (-devices for improving normal breathing through the nose [A61F 5/08](#) ; nose filters [A62B 23/06](#) ; outside holding devices [A61M 25/02](#)-)}
- A61M 16/08 • Bellows; Connecting tubes{(-having means for taking samples [G01N 1/22](#)-); Water traps; Patient circuits}
- U A61M 16/10 • Preparation of respiratory gases or vapours
- A61M 16/104 • • {specially adapted for anaesthetics} (-[A61M 16/18](#) takes precedence-)}

- A61M 16/105
- {Filters (~~A61M 16/047~~ , [A61M 16/22](#) take precedence; water traps [A61M 16/08](#)-)}
- A61M 16/1075
- {by influencing the temperature (~~A61M 16/1045~~ takes precedence-)}
- U A61M 16/14
- by mixing different fluids, one of them being in a liquid phase
- A61M 16/16
- • Devices to humidify the respiration air{(~~A61M 16/1045~~ takes precedence-)}
- A61M 16/22
- Carbon dioxide-absorbing devices; {Other means for removing carbon dioxide} (~~cartridges with absorbing substances for respiratory apparatus [A62B 19/00](#)~~)
- A61M 19/00**
- Local anaesthesia (-syringes therefor [A61M 5/00](#)-); Hypothermia (-[A61M 5/42](#) takes precedence; cooling blood in a bypass of the arterial system [A61M 1/36](#)-)**
- WARNING
- Groups [A61B 19/20](#) - [A61B 19/56](#) do not correspond to former or current IPC groups.
- Concordance CPC : IPC for these groups is as follows: - [A61B 19/20](#) - [A61B 19/56](#) : [A61B 19/00](#)]
- U **A61M 21/00**
- Other devices or methods to cause a change in the state of consciousness; Devices for producing or ending sleep by mechanical, optical, or acoustical means, e.g. for hypnosis**
- A61M 21/0094
- {Isolation chambers used therewith, i.e. for isolating individuals from external stimuli (~~other treatment rooms or enclosures [A61G 10/00](#)~~-)}
- A61M 21/02
- for inducing sleep or relaxation, e.g. by direct nerve stimulation, hypnosis, analgesia (~~for massage [A61H](#) ; electrotherapy [A61N](#) , e.g. applying alternating or intermittent electric currents for producing anaesthesia [A61N1/34](#)~~-)
- A61M 25/00**
- Catheters; Hollow probes (-dilators [A61M 29/00](#) ; { peritoneal catheters [A61M 1/285](#) ; tracheal tubes [A61M 16/04](#) ; for drainage [A61M 27/00](#) ; for uterus, vagina or rectum [A61M 31/00](#) } ; for measuring or testing [A61B](#) ; { materials for catheters [A61L 29/00](#) })**
- A61M 2025/0001
- {for pressure measurement (not used)}
- A61M 25/002
- {Packages specially adapted therefor (~~combined with means for introducing catheters, e.g. dispensers, [A61M 25/0113](#)~~-); catheter kit packages (~~for surgical articles [A61B 19/026](#)~~-)}
- A61M 25/0021
- {characterised by the form of the tubing (~~A61M 25/0054~~ takes precedence-)}
- U A61M 25/0023
- {by the form of the lumen, e.g. cross-section, variable diameter}
- A61M 25/0026
- • {Multi-lumen catheters with stationary elements (~~catheter assemblies comprising a catheter in combination with a guide tube, sheath or sleeve [A61M 2025/0681](#) ; catheters comprising telescoping coaxial elements [A61M 2025/0175](#)~~-)}
- A61M 25/0028
- • • {characterized by features relating to at least one lumen located at the proximal part of the catheter, e.g. alterations in lumen shape or valves (~~catheter hubs [A61M 25/0097](#)~~-)}
- A61M 25/0029
- • • {characterized by features relating to least one lumen located at the middle part of the catheter, e.g. slots, flaps, valves, cuffs, apertures, notches, grooves or rapid exchange ports (~~catheter shaft surface irregularities [A61M 2025/006](#)~~-)}
- A61M 25/003
- • • {characterized by features relating to least one lumen located at the distal part of the catheter, e.g. filters, plugs or valves (~~catheter tips [A61M 25/0067](#)~~-)}
- A61M 2025/0034
- • • {characterized by elements which are assembled, connected or fused, e.g. splittable tubes, outer sheaths creating lumina or separate cores (making of catheters [A61M 25/0009](#))}

- A61M 25/0041
 - • {pre-formed, e.g. specially adapted to fit with the anatomy of body channels (-urethral catheters [A61F 2/04](#)-)}
- U A61M 25/0043
 - {characterised by structural features}
- A61M 25/0045
 - • {multi-layered, e.g. coated (-coating materials [A61L 29/08](#)-)}
- A61M 2025/0062
 - • {having features to improve the sliding of one part within another by using lubricants or surfaces with low friction (-coatings [A61M 2025/0046](#)-)}
- A61M 25/0067
 - {characterised by the distal end, e.g. tips (-[A61M 25/0054](#) , [A61M 25/04](#) take precedence; balloon catheters [A61M 25/10](#)-)}
- U A61M 25/0068
 - • {Static characteristics of the catheter tip, e.g. shape, atraumatic tip, curved tip or tip structure}
- A61M 25/0071
 - • • {Multiple separate lumens (-multiple separate lumens throughout the catheter [A61M 25/0026](#)-)}
- A61M 2025/0073
 - • • {Tip designed for influencing the flow or the flow velocity of the fluid, e.g. inserts for twisted or vortex flow (-general flow characteristics [A61M 2206/10](#)-)}
- A61M 25/0097
 - {characterised by the hub (-connectors [A61M 39/10](#)-)}
- A61M 25/01
 - Introducing, guiding, advancing, emplacing or holding catheters (-[A61M 25/10](#) takes precedence-)
- A61M 25/0105
 - • {Steering means as part of the catheter or advancing means; Markers for positioning (systems for detection of markers [A61B](#))}
- A61M 25/0116
 - • • {self-propelled, e.g. autonomous robots (-[A61M 25/0122](#) takes precedence-)}
- U A61M 25/0194
 - • {Tunnelling catheters}
- A61M 2025/0197
 - • • {for creating an artificial passage within the body, e.g. in order to go around occlusions (-for fixation outside the body [A61M 25/0194](#)-)}
- U A61M 25/02
 - • Holding devices, e.g. on the body
- A61M 2025/0293
 - • • {Catheter, guide wire or the like with means for holding, centering, anchoring or frictionally engaging the device within an artificial lumen, e.g. tube (-natural lumen, e.g. vessels [A61M 25/04](#)-)}
- A61M 25/04
 - • • in the body, e.g. expansible(-[A61M 25/10](#) , [A61M 16/0488](#) take precedence-)}
- U A61M 25/09
 - • Guide wires
- A61M 2025/09058
 - • • {Basic structures of guide wires (not used)}
- A61M 25/10
 - Balloon catheters ({ [A61M 25/0125](#) takes precedence; embolectomy [A61B 17/22032](#) ; retractors [A61B 17/02](#) } ; inflatable balloons for placing stents or stent-grafts [A61F 2/958](#) ; { stomach balloons for treatment of obesity [A61F 5/0003](#) ; oesophageal tubes [A61J 15/00](#) })
- A61M 25/1002
 - • {characterised by balloon shape (-[A61M 25/1006](#) , [A61M 25/1009](#) take precedence-)}
- U A61M 25/1027
 - • {Making of balloon catheters}
- A61M 25/1036
 - • • {Making parts for balloon catheter systems, e.g. shafts or distal ends (-[A61M 25/1029](#) takes precedence-)}
- A61M 2025/1043
 - • {with special features or adapted for special applications (not used)}
- A61M 2025/1059
 - • • {having different inflatable sections mainly depending on the response to the inflation pressure, e.g. due to different material properties (-with different compartments [A61M 2025/1072](#)-)}
- A61M 2025/1081
 - • • {having sheaths or the like for covering the balloon but not forming a permanent part of the balloon, e.g. retractable, dissolvable or tearable sheaths (-for balloon length adjustment [A61M 2025/1068](#)-)}

A61M 27/00	Drainage appliances for wounds or the like, {i.e. wound drains, implanted drains} (-implements for holding wounds open A61B 17/02 ; { middle ear drainage A61F 11/002 ; other drainage devices A61M 1/00)}
A61M 27/002	· {Implant devices for drainage of body fluids from one part of the body to another (-intraocular A61F 9/00781 ; middle ear A61F 11/002 -)}
A61M 29/00	Dilators with or without means for introducing media, e.g. remedies (-instruments for performing visual medical inspections of cavities or tubes of the body A61B 1/00)}
A61M 29/02	· Dilators made of swellable material{-balloon catheters for angioplasty A61M 25/104 -)}
A61M 31/00	Devices for introducing or retaining media, e.g. remedies, in cavities of the body (-A61M 25/00 takes precedence; { introducing or retaining ophthalmic products into the ocular cavities A61F 9/0008)}
A61M 31/002	· {Devices for releasing a drug at a continuous and controlled rate for a prolonged period of time (-artificial gland structures or devices A61F 2/022 ; intra-uterine contraceptive devices A61F 6/14 ; tampons for introducing into the vagina A61F 13/20 , A61L 15/00 ; suppositories or bougies for intra-vaginal or intra-uterine application A61K 9/02 ; physical forms of medicinal preparations for sustained or differential drug release A61K 9/20 , A61K 9/50 -)}
A61M 35/00	Devices for applying, {e.g. spreading}, media, e.g. remedies, on the human body (-devices for handling toilet or cosmetic substances A45D ; absorbent pads, e.g. swabs, A61F 13/15); {Introducing media, e.g. remedies, into the body by diffusion through the skin (-using salt baths A61H 33/04)}
A61M 35/003	· {Hand-held applicator instruments having media dispensing or spreading means (-apparatus for iontophoresis A61N 1/30 ; hand tools for applying fluent material to surfaces, in general B05C 17/00 ; container closures with pads or like contents-applying means, in general B65D 47/42 -)}
A61M 35/006	· {Absorbent pads, e.g. swabs, containing a liquid, e.g. in a rupturable reservoir (-absorbent pads, e.g. swabs, for medical use, in general A61F 13/00 , e.g. A61F 13/38 -)}
A61M 37/00	Other apparatus for introducing media into the body (-for reproduction or fertilisation A61B 17/425 ; apparatus for iontophoresis or cataphoresis A61N 1/30-); Percutany, i.e. introducing medicines into the body by diffusion through the skin (-salt baths A61H 33/04)}
A61M 37/0069	· {Devices for implanting pellets, e.g. markers or solid medicaments (-for introducing of radioactive sources for interstitial radiation therapy, i.e. brachytherapy A61N 5/1027 -)}
A61M 37/0076	· {Tattooing apparatus (-apparatus for marking animals A01K 11/00 ; vaccine applicators having needles or other puncturing means A61B 17/205 -)}
A61M 39/00	Tubes, tube connectors, tube couplings, valves, access sites or the like, specially adapted for medical use (-for respiratory devices, e.g. tracheal tubes A61M 16/00 ; artificial heart valves A61F 2/24)
	WARNING
	Not complete, see A61J 1/14
U A61M 39/02	· Access sites
A61M 39/0208	· {Subcutaneous access sites for injecting or removing fluids (-transcutaneous access sites A61M1/00S ; implantable infusion devices A61M 5/14276 -)}

- A61M 39/0247
 - • {Semi-permanent or permanent transcuteaneous or percutaneous access sites to the inside of the body (-peritoneal dialysis catheters [A61M 1/285](#) ; tracheostomy devices [A61M 16/0465](#) ; measuring pressure within the body [A61B 5/03](#) ; colostomy devices [A61F 5/445](#) ; gastrotomy feeding tubes [A61J 15/0015](#) ; means for fixing a feeding tube outside of the body [A61J 15/0053](#)-)}
- A61M 2039/027
 - • • {having a particular valve, seal or septum (-septum [A61M 2039/0036](#)-)}
- U A61M 39/06
 - • Haemostasis valves, i.e. gaskets sealing around a needle, catheter or the like, closing on removal thereof
- A61M 39/0606
 - • • {without means for adjusting the seal opening or pressure (-[A61M 39/0693](#) takes precedence-)}
- A61M 39/0613
 - • • {with means for adjusting the seal opening or pressure (-[A61M 39/0693](#) takes precedence-)}
- U A61M 39/08
 - Tubes; Storage means specially adapted therefor
- A61M 2039/085
 - • {external enteral feeding tubes (-feeding tubes inside the stomach or intestines [A61J 15/00](#)-)}
- A61M 39/10
 - Tube connectors; Tube couplings{(-[A61M 39/02](#) takes precedence; connecting needles to syringes or hubs [A61M 5/34](#) ; connecting catheter tubes to hubs [A61M 25/0014](#)-)}
- A61M 39/1011
 - • {Locking means for securing connection; Additional tamper safeties (-[A61M 39/16](#) takes precedence-)}
- A61M 39/105
 - • {Multi-channel connectors or couplings, e.g. for connecting multi-lumen tubes (-multi-channel connectors in general [F16L 37/56](#)-)}
- A61M 39/1055
 - • {Rotating or swivel joints (-in general [F16L 27/00](#)-)}
- A61M 39/14
 - • for connecting tubes having sealed ends{(-needle sets [A61M 5/162](#) ; having valves closing automatically on disconnection of line [A61M 39/26](#)-)}
- A61M 39/16
 - • having provision for disinfection or sterilisation{(-[A61M 39/143](#) takes precedence; methods or apparatus for disinfection or sterilisation [A61L 2/00](#)-)}
- A61M 39/22
 - Valves or arrangement of valves{(-[A61M 39/02](#) , [A61M 39/0247](#) , [A61M 39/16](#) take precedence; regulating valves in infusion systems [A61M 5/16881](#) ; in devices worn by the patient for the reception of urine, faeces, catamenial or other discharge, or in colostomy devices [A61F 5/4405](#)-)}
- A61M 39/221
 - • {Frangible or pierceable closures within tubing (-[A61M 39/14](#) takes precedence; frangible closures for containers [A61J 1/14](#)-)}
- A61M 39/26
 - • Valves closing automatically on disconnecting the line and opening on reconnection thereof{(-check valves [A61M 39/24](#)-)}
- A61M 39/28
 - • Clamping means for squeezing flexible tubes, e.g. roller clamps{(-tube strippers [A61M 1/0078](#)-)}
- A61M 2202/00**
 - Special media to be introduced, removed or treated (-applying radioactive material [A61M36/00](#)-)**

NOTE

The classification symbols [A61M 2202/0007](#) to [A61M 2202/0092](#) are not listed first when assigned to patent documents. They are used only when associated to other subgroups of [A61M 2202/00](#) in combination sets
 Example: [A61M 2202/0417](#) , [A61M 2202/0057](#)

- A61M 2202/02
 - Gases (-smoke evacuating [A61B2218/0008](#)-)

- U A61M 2202/04
- Liquids
- NOTE**
- The codes can be followed by additional symbols. The symbols have the meaning as listed below:
- +A fluid entering a filter;
 - +B fluid leaving the cross-flow filter without having passed through the filtering element ;
 - +C filtrate, i.e. the fluid passing through the filter;
 - +D residue retained by the filter due to size;
 - +E retained by adsorption;
 - +F changed by biological action;
 - +H product to be retained or harvested, e.g. by pheresis;
 - +K changed by chemical action;
 - +W product washed out;
 - +Z starting product created by centrifuging.
- U A61M 2202/0413
- A61M 2202/0439
- A61M 2202/0445
- • Blood
 - • • White blood cells; Leucocytes (-lymphocytes [A61M 2202/0407](#)-)
 - • • Proteins (-immunoglobulin [A61M 2202/0417](#) ; beta-2-microglobulin [A61M 2202/0421](#) ; thrombin [A61M 2202/0425](#) ; haemoglobin [A61M 2202/0433](#)-)
- U A61M 2202/0468
- A61M 2202/048
- • non-physiological
 - • • Anaesthetics (-see also [A61M 19/00](#)-)
- U A61M 2205/00** **General characteristics of the apparatus**
- U A61M 2205/33
- U A61M 2205/3379
- A61M 2205/3389
- U A61M 2205/70
- A61M 2205/705
- Controlling, regulating or measuring
 - • Masses, volumes, levels of fluids in reservoirs, flow rates
 - • • Continuous level detection (-[A61M 2205/3393](#) takes precedence-)
 - with testing or calibration facilities
 - • Testing of filters for leaks (-blood in dialysate [A61M 1/1692](#)-)
- U A61M 2210/00** **Anatomical parts of the body**
- U A61M 2210/10
- A61M 2210/1025
- A61M 2210/1042
- Trunk
 - • Respiratory system ([A61M 2210/0618](#) take precedence)
 - • Alimentary tract ([A61M 2210/0618](#) takes precedence)
- U A61M 2230/00** **Measuring parameters of the user**
- NOTE**
- +A following the symbol means that the parameter is used for controlling an apparatus
- The classification symbol [A61M 2230/005](#) is not listed first when assigned to patent documents. It is used only when associated to other subgroups of [A61M 2230/00](#)
- . Example: [A61M 2230/06](#) + [A61M 2230/005](#)
- A61M 2230/30
- Blood pressure (-[A61M 2230/04](#) takes precedence-)

Project: N/A (A61N)

- U A61N 1/00 Electrotherapy; Circuits therefor ([A61N 2/00](#) takes precedence; irradiation apparatus [A61N 5/00](#))**
- U A61N 1/02 · Details
- A61N 1/025 · · {-Digital circuitry features of electrotherapy devices, e.g. memory, clocks, processors}
- U A61N 1/04 · · Electrodes {(electrosurgical electrodes [A61B 18/14](#))}
- A61N 1/0404 · · · {-for external use ([A61N 1/06](#) takes precedence)}
- A61N 1/0408 · · · · {-Use-related aspects}
- A61N 1/0412 · · · · · {-Specially adapted for transcutaneous electroporation, e.g. including drug reservoirs}
- A61N 1/0416 · · · · · · {-Anode and cathode}
- A61N 1/042 · · · · · · {-Material of the electrode}
- A61N 1/0424 · · · · · · {-Shape of the electrode}
- A61N 1/0428 · · · · · {-Specially adapted for iontophoresis, e.g. AC, DC or including drug reservoirs}
- A61N 1/0432 · · · · · · {-Anode and cathode}
- A61N 1/0436 · · · · · · {-Material of the electrode}
- A61N 1/044 · · · · · · {-Shape of the electrode}
- A61N 1/0444 · · · · · · {-Membrane}
- A61N 1/0448 · · · · · · {-Drug reservoir}
- A61N 1/0452 · · · · · {-Specially adapted for transcutaneous muscle stimulation (TMS)}
- A61N 1/0456 · · · · · {-Specially adapted for transcutaneous electrical nerve stimulation (TENS)}
- A61N 1/046 · · · · · {-Specially adapted for shock therapy, e.g. defibrillation}
- A61N 1/0464 · · · · · {-Specially adapted for promoting tissue growth}
- A61N 1/0468 · · · · · {-Specially adapted for promoting wound healing}
- A61N 1/0472 · · · · · {-Structure-related aspects}
- A61N 1/0476 · · · · · {-Array electrodes (*including any electrode arrangement with more than one electrode for at least one of the polarities*)}(*including any electrode arrangement with more than one electrode for at least one of the polarities*)}
- A61N 1/048 · · · · · {-Electrodes characterised by a specific connection between lead and electrode}
- A61N 1/0484 · · · · · {-Garment electrodes worn by the patient}
- A61N 1/0488 · · · · · {-Details about the lead}
- A61N 1/0492 · · · · · {-Patch electrodes ([A61N 1/0412](#), [A61N 1/0428](#) take precedence)}
- A61N 1/0496 · · · · · · {-characterised by using specific chemical compositions, e.g. hydrogel compositions, adhesives}
- U A61N 1/05 · · · for implantation or insertion into the body, e.g. heart electrode ([A61N 1/06](#) takes precedence)
- A61N 1/0502 · · · · · {-Skin piercing electrodes}
- A61N 1/0504 · · · · · {-Subcutaneous electrodes}
- A61N 1/0507 · · · · · {-Electrodes for the digestive system}
- A61N 1/0509 · · · · · {-Stomach and intestinal electrodes}
- A61N 1/0512 · · · · · {-Anal electrodes}
- A61N 1/0514 · · · · · {-Electrodes for the urinary tract}

- A61N 1/0517 {-Esophageal electrodes}
- A61N 1/0519 {-Endotracheal electrodes}
- A61N 1/0521 {-Genital electrodes}
- A61N 1/0524 {-Vaginal electrodes}
- A61N 1/0526 {-Head electrodes ([A61N 1/0551](#) takes precedence)}
- A61N 1/0529 {-Electrodes for brain stimulation}
- A61N 1/0531 {-Brain cortex electrodes}
- A61N 1/0534 {-Electrodes for deep brain stimulation}
- A61N 1/0536 {-Preventing neurodegenerative response or inflammatory reaction}
- A61N 1/0539 {-Anchoring of brain electrode systems, e.g. within burr hole}
- A61N 1/0541 {-Cochlear electrodes}
- A61N 1/0543 {-Retinal electrodes}
- A61N 1/0546 {-Nasal electrodes}
- A61N 1/0548 {-Oral electrodes}
- A61N 1/0551 {-Spinal or peripheral nerve electrodes}
- A61N 1/0553 {-Paddle shaped electrodes, e.g. for laminotomy}
- A61N 1/0556 {-Cuff electrodes}
- A61N 1/0558 {-Anchoring or fixation means therefor}
- U A61N 1/0587 {-Epicardial electrode systems; Endocardial electrodes piercing the pericardium}
- A61N 1/059 {-Anchoring means}
- A61N 1/0592 {-Introducing the lead through the pericardium with a needle}
- A61N 1/0595 {-Temporary leads}
- A61N 1/0597 {-Surface area electrodes, e.g. cardiac harness}
- U A61N 1/18 {-Applying electric currents by contact electrodes}
- U A61N 1/20 {-continuous direct currents}
- U A61N 1/30 {-Apparatus for iontophoresis, {i.e. transfer of media in ionic state by an electromotoric force into the body}, or cataphoresis}
- A61N 1/303 {-Constructional details (electrodes for external use [A61N 1/0428](#))}
- U A61N 1/32 {-alternating or intermittent currents {(applying electric fields by inductive or capacitive coupling [A61N 1/40](#); microwave apparatus [A61N 5/02](#))}
- A61N 1/325 {-for iontophoresis, i.e. transfer of media in ionic state by an electromotoric force into the body (electrodes for external use [A61N 1/0428](#))}
- A61N 1/328 {-for improving the appearance of the skin, e.g. facial toning or wrinkle treatment}
- U A61N 1/36 {-for stimulation, e.g. heart pace-makers}
- A61N 1/36003 {-of motor muscles, e.g. for walking assistance}
- A61N 1/36007 {-of urogenital or gastrointestinal organs, e.g. for incontinence control}
- A61N 1/3601 {-of respiratory organs}
- A61N 1/36014 {-External stimulators, e.g. with patch electrodes (external pacemakers [A61N 1/3625](#))}
- A61N 1/36017 {-with leads or electrodes penetrating the skin}
- A61N 1/36021 {-for treatment of pain}
- A61N 1/36025 {-for treating a mental or cerebral condition}
- A61N 1/36028 {-for aversion therapy}
- A61N 1/36032 {-of the outer, middle or inner ear, e.g. cochlear implants}

- A61N 1/36046 {of the eye} ~~{N0304}~~
- A61N 1/3605 {-Implantable neurostimulators for stimulating central or peripheral nerve system}
- A61N 1/36053 {-adapted for vagal stimulation ([A61N 1/36114](#) takes precedence)}
- A61N 1/36057 {-adapted for stimulating afferent nerves}
- A61N 1/3606 {-adapted for a particular treatment}
- A61N 1/36064 {-Epilepsy}
- A61N 1/36067 {-Movement disorders, e.g. tremor, parkinson (stimulating motor muscle [A61N 1/36003](#))}
- A61N 1/36071 {-Pain}
- A61N 1/36075 {-Headache, migraine}
- A61N 1/36078 {-Inducing or controlling sleep, relaxation (non-implantable stimulator [A61M 21/00](#))}
- A61N 1/36082 {-Cognitive or psychiatric applications, e.g. dementia, Alzheimer's, depression}
- A61N 1/36085 {-Eating disorders and obesity}
- A61N 1/36089 {-Addiction, withdrawal from substance abuse such as alcohol, drugs}
- A61N 1/36092 {-Mental training}
- A61N 1/36096 {-Mood disorders, e.g. depression, anxiety, panic disorder}
- A61N 1/361 {-Phantom sensations e.g. tinnitus}
- A61N 1/36103 {-Neurorehabilitation; repair and reorganisation of neural tissue e.g. after stroke}
- A61N 1/36107 {-Sexual dysfunction (stimulating genital organ [A61N 1/36007](#))}
- A61N 1/3611 {-Respiration control (stimulating respiratory organ [A61N 1/3601](#))}
- A61N 1/36114 {-Cardiac control e.g. by vagal stimulation (stimulating the heart [A61N 1/362](#))}
- A61N 1/36117 {-for treating hypertension}
- A61N 1/36121 {-Production of neurotransmitters; modulation of gene expression}
- A61N 1/36125 {-Details of circuitry or electric components}
- A61N 1/36128 {-Control systems}
- A61N 1/36132 {-using patient feedback}
- A61N 1/36135 {-using a physiological parameter}
- A61N 1/36139 {-with automatic adjustment}
- A61N 1/36142 {-for improving safety}
- A61N 1/36146 {-specified by the stimulation parameters}
- A61N 1/3615 {-Intensity}
- A61N 1/36153 {-Voltage}
- A61N 1/36157 {-Current}
- A61N 1/3616 {-Voltage density or current density}
- A61N 1/36167 {-Timing, e.g. stimulation onset}
- A61N 1/36171 {-Frequency}
- A61N 1/36175 {-Pulse width and/or duty cycle}
- A61N 1/36178 {-Burst or pulse train parameters}
- A61N 1/36182 {-Direction of the electrical field, e.g. with sleeve around stimulating electrode}

	A61N 1/36185	. . . . . {-Selection of the electrode configuration}
	A61N 1/36189	. . . . . {-using a modulation technique}
	A61N 1/36192	. . . . . {-Amplitude modulation}
	A61N 1/36196	. . . . . {-Frequency modulation}
U	A61N 1/362	. . . . Heart stimulators (heart defibrillators A61N 1/39)
U	A61N 1/3621	. . . . . {for treating or preventing abnormally high heart rate}
	A61N 1/3624	. . . . . {-occurring in the atrium, i.e. atrial tachycardia}
	A61N 1/3628	. . . . . {-using subthreshold, non-excitatory signals}
U	A61N 1/365	. . . . . controlled by a physiological parameter, e.g. heart potential {(evoked response A61N 1/371)}
U	A61N 1/36514	. . . . . {controlled by a physiological quantity other than heart potential, e.g. blood pressure (controlled by two or more physical parameters A61N 1/36585)}
	A61N 1/36535	. . . . . {-controlled by body position or posture}
	A61N 1/36571	. . . . . {-controlled by blood flow rate, e.g. blood velocity or cardiac output}
	A61N 1/36578	. . . . . {-controlled by mechanical motion of the heart wall, e.g. measured by an accelerometer or microphone}
	A61N 1/36592	. . . . . {-controlled by the heart rate variability}
U	A61N 1/368	. . . . . comprising more than one electrode co-operating with different heart regions {(A61N 1/3622 , A61N 1/3627 take precedence)}
	A61N 1/3682	. . . . . {-with a variable atrioventricular delay}
	A61N 1/3684	. . . . . {-for stimulating the heart at multiple sites of the ventricle or the atrium, e.g. biventricular stimulation}
	A61N 1/3686	. . . . . {-configured for selecting the electrode configuration on a lead (A61N 1/3688 takes precedence)}
	A61N 1/3688	. . . . . {-configured for switching the pacing mode, e.g. from AAI to DDD}
U	A61N 1/37	. . . . . Monitoring; Protecting
U	A61N 1/371	. . . . . {Capture, i.e. successful stimulation}
U	A61N 1/3712	. . . . . {Autocapture, i.e. automatic adjustment of the stimulation threshold}
	A61N 1/3714	. . . . . {-Atrial capture}
	A61N 1/3716	. . . . . {-with reduction of residual polarisation effects}
	A61N 1/3718	. . . . . {-Monitoring of or protection against external electromagnetic fields or currents}
U	A61N 1/372	. . . . Arrangements in connection with the implantation of stimulators
	A61N 1/37205	. . . . . {-Microstimulators, e.g. implantable through a cannula}
	A61N 1/37211	. . . . . {-Means for communicating with stimulators}
	A61N 1/37217	. . . . . {-characterised by the communication link, e.g. acoustic or tactile}
	A61N 1/37223	. . . . . {-Circuits for electromagnetic coupling}
	A61N 1/37229	. . . . . {-Shape or location of the implanted or external antenna}
	A61N 1/37235	. . . . . {-Aspects of the external programmer}
	A61N 1/37241	. . . . . {-providing test stimulations}
	A61N 1/37247	. . . . . {-User interface, e.g. input or presentation means}
	A61N 1/37252	. . . . . {-Details of algorithms or data aspects of communication system, e.g. handshaking, transmitting specific data or segmenting data}
	A61N 1/37258	. . . . . {-Alerting the patient}
	A61N 1/37264	. . . . . {-Changing the program; Upgrading firmware}

- A61N 1/3727 · · · · · {characterised by the modulation technique}
- A61N 1/37276 · · · · · {characterised by means for reducing power consumption during telemetry}
- A61N 1/37282 · · · · · {characterised by communication with experts in remote locations using a network}
- A61N 1/37288 · · · · · {Communication to several implantable medical devices within one patient}
- U A61N 1/375 · · · · · Constructional arrangements, e.g. casings
- A61N 1/3756 · · · · · {Casings with electrodes thereon, e.g. leadless stimulators}
- A61N 1/3758 · · · · · {Packaging of the components within the casing}
- U A61N 1/378 · · · · · Electrical supply
- A61N 1/3782 · · · · · {producing a voltage above the power source level}
- U A61N 1/38 · · · for producing shock effects (in general [H05C 1/00](#))
- U A61N 1/39 · · · · · Heart defibrillators
- U A61N 1/3906 · · · · · {characterised by the form of the shockwave}
- A61N 1/3912 · · · · · {Output circuitry therefor, e.g. switches}
- A61N 1/395 · · · · · {for treating atrial fibrillation}
- U A61N 1/3975 · · · · · {Power supply ([A61N 1/378](#) takes precedence)}
- A61N 1/3981 · · · · · {High voltage charging circuitry}
- A61N 1/3993 · · · · · {User interfaces for automatic external defibrillators}
- U A61N 2/00** **Magnetotherapy**
- U A61N 2/004 · {specially adapted for a specific therapy}
- A61N 2/008 · · {for pain treatment or analgesia}
- U A61N 5/00** **Radiation therapy (ultrasound therapy [A61N 7/00](#); devices or apparatus applicable to both therapy and diagnosis [A61B 6/00](#))**
- U A61N 5/02 · using microwaves
- A61N 5/022 · · {Apparatus adapted for a specific treatment}
- A61N 5/025 · · · {Warming the body, e.g. hyperthermia treatment (heating by RF [A61N 1/403](#); heating by infrared radiation [A61N 5/0625](#); heating by other appliances [A61F 7/00](#); hot air bath [A61H 33/06](#))}
- U A61N 5/04 · · Radiators for near-field treatment
- A61N 5/045 · · · {specially adapted for treatment inside the body ([A61B 18/1815](#) takes precedence)}
- U A61N 5/06 · using light
- U A61N 5/0601 · · {Apparatus for use inside the body (illuminating body cavities [A61B 1/06](#); diagnosis by radiation applied to body cavities [A61B 6/4057](#), [A61B 6/145](#); devices for heating or cooling body cavities [A61F 7/12](#); X-ray tubes having a small cross-section to facilitate introduction into small cavities [H01J 35/32](#))}
- A61N 5/0603 · · · {for treatment of body cavities}
- A61N 5/0613 · · {Apparatus adapted for a specific treatment}
- A61N 5/0614 · · · {Tanning}
- A61N 5/0616 · · · {Skin treatment other than tanning}
- A61N 5/0617 · · · · {Hair treatment}
- A61N 5/0618 · · · {Psychological treatment ([A61M 21/00](#) takes precedence)}
- A61N 5/0619 · · · {Acupuncture (Acupuncture in general [A61H 39/00](#))}
- A61N 5/062 · · · {Photodynamic therapy, i.e. excitation of an agent}

- A61N 5/0621 . . . {Hyperbilirubinemia, jaundice treatment}
- A61N 5/0622 . . . {-Optical stimulation for exciting neural tissue}
- A61N 5/0624 . . . {-for eliminating microbes, germs, bacteria on or in the body (sterilization by radiation [A61L 2/08](#), [A61L 2/10](#))}
- A61N 5/0625 . . . {-Warming the body, e.g. hyperthermia treatment (heating by RF [A61N 1/403](#); heating by microwave [A61N 5/025](#); heating by other appliances [A61F 7/00](#); hot air bath [A61H 33/06](#))}
- U A61N 5/10 . . . X-ray therapy; Gamma-ray therapy; Particle-irradiation therapy ([A61N 5/01](#) takes precedence; {radiation diagnosis, e.g. combined with radiation therapy [A61B 6/00](#); irradiation devices in general [G21K 1/00](#); X-ray tubes, Lenard tubes [H01J 35/00](#); X-ray techniques, in particular circuits for feeding or controlling X-ray tubes, [H05G](#)})
- A61N 5/1001 . . . {-using radiation sources introduced into or applied onto the body; brachytherapy}
- A61N 5/1007 . . . {-Arrangements or means for the introduction of sources into the body (needle guides in general [A61B 17/3403](#); apparatus for implanting surgical devices [A61B 17/3468](#); devices for implanting seeds or pellets in general [A61M 37/0069](#))}
- U A61N 5/1014 . . . {Intracavitary radiation therapy}
- A61N 5/1015 {-Treatment of resected cavities created by surgery e.g. lumpectomy}
- A61N 5/1016 {-Gynaecological radiation therapy}
- A61N 5/1017 {-Treatment of the eye, e.g. for "macular degeneration"}
- A61N 5/1028 . . . {-using radiation sources applied onto the body}
- A61N 5/1029 {-Radioactive dressings (dressings in general [A61F](#), [A61L 15/00](#))}
- U A61N 5/103 . . . {Treatment planning systems}
- A61N 5/1031 . . . {-using a specific method of dose optimization}
- A61N 5/1036 . . . {-Leaf sequencing algorithms}
- A61N 5/1037 . . . {-taking into account the movement of the target, e.g. 4D-image based planning}
- A61N 5/1038 . . . {-taking into account previously administered plans applied to the same patient, i.e. adaptive radiotherapy}
- A61N 5/1039 . . . {-using functional images, e.g. PET or MRI}
- A61N 5/1042 . . . {-with spatial modulation of the radiation beam within the treatment head}
- A61N 5/1043 . . . {-Scanning the radiation beam, e.g. spot scanning or raster scanning}
- A61N 5/1044 {-with multiple repetitions of the scanning pattern}
- A61N 5/1045 . . . {-using a multi-leaf collimator, e.g. for intensity modulated radiation therapy or IMRT}
- A61N 5/1047 {-with movement of the radiation head during application of radiation, e.g. for intensity modulated arc therapy or IMAT}
- A61N 5/1048 . . . {-Monitoring, verifying, controlling systems and methods}
- A61N 5/1049 . . . {-for verifying the position of the patient with respect to the radiation beam}
- A61N 5/1064 . . . {-for adjusting radiation treatment in response to monitoring}
- A61N 5/1065 {-Beam adjustment}
- A61N 5/1067 {-in real time, i.e. during treatment}
- A61N 5/1068 {-Gating the beam as a function of a physiological signal }
- A61N 5/1069 {-Target adjustment, e.g. moving the patient support}
- A61N 5/107 {-in real time, i.e. during treatment}
- A61N 5/1071 . . . {-for verifying the dose delivered by the treatment plan}

- A61N 5/1075 . . . {for testing, calibrating, or quality assurance of the radiation treatment apparatus}
- A61N 5/1077 . . {Beam delivery systems}
- A61N 5/1078 . . . {Fixed beam systems}
- A61N 5/1079 . . . {Sharing a beam by multiple treatment stations}
- A61N 5/1081 . . . {Rotating beam systems with a specific mechanical construction, e.g. gantries}
- A61N 5/1082 {having multiple beam rotation axes}
- A61N 5/1083 . . . {Robot arm beam systems}
- A61N 5/1084 . . . {for delivering multiple intersecting beams at the same time, e.g. gamma knives}

Project: N/A (A61Q)**U A61Q 1/00****Make-up preparations; Body powders; Preparations for removing make-up**

- U A61Q 1/02 . Preparations containing skin colorants, e.g. pigments (preparations in powder form [A61Q 1/12](#))
- A61Q 1/025 . . {Semi-permanent tattoos, stencils, e.g. "permanent make-up"}
- U A61Q 1/14 . Preparations for removing make-up
- A61Q 1/145 . . {Tattoo removal}

U A61Q 5/00**Preparations for care of the hair**

- A61Q 5/002 . {Preparations for repairing the hair, e.g. hair cure}
- A61Q 5/004 . {Preparations used to protect coloured hair}
- A61Q 5/006 . {Antidandruff preparations}
- A61Q 5/008 . {Preparations for oily hair}

A61Q 17/00**Barrier preparations; Preparations brought into direct contact with the skin for affording protection against external influences, e.g. sunlight, X-rays or other harmful rays, corrosive materials, bacteria or insect stings (chemical means for combating harmful chemical agents [A62D 3/00](#)) Note: drugs for treating burns [A61P17/02](#)**

- A61Q 17/005 . {Antimicrobial preparations}

U A61Q 19/00**Preparations for care of the skin**

- A61Q 19/001 . {Preparations for care of the lips}
- A61Q 19/002 . {Aftershave preparations}
- A61Q 19/004 . {Aftersun preparations}
- A61Q 19/005 . {Preparations for sensitive skin}
- A61Q 19/007 . {Preparations for dry skin}
- A61Q 19/008 . {Preparations for oily skin}

Project: N/A (A62B)**U A62B 23/00****Filters for breathing-protection purposes (gas-filters in general [B01D](#))**

- U A62B 23/02 . for respirators
- A62B 23/025 . . {the filter having substantially the shape of a mask (surgical face masks [A41D 13/11](#))}

- U A62B 35/00** **Safety belts or body harnesses; Similar equipment for limiting displacement of the human body, especially in case of sudden changes of motion (buckles [A44B 11/00](#); accessories for children's furniture [A47D 15/00](#); children's seats [B60N 2/24](#); safety belts or body harnesses for land vehicles [B60R 22/00](#); harnesses for parachutes [B64D 17/30](#); harnessing in aircraft [B64D 25/06](#); releasable fastenings [F16B](#))**
- A62B 35/0006 · {Harnesses; Accessories therefor}
 - A62B 35/0012 · · {Sit harnesses}
 - A62B 35/0018 · · {Full body harnesses covering at least shoulders and thighs}
 - A62B 35/0025 · · {Details and accessories}
 - A62B 35/0031 · · · {Belt sorting accessories, e.g. devices keeping the belts in comfortable positions}
 - A62B 35/0037 · · · {Attachments for lifelines and lanyards (lifelines, lanyards [A62B 35/0043](#))}
 - A62B 35/0043 · {Lifelines, lanyards, and anchors therefore (attachments [A62B 35/0037](#))}
 - A62B 35/005 · · {Vertical lifelines}
 - A62B 35/0056 · · {Horizontal lifelines}
 - A62B 35/0062 · · {Rail-form lifelines for permanent installation}
 - A62B 35/0068 · · {Anchors}
 - A62B 35/0075 · · {Details of ropes or similar equipment, e.g. between the secured person and the lifeline or anchor}
 - A62B 35/0081 · {Equipment which can travel along the length of a lifeline, e.g. travelers}
 - A62B 35/0087 · · {Arrangements for bypassing lifeline supports without lanyard disconnection}
 - A62B 35/0093 · {Fall arrest reel devices}

Project: N/A (A62C)**A62C**

FIRE-FIGHTING (-fire-extinguishing compositions, use of chemical substances in extinguishing fires [A62D 1/00](#) ; spraying, applying liquids or other fluent materials to surfaces in general [B05](#); alarm arrangements [G08B](#), e.g. fire alarms actuated by smoke or gases [G08B 17/10](#)-)

A62C 2/00

Fire prevention or containment (-[A62C 3/00](#) takes precedence; flame traps [A62C 4/00](#)-)

- U A62C 2/06** · Physical fire-barriers
- A62C 2/065 · · {having as the main closure device materials, whose characteristics undergo an irreversible change under high temperatures, e.g. intumescent (intumescent materials forming part of the mechanism of another main closure device, see the relevant class)}
- A62C 2/08 · · Water curtains (-nozzles [A62C 31/02](#)-)

Project: RP0118 (A62C)**A62C 2/24**

- · Operating or controlling mechanisms{(-emergency operation of doors and windows [E05F 1/002](#) , [E05F 15/2015](#) -[E05F 15/72](#))}

Project: N/A (A62C)**A62C 3/00**

Fire prevention, containment or extinguishing specially adapted for particular objects or places ({ in oil wells [E21B 29/08](#) , [A62C 35/00](#) ; in mines or tunnels [E21F 5/00](#) } ; for nuclear reactors [G21C 9/04](#)-)

- A62C 3/008
 - {for decorations, e.g. Christmas trees (~~Christmas tree decorations incorporating fire extinguishing or fire prevention means A47G 33/0872~~; *Christmas tree decorations incorporating fire extinguishing or fire prevention means A47G 33/0872* ; blowing or snuffing out candle-flames [F23Q 25/00](#)-)}
- U A62C 3/02
 - for area conflagrations, e.g. forest fires, subterranean fires
- A62C 3/0228
 - · {with delivery of fire extinguishing material by air or aircraft (~~fire-fighting aircraft [B64D 1/16](#)~~-)}
- A62C 3/0242
 - · · {by spraying extinguishants from the aircraft (~~spraying from aircraft in general [B64D 1/16](#)~~-)}
- A62C 3/025
 - · · {Fire extinguishing bombs; Projectiles and launchers therefor (~~launching apparatus for projectiles, missiles or torpedoes in general [F41F 1/00](#) , [F41F 3/00](#) , [F41F 7/00](#)~~-)}
- A62C 3/0271
 - · {Detection of area conflagration fires (~~fire alarms for forest fires [G08B 17/005](#)~~-)}
- A62C 3/0292
 - · {by spraying extinguishants directly into the fire (~~A62C 3/0242 takes precedence~~-)}
- A62C 3/04
 - for dust or loosely-baled or loosely-piled materials, e.g. in silos, in chimneys (~~flame traps [A62C 4/00](#)~~-)
- U A62C 3/07
 - in vehicles, e.g. in road vehicles
- A62C 3/08
 - · in aircraft(~~A62C 3/0207 takes precedence~~-)}
- A62C 3/10
 - · in ships(~~A62C 3/0207 takes precedence~~-)}
- U **A62C 4/00**

Flame traps allowing passage of gas but not of flame or explosion wave
- A62C 4/02
 - in gas-pipes (~~safety valves [F16K 17/00](#)~~-)
- A62C 5/00**

Making of fire-extinguishing materials immediately before use (~~nozzles [A62C 31/02](#)~~-)
- A62C 5/004
 - {for producing carbon-dioxide snow, carbon-dioxide ice, carbon-dioxide gas, carbon-dioxide liquid, or mixtures thereof (~~carbon-dioxide jet-pipes or snow jet-pipes [A62C 31/03](#)~~-)}
- U A62C 5/02
 - of foam
- U A62C 5/022
 - · {with air or gas present as such}
- A62C 5/024
 - · · {Apparatus in the form of pipes (~~jet-pipes for foam [A62C 31/12](#)~~-)}
- A62C 5/033
 - of gel
- A62C 13/00**

Portable extinguishers which are permanently pressurised or pressurised immediately before use (~~A62C 11/00 takes precedence~~-)
- U A62C 13/02
 - with pressure gas produced by chemicals
- U A62C 13/04
 - · with separate acid container
- U A62C 13/08
 - · · with acid container with closure device
- A62C 13/10
 - · · · with loose-lid closure device (~~loosely-engaging lids or covers for containers for liquids without means for effecting sealing of container in general [B65D 51/02](#)~~-)
- A62C 15/00**

Extinguishers essentially of the knapsack type (~~knapsacks, carrying-frames, pack-frames carried on the body [A45F 3/00](#)~~-)
- A62C 27/00 -
A62C 33/00

Fire-fighting vehicles (~~A62C 31/00 , [A62C 33/00](#) , [A62C 37/00](#) take precedence; vehicle aspects, see the appropriate subclasses of [B60](#) to [B64](#) , e.g. fire-fighting aircraft [B64D 1/16](#)-)~~
- A62C 31/00**

Delivery of fire-extinguishing material (~~pumps [F04](#) ; {suction or pressure}hoses,{joints or couplings therefor} [F16L](#)~~-)
- A62C 31/005
 - {using nozzles (see warning after subclass title)}

- U A62C 33/00** **Hose accessories**
- A62C 33/02 · Apparatus for cleaning or drying hoses (-drying shelves [F26B](#)-)
 - A62C 33/06 · Hose or pipe bridges
- A62C 35/00** **Permanently-installed equipment (-A62C 31/00 , A62C 33/00 , A62C 37/00 take precedence; for forming water curtains [A62C 2/08](#)-)**
- U A62C 35/02** · with containers for delivering the extinguishing substance
- A62C 35/023** · · {the extinguishing material being expelled by compressed gas, taken from storage tanks, or by generating a pressure gas (-for foam generation [A62C 5/02](#)-)}
- A62C 35/20** · Hydrants, e.g. wall-hoses, wall units, plug-in cabinets (-hydrants in streets [E03B 9/02](#)-)
- U A62C 35/58** · Pipe-line systems
- U A62C 35/60** · · wet, i.e. containing extinguishing material even when not in use
- A62C 35/605** · · · {operating and sounding alarm automatically (see warning after subclass title)}
- U A62C 35/64** · · pressurised
- A62C 35/645** · · · {with compressed gas in pipework (see warning after subclass title)}
- A62C 35/68** · · Details, e.g. of pipes or valve systems (-valves in general [F16K](#)-)
- A62C 37/00** **Control of fire-fighting equipment (-heat-sensitive devices [G01K](#)-)**

WARNING

Groups [A62C 37/04](#) and [A62C 37/28](#) are no longer used for the classification of new documents. Documents of these groups will be systematically transferred to groups [A62C 37/36](#) to [A62C 37/48](#)

- U A62C 99/00** **Subject matter not provided for in other groups of this subclass**
- A62C 99/009 · {-Methods or equipment not provided for in groups [A62C 99/0009](#) to [A62C 99/0081](#)-}

Project: N/A (A63B)**A63B****APPARATUS FOR PHYSICAL TRAINING, GYMNASTICS, SWIMMING, CLIMBING, OR FENCING; BALL GAMES; TRAINING EQUIPMENT (apparatus for passive exercising, massage [A61H](#))****WARNING**

1. The following IPC groups are not used in the internal classification scheme. Subject matter covered by these groups is classified in the following CPC groups:

A63B 7/06	covered by	A63G 1/00	
A63B 21/075	covered by	A63B 21/072	
A63B 21/08	covered by	A63B 21/06	
A63B 22/08	covered by	A63B 22/0605	in
absence of	A63B 22/0002		
A63B 22/10	covered by	A63B 22/0605	in
combination with	A63B 22/0002		
A63B 22/12	covered by	A63B 22/0605	in
combination with	A63B 22/001		
A63B 29/04	covered by	A63B 29/00	
A63B 31/16	covered by	A63B 31/14	
A63B 49/06	covered by	A63B 49/02	
A63B 51/16	covered by	A63B 51/14	
A63B 55/06	covered by	A63B 55/04	
A63B 63/02	covered by	A63B 63/00	

[A63B 63/04](#) covered by [A63B 63/00](#)
[A63B 69/22](#) covered by [A63B 69/20](#)
[A63B 69/28](#) covered by [A63B 69/20](#)
[A63B 69/30](#) covered by [A63B 69/20](#)
[A63B 71/16](#) covered by [A63B 71/081](#)

**A63B 1/00 -
A63B 26/00** **Gymnastic exercising apparatus (training apparatus for special sports
A63B 69/00 ; apparatus for passive exercising, massage A61H-)**

A63B 5/00 **Apparatus for jumping (-mats for jumping A63B 6/00 ; for racing or riding
sports, e.g. hurdles A63K-)**

- U A63B 5/02
 - High-jumping posts
- A63B 5/04
 - · Ropes {or similar devices}therefor
- A63B 5/08
 - Spring-boards (-of trampoline type [A63B 5/11](#) ; { in the form of spring mats
[A63B 6/00](#))}
- A63B 5/16
 - Training devices for jumping; Devices for balloon-jumping; Jumping
aids((-[A63B 25/02](#) , [A63B 25/10](#) take precedence-))
- A63B 5/20
 - Skipping-ropes {or similar devices rotating in a vertical plane}

A63B 6/00 **Mats or the like for absorbing shocks for jumping, gymnastics or the
like((-for jogging on the spot [A63B 69/0035](#) ; resiliently-mounted floors
[E04F 15/22](#) -))**

- A63B 6/02
 - for landing, e.g. for pole vaulting((-jumping-mattresses for rescue [A62B 1/22](#)-))

A63B 9/00 **Climbing poles, frames, or stages((-climbing walls for mountaineering
training [A63B 69/0048](#) ; endless loop ladders [A63B 22/04](#) -))**

WARNING

Documents are being reclassified to [A63B 21/072](#) ; [A63B 21/0728](#) is complete

U A63B 15/00 **Clubs,{e.g. for swinging exercises}**

WARNING

Documents are being reclassified to [A63B 21/072](#)

- A63B 15/005
 - {with a weight movable along the longitudinal axis of the club due to centrifugal
forces (-in tennis rackets [A63B 59/0096](#) -)}

A63B 19/00 **Hoop exercising apparatus((- [A63B 21/0608](#) takes precedence; not driven by
the user, e.g. motor driven, [A63G 29/00](#) , [A63G 31/00](#) -))**

- A63B 19/02
 - Freely-movable rolling hoops, e.g. gyrowheels {or spheres or cylinders,
carrying the user inside(-resisting devices overcoming gyroscopic forces
of rotating bodies [A63B 21/22](#) ; standing on it for equilibrium exercises
[A63B 26/003](#) ; spherical hulls or hulls in the shape of a vertical ring for use in
water [B63B 1/047](#) -)}
- A63B 19/04
 - movably supported on a framework {or spheres or cylinders carrying the user
inside(-standing on it for equilibrium exercises [A63B 26/003](#) -)}

A63B 21/00 **Exercising apparatus for developing or strengthening the muscles or joints
of the body by working against a counterforce, with or without measuring
devices (-electric or electronic controls therefor [A63B 24/00](#) ; measuring
muscular strength [A61B 5/22](#) -)**

- U A63B 21/00003
 - {Special force transmissions therefor}
- A63B 21/00007
 - · {using flexible elements for reciprocating movements, e.g. ropes, chain
(flexible ropes or chains for transmission between rotating axes or pulleys
n.c.)}(flexible ropes or chains for transmission between rotating axes or
pulleys n.c.)}

- A63B 21/00014
- • • {wound up and unwound during exercise, e.g. from a reel, rewind reels [B65H 75/00](#)}
- A63B 21/00036
- • {Hydraulic transmission, hydraulic resistance [A63B 21/0081](#)}
- A63B 21/0004
- {Exercise device moving as a whole during exercise, bar bells and dumb bells [A63B 21/072](#) t.p., on wheels [A63B 22/20](#)}
- A63B 21/00043
- • {exercise device consisting of a pair of interfaces with the user connected by flexible elements, e.g. two handles connected by elastic bands, skipping ropes [A63B 5/20](#) t.p., resilient element [A63B 21/02](#)}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00047
- Exercise device not moving during use, benches [A63B 21/00087](#) t.p., isometric exercising [A63B 21/0023](#) , step exerciser [A63B 23/0458](#) t.p., walk exerciser [A63B 23/0464](#) t.p.]
- A63B 21/00058
- {Mechanical means for variation of the resistance (~~-[A63B 21/06](#) takes precedence-~~)}
- WARNING
not complete, pending the completion of a reclassification
- U A63B 21/00079
- {details of the interface with the user related to strength training}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00083
- • {kind of exercise interface; chairs and stools with exercising means [A47C 9/002](#)}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00087
- • • {benches specifically designed for exercising; for bench press [A63B 21/078](#)}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00105
- • • {exercise mats with or without hand or foot grips for personal use, e.g. for Yoga or supine floor exercises; mats for absorbing shocks [A63B 6/00](#) t.p.-}
- WARNING
not complete, pending the completion of a reclassification
- U A63B 21/00112
- • {movement of the interface}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00116
- • • {free movement, unrestricted apart from by the resistance; [A63B 21/072](#) t.p.; [A63B 21/00043](#) t.p-}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/0012
- • • {reciprocating movement of the interface along (in/on) a guide, weights moving along or in guiding means [A63B 21/06](#) , for cardio-training [A63B 22/201](#)}
- WARNING
not complete, pending the completion of a reclassification

- A63B 21/00123
 - • {pivoting movement of the interface, weight pivoting [A63B 21/08](#)}
 - WARNING
 - not complete, pending the completion of a reclassification
- A63B 21/0013
 - • direct manipulation of the resistance, dumb bells, bar bells or the like [A63B 21/072](#) t.p.]
 - WARNING
 - not complete, pending the completion of a reclassification
- A63B 21/00134
 - • {resisting device worn on the body; weights worn on user's body [A63B 21/065](#) t.p.}
- A63B 21/00138
 - • {Attachments of exercising apparatus to the body of the user, e.g. using special belts, shoes or gloves, weights worn on user's body [A63B 21/065](#) t.p., exoskeletons [B25J 9/0006](#)}
- A63B 21/00156
 - • {to the lower limbs, means for physically limiting movements of body parts [A63B 69/0053](#)}
- A63B 21/00185
 - {Resistance force provided by the user himself, e.g. exercising one body part against a resistance provided by another body part (~~-[A63B 21/068](#) takes precedence~~; isometric exercise [A63B 21/0023](#)-)}
- A63B 21/00192
 - {Resistance force provided by magnetic means (~~-[A63B 21/005](#) takes precedence~~-)}
- A63B 21/00196
 - {Pulsed counterforce; e.g. vibrating resistance means (~~-[A61H 1/005](#) takes precedence~~-)}
- A63B 21/002
 - isometric or isokinetic, i.e. substantial force variation without substantial muscle motion {or wherein the speed of the motion is independent of the force applied by the user}
- U A63B 21/005
 - using electromagnetic or electric force-resisters
- U A63B 21/0051
 - • {using eddy-currents induced in moved elements, e.g. by permanent magnets}
- A63B 21/0052
 - • {induced by electromagnets (~~-[A63B 21/0056](#) takes precedence~~-)}
- A63B 21/008
 - using hydraulic or pneumatic force-resisters {not used, see subgroups}
- U A63B 21/0081
 - • {using hydraulic force-resisters}
- A63B 21/0083
 - • {of the piston-cylinder type (~~-shock absorbers in general [F16F 9/00](#)-)}~~
- A63B 21/0084
 - • {by moving the ambient water (~~-[A63B 31/00](#) , [A63B 35/00](#) take precedence~~-)}
- A63B 21/012
 - using frictional force-resisters{(~~-electromagnetically-controlled brakes [A63B 21/0056](#)-)}~~
- A63B 21/015
 - • including rotating or oscillating elements {rubbing against fixed elements}
- A63B 21/018
 - • including a rope {or other flexible element}moving relative to the surface of elements
- U A63B 21/02
 - using resilient force-resisters
- A63B 21/026
 - • {Bars; Tubes; Leaves (~~-[A63B 21/023](#) takes precedence~~-)}
- A63B 21/045
 - • having torsion {or bending, flexion}element
- A63B 21/05
 - • Linearly-compressed elements{(~~-[A63B 21/028](#) takes precedence~~-)}
- U A63B 21/06
 - User-manipulated weights
- U A63B 21/0611
 - • {to be launched or thrown along guiding means against gravity forces}
- A63B 2021/0614
 - • {with substantially vertical guiding means (~~-[A63B 21/062](#) takes precedence~~-)}

- U A63B 21/14
 - {Details of the interface with the user related to strength training}
 - WARNING
This group and its subgroups are not complete pending the completion of a reclassification; see also the other subgroups of [A63B 21/00](#)
- A63B 21/1403
 - • {Attachments of exercising apparatus to the body of the user, e.g. using special belts, shoes or gloves (~~-A63B 21/065 takes precedence, Exoskeletons B25J 9/0006-~~)}
- A63B 21/1423
 - • • {to the lower limbs (~~-means for physically limiting movements of body parts A63B 69/0053-~~)}
- A63B 21/1446
 - • {Direct manipulation of the resistance} (~~-A63B 21/072 takes precedence-~~)
- A63B 21/1449
 - • • {Resisting device worn on the body (~~-A63B 21/065 takes precedence-~~)}
- A63B 21/1453
 - • {Kind of exercise interface (~~-chairs and stools with exercising means A47C 9/002-~~)}
- A63B 21/1457
 - • • {Benches specifically designed for exercising (~~-for bench press A63B 21/078-~~)}
- A63B 21/1473
 - • • {Exercise mats with or without hand or foot grips for personal use, e.g. for Yoga or supine floor exercises (~~-A63B 6/00 takes precedence-~~)}
- A63B 21/1476
 - • • {Contoured to fit to specific body parts; e.g. back, knee or neck support (~~-A63B 21/1403 , A63B 21/1465 take precedence-~~)}
- U A63B 21/148
 - • {Movement of the interface}
- A63B 21/1484
 - • • {Free movement, unrestricted apart from by the resistance (~~-A63B 21/00043 , A63B 21/072 take precedence-~~)}
- A63B 21/1488
 - • • {Reciprocating movement of the interface along, in or on a guide (~~-weights moving along or in guiding means A63B 21/06 , for cardio-training A63B 22/201-~~)}
- A63B 21/1492
 - • • {Pivoting movement of the interface (~~-weight pivoting A63B 21/08-~~)}
- U A63B 21/15
 - {Special force transmissions therefor}
- U A63B 21/151
 - • {Using flexible elements for reciprocating movements, e.g. ropes, chain}
- A63B 21/153
 - • • {Wound up and unwound during exercise, e.g. from a reel (~~-rewind reels B65H 75/00-~~)}
- A63B 21/158
 - • {Hydraulic transmissions (~~-hydraulic resistance A63B 21/0081-~~)}
- U A63B 21/16
 - Supports for anchoring force-resisters
- A63B 21/1618
 - • {not used, see subgroups and [A63B 21/16](#)}
- A63B 21/22
 - Resisting devices with rotary bodies, {e.g. by overcoming gyroscopic forces (~~-A63B 21/0608 takes precedence-~~)}
- A63B 22/00**

Exercising apparatus specially adapted for conditioning the cardio-vascular system, for training agility or co-ordination of movements (~~-force-resisting aspects [A63B 21/00](#) ; { for particular parts of the body, e.g. to strengthen particular limbs or muscles [A63B 23/00](#) ; } electric or electronic controls therefor [A63B 24/00](#)-)~~

NOTE
In this subclass, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its groups, which is considered to represent information of interest for search, may also be classified in each of those groups.
- A63B 22/0002
 - {involving an exercising of arms (~~-for strengthening the upper limbs [A63B 23/12](#)-)~~}
- A63B 22/001
 - • {by simultaneously exercising arms and legs, e.g. diagonally in anti-phase (~~-A63B 22/0076 takes precedence-~~)}

- A63B 22/0046 · {Details of the support elements or their connection to the exercising apparatus, e.g. adjustment of size or orientation} (-attachments of resisters or weights to the body of the user [A63B 21/1403](#) ; using rollers, wheels, castors or gliding means to be moved over the floor or guide tracks [A63B 22/20](#)-)}
- A63B 22/0048 · {with cantilevered support elements pivoting about an axis} (-[A63B 22/0076](#) takes precedence-)}
- A63B 22/0056 · · {the pivoting movement being in a vertical plane, e.g. steppers with a horizontal axis} (-platforms for rocking motion about a horizontal axis [A63B 22/16](#)-)}
- A63B 22/0061 · · {the pivoting movement being in a horizontal plane, e.g. skating movement} (-platforms for reciprocating rotating motion about a vertical axis [A63B 22/14](#)-)}
- A63B 22/0076 · {Rowing machines} (-seats moving during exercise [A63B 22/0087](#) ; training appliances for rowing or sculling on boats [A63B 69/06](#)-)}
- A63B 22/0087 · {with a seat or torso support moving during the exercise, e.g. reformers} (-[A63B 22/0076](#) takes precedence-)}
- A63B 22/0089 · · {a counterforce being provided to the support} (-force-resisting aspects [A63B 21/00](#)-)}
- A63B 22/02 · with movable endless bands{, e.g. treadmills (other training appliances for running on the spot [A63B 69/0028](#)-)}
- A63B 22/04 · with movable{multiple}steps,{i.e. more than one step per limb, e.g. steps mounted on endless loops, endless ladders}(-steppers with cantilevered support elements pivoting about an axis [A63B 22/0048](#)-)}
- A63B 22/06 · with{support elements performing a}rotating cycling movement,{i.e. a closed path movement}(-support stands for bicycles [A63B 69/16](#) ; unicycles [B62K 1/00](#)-)}
- A63B 22/14 · Platforms for reciprocating rotating motion about a vertical axis {e.g. axis through the middle of the platform}
- A63B 22/16 · Platforms for rocking motion about a horizontal axis {e.g. axis through the middle of the platform}; Balancing drums; Balancing boards or the like{(-exercising apparatus with cantilevered support elements pivoting about an axis [A63B 22/0056](#) ; other exercising apparatus for improving balance [A63B 26/003](#)-)}
- A63B 22/18 · with elements,{i.e. platforms,}having a circulating,{nutating}or rotating movement, generated by oscillating movement of the user,{e.g. platforms wobbling on a centrally arranged spherical support} (-hoop exercising apparatus [A63B 19/00](#) ; { eccentric weights put into orbital motion by nutating movement of the user [A63B 21/0608](#) ; pots rotating or rocking by moving the whole body [A63G 23/00](#))}
- U A63B 22/20 · using rollers, wheels, castors or the like,{e.g. gliding means,}to be moved over the floor or other surface,{e.g. guide tracks,}during exercising
- U A63B 22/201 · · {for moving a support element in reciprocating translation, e.g. for sliding back and forth on a guide track}
- A63B 22/205 · · · {in a substantially vertical plane, e.g. for exercising against gravity}(-exercising for developing or strengthening the muscles or joints of the body by working against a user's body weight [A63B 21/068](#) ; with adjustable inclination [A63B 22/0023](#)-)}
- A63B 23/00** **Exercising apparatus specially adapted for particular parts of the body** (-[A63B 22/00](#) takes precedence; force-resisting aspects [A63B 21/00](#) ; electric or electronic controls therefor [A63B 24/00](#) ; devices for exercising or strengthening of fingers, or arms in teaching operation of keyboards [G09B 15/06](#)-)

- A63B 23/02
- for the abdomen, the spinal column or the torso {muscles related to shoulders (e.g. chest muscles)} (e.g. chest muscles)}
- U A63B 23/0233
- {Muscles of the back, e.g. by an extension of the body against a resistance, reverse crunch}
- A63B 23/0238
- • {Spinal column (-for the neck [A63B 23/025-](#))}
- U A63B 23/035
- for limbs, i.e. upper or lower limbs, e.g. simultaneously
- A63B 23/03508
- • {For a single arm or leg, (-[A63B 21/0726](#) takes precedence-)}
- WARNING
not complete, pending the completion of a reclassification
- U A63B 23/03516
- • {For both arms together or both legs together; Aspects related to the coordination between right and left side limbs of a user}
- A63B 23/03525
- • • {Supports for both feet or both hands performing simultaneously the same movement, e.g. single pedal or single handle (-[A63B 21/0724](#) takes precedence-)}
- U A63B 23/03533
- • • {With separate means driven by each limb, i.e. performing different movements}
- A63B 23/03541
- • • • {Moving independently from each other (-[A63B 2022/0038](#) takes precedence-)}
- A63B 23/04
- • for lower limbs (-Training appliances for special sports [A63B 69/00](#) ; For the purpose of producing mechanical power [F03G 5/00-](#))}
- A63B 23/0405
- • • {involving a bending of the knee and hip joints simultaneously (-[A63B 23/0476](#) takes precedence-)}
- A63B 23/0458
- • • • {Step exercisers without moving parts (-with movable steps [A63B 22/04-](#))}
- A63B 23/0464
- • • • {Walk exercisers without moving parts (-with movable endless bands [A63B 22/02-](#))}
- A63B 23/047
- • • • {Walking and pulling or pushing a load (-for exercising the player ability for rugby or American football [A63B 69/345-](#))}
- A63B 23/0476
- • • {by rotating cycling movement (-arrangements on or for real bicycles [A63B 69/16-](#))}
- WARNING
Group [A63B 23/0476](#) is no longer used for classification. Documents are in the process of being reorganised to group [A63B 22/06](#)
- A63B 23/0482
- • • {primarily by articulating the hip joints (-[A63B 23/0211](#) , [A63B 23/0405](#) , [A63B 23/0476](#) take precedence-)}
- A63B 23/0494
- • • {primarily by articulating the knee joints (-[A63B 23/0405](#) , [A63B 23/0476](#) take precedence-)}
- A63B 23/12
- • for upper limbs {or related muscles, e.g. chest, upper back or shoulder muscles (-bench press exercises [A63B 21/078](#) ; for teaching music [G09B 15/06-](#))}
- A63B 23/1245
- • • {Primarily by articulating the shoulder joint (-[A63B 23/129](#) takes precedence-)}
- A63B 23/16
- • • for hands or fingers (-for teaching typing [G09B 13/00-](#))}
- A63B 23/20
- for vaginal muscles {or other sphincter-type muscles}
- U **A63B 24/00**
- Electric or electronic controls for exercising apparatus of preceding groups;{Controlling or monitoring of exercises, sportive games, training or athletic performances}**
- A63B 24/0087
- {-Electric or electronic controls for exercising apparatus of groups [A63B 21/00](#) - [A63B 23/00](#) , e.g. controlling load-}

- U A63B 25/00** **Stilts or the like**
- A63B 25/02 · Elastic stilts{(-devices for balloon jumping [A63B 5/166](#)-)}
 - A63B 25/08 · Hopping-sticks, e.g. pogo sticks; {Hopping apparatus with a single resilient support(-devices for balloon jumping [A63B 5/166](#)-)}
- A63B 26/00** **Exercising apparatus not covered by groups [A63B 1/00](#) to [A63B 25/00](#)**
- A63B 26/003 · {for improving balance or equilibrium (-balance beams [A63B 4/00](#) ; apparatus for rope dancing [A63B 7/08](#) ; balancing drums, balancing boards or the like [A63B 22/16](#)-)}
- A63B 27/00** **Apparatus for climbing poles, trees, or the like (ropes [A63B 29/02](#) } ; safety belts for climbers [A62B 35/00](#) ; { climbing irons permanently attached to fixed structures [E06C 9/04](#) }**
- A63B 27/02 · Climbing devices for round poles {or trees}attachable to the feet
- A63B 29/00** **Apparatus for mountaineering (-helmets [A42B 3/00](#) ; non-skid devices or attachments for footwear, e.g. mountain climbing irons [A43C 15/00](#) ; breathing masks or helmets for use at high altitudes [A62B 18/00](#) ; { safety belts or body harnesses [A62B 35/00](#) } ; picks [B25D 7/00](#)-)**
- A63B 29/02 · Mountain guy-ropes or accessories, e.g. avalanche ropes{(-hooks, e.g. snaphooks, therefor [F16B 45/00](#)-)}; Means for indicating the location of accidentally buried, e.g. snow-buried, persons (-detecting hidden masses in general [G01V](#)-)
- NOTE**
- Contrary to the wording of group [A63B 29/02](#) , devices for lowering persons are classified in [A62B 1/06](#)
- A63B 29/021 · · {Means for indicating the location of accidentally buried, e.g. snow-buried, persons (-detecting hidden masses in general [G01V](#)-)}
 - A63B 29/08 · Hand equipment for climbers
- A63B 31/00** **Swimming aids (-teaching swimming [A63B 69/10](#) to [A63B 69/14](#) ; life-saving in water, {e.g. life-buoys, life-belts} , [B63C 9/00](#)-)**
- A63B 31/08 · Swim fins, flippers or other swimming aids held by, or attachable to, the hands, arms, feet or legs (-[A63B 31/18](#) takes precedence; worn as gloves [A63B 31/02](#)-)
- A63B 33/00** **Swimming equipment attachable to the head, e.g. swim caps or goggles (-diving masks [B63C 11/12](#) ; breathing aids, e.g. snorkels, [B63C 11/18](#)-)**
- A63B 33/002 · {Swimming goggles (-with means covering the nostrils [B63C 11/12](#)-)}
- A63B 35/00** **Swimming framework,{i.e. apparatus fixed to or held by the swimmer or diver}, with driving mechanisms operated by the swimmer or by a motor (-other vessels or like floating structures for pleasure or sport [B63B 35/71](#) , [B63B 35/73](#) ; divers` sleds or like craft [B63C 11/46](#)-)**
- NOTE**
- References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:
- Effecting propulsion of vessels by muscle power
[B63H 16/00](#)
- A63B 37/00** **Solid balls; {Rigid hollow balls}; Marbles (-heavy throwing balls [A63B 65/06](#)-)**

- A63B 37/0003
- {Golf balls (-for practising drives [A63B 69/3655](#) , for practising puts [A63B 69/3688](#)-)}
- WARNING
Subgroups of [A63B 37/0003](#) are not complete pending reclassification; see also this group
- A63B 37/0022
- {Coatings, markings (-methods for marking [A63B 45/02](#)-)}
- A63B 37/02
- Special cores{(-[A63B 37/0001](#) , [A63B 37/0003](#) take precedence-)}
- A63B 37/12
- Special coverings,{i.e. outer layer material(-[A63B 37/0001](#) , [A63B 37/0003](#) take precedence-)}
- A63B 37/14
- Special surfaces{(-[A63B 37/0004](#) takes precedence-)}
- A63B 39/00**
- Hollow non-inflatable balls,{i.e. having no valves(-rigid balls [A63B 37/00](#)-)}**
- U A63B 39/02
- Arrangements for maintaining the pressure
- A63B 39/025
- {using containers with pressurising means for balls not in use (-packages under vacuum or pressure, or special atmospheres [B65D 81/20](#)-)}
- A63B 41/00**
- Hollow inflatable balls (-connecting valves to inflatable elastic bodies [B60C 29/00](#) ; valves, e.g. self-closing valves [F16K](#)-)**
- A63B 41/12
- Tools or devices for blowing up or closing balls ({ for pricking-balls [A63B 39/04](#) } ; air pumps [F04](#)-)}
- U **A63B 43/00**
- Balls with special arrangements**
- A63B 43/002
- {with special configuration, e.g. non-spherical (-discs for throwing [A63B 65/10](#)-)}
- A63B 43/008
- {with means for improving visibility, e.g. special markings or colours (-illuminating or reflecting means [A63B 43/06](#)-)}
- A63B 43/04
- with an eccentric centre of gravity; with mechanism for changing the centre of gravity (-solid balls [A63B 37/10](#) ; { motorised rolling toys [A63H 33/005](#) })
- A63B 45/00**
- Apparatus or methods for manufacturing balls (-working of plastics or substances in a plastic state [B29](#))**
- A63B 47/00**
- Devices for handling or treating balls,{e.g. for holding or carrying balls(-for maintaining ball pressure [A63B 39/02](#) ; ball holders combined with racket presses [A63B 49/16](#) , with racket covers or cases [A63B 49/18](#) , fitted on golf bags [A63B 55/02](#)-)}**
- A63B 47/002
- {Devices for dispensing balls, e.g. from a reservoir (-automatic teeing devices [A63B 57/0006](#) ; devices for projecting balls [A63B 69/40](#)-)}
- A63B 47/008
- {Devices for measuring or verifying ball characteristics (-measuring or testing in general [G01](#)-)}
- A63B 47/02
- for picking-up {or collecting}
- A63B 47/04
- for cleaning balls (-apparatus for cleaning balls, as accessories for bowling- or table alleys [A63D 5/10](#)-)}
- U **A63B 49/00**
- Tennis, badminton, or like rackets**
- WARNING
Group [A63B 49/007](#), [A63B 49/06](#) are not complete pending a reclassification. See also this group, its subgroups and other groups of [A63B](#)
- U A63B 49/02
- Frames
- A63B 49/04
- with balancing devices{(-[A63B 59/0092](#) , [A63B 59/0096](#) take precedence-)}
- A63B 49/06
- with slits{(-slits for guiding strings [A63B 49/002](#) ; slits for cooling or ventilation [A63B 59/0037](#)-)}
- A63B 49/16
- Presses,{e.g. with ball holders(-ball holders in general [A63B 47/00](#)-)}

- A63B 49/18 · Covers {or cases, e.g. with ball holders(-ball holders in general [A63B 47/00](#)-)}
- A63B 51/00 Stringing tennis rackets{(-string guides on frames [A63B 49/002](#) ; clamping strings on frames [A63B 49/005](#)-)}**
- A63B 51/005 · {Devices for measuring the tension of the string(-for controlling the tension during stringing [A63B 51/14](#) ; measuring force, in general [G01L](#)-)}
- A63B 51/02 · Strings; String substitutes; {Products applied on strings, e.g. for protection against humidity or wear(-ropes or cables in general [D07B](#); yarns or threads for use in sports applications [D02G 3/444](#) ; mechanical methods or apparatus in the manufacture of artificial filaments, threads, fibres, bristles or ribbons [D01D](#); strings for musical instruments [G10D 3/10](#)-)}
- A63B 53/00 Golf clubs{(-cleaning or maintenance [A63B 57/0087](#) ; measuring, verifying or correcting golf-club characteristics [A63B 59/0074](#) ; clubs or attachments on clubs for golf training [A63B 69/3632](#)-)}**
- U A63B 53/04 · Heads
- A63B 53/0487 · · {for putters (-[A63B 53/065](#) takes precedence-)}
- A63B 53/10 · {Shafts, e.g.}non-metallic shafts{(-metallic [A63B 53/12](#)-)}
- U A63B 55/00 Bags for golf clubs; Stands for golf clubs for use on the course**
- A63B 55/008 · {Releasably mounted accessories fitted outside the bag, e.g. straps or holders (-[A63B 55/02](#) and [A63B 55/04](#) take precedence; covers for golfbags [A63B 55/004](#) ; covers for club heads [A63B 55/007](#)-)}
- A63B 55/02 · with special {or detachable}receptacles for the balls
- A63B 55/08 · Wheeled carriers for golf bags (-running gear or propulsion features [B60](#) ; { insofar as the features thereof are generic to hand carts [B62B](#) })
- U A63B 57/00 Golf game accessories, e.g. golf cups, golf tees**
- A63B 57/0006 · {Automatic teeing devices (-devices for automatically dispensing balls in general [A63B 47/002](#)-)}
- U A63B 57/0018 · {Tees; Tee-holders; Devices for inserting or extracting tees}
- A63B 57/0031 · · {Tee-holders(-to be fitted on golf bags or caddies [A63B 55/008](#)-); Tee-gauges; Tee-repairing devices}
- A63B 57/0056 · {Cups (-with automatic ball ejector [A63B 57/0062](#)-); Hole or ball traps; Markers therefor, e.g. flags}
- A63B 57/0087 · {Cleaning or maintenance of golf-clubs, putters, shoes or other golf accessories (-cleaning balls [A63B 47/04](#) ; cleaning grips [A63B 59/0062](#) ; cleaning footwear in general [A47L 23/00](#)-)}
- A63B 59/00 Bats, rackets, or the like, for other games (-bats with a ball tethered thereto [A63B 67/20](#)-); { Hand-held throwing or catching aids; Details or accessories of bats, rackets or the like, not limited to one of the groups [A63B 49/00](#) to [A63B 57/00](#) , or not otherwise provided for-}**
- A63B 59/0014 · {Handles or grips (-[A63B 49/08](#) takes precedence-)}
- A63B 59/007 · {Bats or rackets with holding means provided inside, on the edge or on the rear face of the the striking surface (-[A63B 59/02](#) and [A63B 59/04](#) take precedence-)}
- A63B 59/0074 · {Devices for measuring, verifying, correcting or customizing characteristics of golf-clubs, bats or rackets (-having a weight movable along the longitudinal axis of the club due to centrifugal forces [A63B 15/005](#)-)}
- A63B 59/0092 · {Means for damping vibration (-[A63B 15/005](#) takes precedence-)}
- A63B 59/0096 · {Movable ballast means for varying the centre of mass during the stroke, e.g. by centrifugal force (-[A63B 15/005](#) takes precedence; weights set in movement on impact of the ball for damping vibrations [A63B 59/0092](#)-)}

- A63B 59/02
- for lacrosse, pelota or similar games; {Bats or rackets having means for catching or holding a ball, e.g. pockets, netting, adhesive type surface; Hand-held throwing or catching aids(-juggling games with integral catching arrangements [A63B 67/083-](#))}
- A63B 59/10
- for croquet; {Mallet-form bats(-polo mallets [A63B 59/16-](#))}
- A63B 59/14
- for ice hockey{(-[A63B 59/12](#) takes precedence-)}
- A63B 59/18
- Circular {or similar planar}bats for other games{ not covered by groups [A63B 59/02](#) to [A63B 59/16](#)}
- A63B 59/185
- • {Paddles for paddle tennis, pádel tennis or platform tennis (-stringed rackets for tennis or the like [A63B 49/00-](#))}
- A63B 61/00**
- Tennis nets or accessories for tennis or like games,{e.g. volley-ball(-devices for holding or carrying balls [A63B 47/00](#) ; for table tennis [A63B 67/04-](#))}**
- A63B 61/003
- {Nets for tennis or like games or accessories therefor (-straining or adjusting devices on the posts [A63B 61/02-](#))}
- A63B 61/04
- Straining or adjusting devices for nets,{e.g. centre strainers, single-double adjusters, net height meters(-straining or adjusting devices on the posts [A63B 61/02-](#))}
- A63B 63/00**
- Targets or goals for ball games (-golf cups [A63B 57/00](#))**
- A63B 63/08
- with {substantially}horizontal opening for ball, e.g. for basketball{(-[A63B 57/0056](#) , [A63B 63/06](#) take precedence-)}
- A63B 65/00**
- Implements for throwing (-throwing toys [A63H 33/18](#) ; throwing weapons [F41B](#)-); {Mechanical projectors, e.g. using spring force}**
- A63B 65/02
- Spears or the like; {Javelins(-darts [F42B 6/003-](#))}
- A63B 65/10
- Discus discs; Quoits{(-flying disc toys [A63H 33/18-](#))}
- A63B 65/12
- Ball-throwing apparatus with or without catchers; {(-hand-held throwing or catching aids [A63B 59/02-](#)); Mechanical projectors, e.g. using spring force}
- U A63B 67/00**
- Miscellaneous sporting games**
- A63B 67/02
- Special golf games, e.g. miniature golf,{e.g. golf putting games played on putting tracks; putting practice apparatus having an elongated platform as a putting track(-mats for golf practice [A63B 69/3661-](#))}
- A63B 67/04
- Table games physically beneficial for the human body, modelled on outdoor sports, e.g. table tennis ({ tables for table tennis [A47B 25/003](#) } ; other table games [A63F-](#))
- A63B 67/08
- Juggling or spinning ball games played as games of skill; {Juggling games(-games using tethered bodies, e.g. balls [A63B 67/10](#) , [A63B 67/20-](#))}
- A63B 67/10
- Games with thread-suspended or swingably-mounted bodies, e.g. balls, pointed bodies shaped as birds, animals, or the like, for aiming at and hitting targets (-games using a bat with a ball tethered thereto [A63B 67/20](#) ; pin games with tethered balls [A63D 7/00-](#)); {Games using tethered bodies, e.g. balls, not otherwise provided for}
- U A63B 67/16
- Tethered aerial top or spinner games,{i.e. diabolo games}
- A63B 2067/163
- • {Details (Not used)}
- A63B 67/20
- Games using a bat {or racket}with a {body, e.g. a}ball tethered thereto
- A63B 67/22
- • the bat {or racket}having one or more holes {or pockets}therein,{e.g. for catching or collecting the ball; the bat comprising a ring or cup having a handle}
- A63B 69/00**
- Training appliances or apparatus for special sports (-training of parachutists [B64D 23/00-](#))**

- A63B 69/002 • {for football (~~American-football dummies A63B 69/345~~ *American-football dummies A63B 69/345*)}
- A63B 69/0028 • {for running, jogging or speed-walking (~~movable endless bands A63B 22/02~~)}
- A63B 69/004 • {for the martial arts, e.g. karate, judo (~~A63B 69/20~~ , ~~A63B 69/34~~ take precedence)}
- A63B 69/0051 • {not used, see subgroups and [A63B 69/00](#)}
- A63B 69/0053 • • {Apparatus generating random stimulus signals for reaction-time training involving a substantial physical effort (~~testing reaction time A61B 5/162~~ ; reaction-time games [A63F 9/0096](#))}
- A63B 69/0057 • • {Means for physically limiting movements of body parts (~~A63B 23/0211~~ takes precedence)}
- A63B 69/0073 • {Means for releasably holding a ball in position; Balls constrained to move around a fixed point, e.g. by tethering (~~not used, see subgroups and A63B 69/00~~)}
- A63B 69/0075 • • {Means for releasably holding a ball in position prior to kicking, striking or the like (~~golf tees A63B 57/0018~~)}
- A63B 69/0079 • • {Balls tethered to a line or cord (~~A63B 43/007~~ takes precedence; other games using tethered balls [A63B 67/10](#) ; games using a bat or racket with a ball tethered thereto [A63B 67/20](#))}
- A63B 69/0086 • • • {the line or cord being attached to the user (~~A63B 21/0608~~ takes precedence; punching balls attached to the user [A63B 69/26](#))}
- A63B 69/0097 • {Ball rebound walls (~~with holes or in combination with nets A63B 63/00~~)}
- A63B 69/02 • for fencing, {e.g. means for indicating hits (~~fencing foils, sabres or epees F41B 13/02~~)}
- A63B 69/04 • simulating the movement of horses (~~toy animals for riding A63G 19/00~~)
- A63B 69/12 • Arrangements in swimming pools for teaching swimming (or for training)
- A63B 69/14 • • Teaching frames for swimming; {Swimming boards (~~life-buoys, life-belts B63C 9/08~~)}
- A63B 69/16 • for cycling, {i.e. arrangements on or for real bicycles (~~home-trainers A63B 23/0476~~)}
- U A63B 69/18 • for skiing
- A63B 69/182 • • {for cross-country-skiing (~~A63B 23/0417~~ , ~~A63B 69/0022~~ take precedence)}
- A63B 69/20 • Punching balls, {e.g. for boxing; Other boxing training devices, e.g. bags (~~A63B 69/34~~ takes precedence)}
- A63B 69/24 • • mounted on, or suspended from, a movable support (not used, see subgroup)
- A63B 69/34 • {Dummies, e.g.} boxing or {American-}football dummies
- U A63B 69/36 • for golf
- A63B 2069/3602 • • {Player`s game information devices (not used)}
- A63B 69/3608 • • {Attachments on the body, e.g. for measuring, aligning, restraining (~~A63B 69/0059~~ , ~~A63B 69/3673~~ take precedence)}
- A63B 69/3623 • • {for driving (~~A63B 69/3608~~ , ~~A63B 69/3658~~ , ~~A63B 69/3661~~ , ~~A63B 69/3667~~ and ~~A63B 69/3691~~ take precedence)}
- A63B 2069/3626 • • • {Details (not used)}
- A63B 69/3632 • • • {Clubs or attachments on clubs, e.g. for measuring, aligning (~~A63B 69/3614~~ takes precedence; clubs for swinging exercises in general [A63B 15/00](#))}
- A63B 69/3676 • • {for putting (~~A63B 69/3608~~ , ~~A63B 69/3661~~ , ~~A63B 69/3667~~ and ~~A63B 69/3697~~ take precedence)}
- A63B 2069/3679 • • • {Details (not used)}

A63B 69/3685	• • • {Putters or attachments on putters e.g. for measuring, aligning (A63B 69/3614 takes precedence)}
A63B 69/3691	• • {Golf courses; Golf practising terrains having a plurality of driving areas, fairways, greens (special golf games, e.g. miniature golf, A63B 67/02 ; mats for simulating golf greens A63B 69/3661)}
A63B 69/38	• for tennis(A63B 61/006 , A63B 69/0073 and A63B 69/0097 take precedence)}
A63B 69/40	• Stationarily-arranged devices for projecting balls {or other bodies (ball-dispensing devices A63B 47/002 ; golf cups with ball ejector means A63B 57/0062 ; targets with means for returning balls by gravity or mechanically A63B 63/00)}; (sling weapons F41B 3/00 ; traps for clay-pigeon targets F41J 9/18)}
A63B 71/00	Games or sports accessories not covered in groups A63B 1/00 to A63B 69/00 (starting appliances A63K 3/02)
A63B 71/0036	• {Accessories for stowing, putting away or transporting exercise apparatus or sports equipment (handling or treating balls A63B 47/00 ; for golf clubs A63B 55/00)}
A63B 71/0054	• {Features for injury prevention on an apparatus, e.g. shock absorbers (mats or the like for absorbing shocks for jumping A63B 6/00)}
U A63B 71/02	• for large-room or outdoor sporting games
A63B 71/021	• • {Stays or guy-ropes (for masts E04H 12/20 , for tents E04H 15/34)}
U A63B 71/023	• • {Supports, e.g. poles}
A63B 71/028	• • • {Floor sockets for removable poles (sockets for poles in general E04H 12/22)}
A63B 71/08	• Body-protectors for players or sportsmen, {i.e. body-protecting accessories affording protection of body parts against blows or collisions} (protective clothing or garments for sporting purposes A41D 13/00)}
A63B 71/085	• • {Mouth or teeth protectors (A63B 71/081 takes precedence; protective face masks A41D 13/00)}
A63B 71/10	• • for the head ({ A63B 71/081 takes precedence } ; in the form of caps or hats A42B 1/08 ; helmets A42B 3/00)}
A63B 71/12	• • for the body, {e.g. shoulders}, or the legs(A63B 71/081 takes precedence)}
A63B 71/1225	• • • {for the legs, e.g. thighs, knees, ankles, feet (bandages, e.g. orthosis-like supports or braces A61F 5/0102 ; for strengthening joints A61F 13/06)}
A63B 71/1291	• • • {for the neck (as a part of a helmet A42B)}
A63B 71/14	• • for the hands e.g. baseball, boxing or golfing gloves (archer`s finger tabs F41B5/16)}
A63B 71/141	• • • {in the form of gloves (gloves in general A41D 19/00)}
A63B 2208/00	Characteristics or parameters related to the user or player (not used) (measuring physical characteristics of the user A63B 2230/00)
U A63B 2208/02	• posture
A63B 2208/0295	• • on hands and feet (for push-ups A63B 23/1236)}
A63B 2208/05	• the user being at least partly surrounded by a pressure different from the atmospheric pressure (not used)
U A63B 2230/00	Measuring physiological parameters of the user
A63B 2230/30	• blood pressure (A63B 2230/04 takes precedence)}
A63B 2230/305	• • used as a control parameter for the apparatus (A63B 2230/045 takes precedence)}
U A63B 2243/00	Specific ball sports

A63B 2243/0025 · Football (~~American football A63B 2243/007~~ ~~American football A63B 2243/007~~)

A63B 2244/00 Sports without balls (not used)

A63B 2244/10 · Combat sports (~~Rugby, American football A63B 2243/0066~~)

Project: N/A (A63C)

U A63C 1/00 Skates (roller skates or skate boards [A63C 17/00](#))

- U A63C 1/30 · with special blades
- A63C 1/303 · · {removably fastened to the blade holder}
- A63C 1/306 · · {Ice wheels}

U A63C 5/00 Skis or snowboards (sledges with runners, e.g. ski-bobs, [B62B 13/00](#) ; runners for sledges [B62B 17/02](#) ; runners for carrying wheeled vehicles to facilitate travel on snow or ice [B62B 19/00](#))

- A63C 5/03 · {Mono skis; Snowboards }
- U A63C 5/04 · Structure of the surface thereof
- A63C 5/0405 · · {Shape thereof when projected on a plane, e.g. sidecut, camber, rocker}
- A63C 5/0411 · · · {asymmetric}
- A63C 5/0417 · · {with fins or longitudinal protrusions on the running sole}
- A63C 5/0434 · · {of the side walls}
- U A63C 5/12 · Making thereof; Selection of particular materials (materials for the running sole [A63C 5/056](#))
- A63C 5/126 · · {Structure of the core}
- A63C 5/128 · · {A part for the binding being integrated within the board structure, e.g. plate, rail, insert}

U A63C 7/00 Devices preventing skis from slipping back; Ski-stoppers or ski-brakes

- U A63C 7/10 · Hinged stoppage blades attachable to the skis in such manner that these blades can be moved out of the operative position {(not used, see subgroups)}
- A63C 7/1006 · · {Ski-stoppers (not used, see subgroups)}

U A63C 9/00 Ski bindings

- A63C 9/002 · {Strap closures or latches; Leashes}
- A63C 9/006 · {with a climbing wedge}
- A63C 9/007 · {Systems preventing accumulation of forces on the binding when the ski is bending}
- U A63C 9/08 · yieldable or self-releasing in the event of an accident, i.e. safety bindings
- U A63C 9/084 · · with heel hold-downs, e.g. swingable
- A63C 9/0841 · · · {with a single jaw}
- A63C 9/0842 · · · · {the jaw pivoting on the body or base about a transverse axis}
- A63C 9/0843 · · · {with a plurality of mobile jaws}
- A63C 9/0844 · · · {the body pivoting about a transverse axis}
- A63C 9/0845 · · · {the body or base or a jaw pivoting about a vertical axis, i.e. side release}
- A63C 9/0846 · · · {Details of the release or step-in mechanism}
- A63C 9/0847 · · · {Details of the manual release}
- A63C 9/0848 · · · {Structure or making}
- U A63C 9/085 · · with sole hold-downs, e.g. swingable
- A63C 9/08507 · · · {with a plurality of mobile jaws}
- A63C 9/08514 · · · · {pivoting about a transversal axis}

- A63C 9/08521 {-pivoting about a vertical axis, e.g. side release}
 - A63C 9/08528 {-pivoting about a longitudinal axis}
 - A63C 9/08535 . . . {-with a mobile body or base or single jaw}
 - A63C 9/08542 {-pivoting about a transversal axis}
 - A63C 9/0855 {-pivoting about a vertical axis}
 - A63C 9/08557 . . . {-Details of the release mechanism}
 - A63C 9/08564 {-using cam or slide surface}
 - A63C 9/08571 {-using axis and lever}
 - A63C 9/08578 {-using a plurality of biasing elements}
 - A63C 9/08585 {-using transverse biasing element}
 - A63C 9/08592 . . . {-Structure or making}
- U A63C 10/00 Snowboard bindings**
- A63C 10/005 . {-of the baseless type, i.e. without structural part under the shoe}
- U A63C 11/00 Accessories for skiing or snowboarding (fittings on vehicles for carrying skis [B60R 9/12](#))**
- U A63C 11/22 . Ski-sticks
 - A63C 11/227 . . {-Details; Structure}
 - A63C 11/228 . . {-Accessories}
- U A63C 13/00 Snow shoes**
- A63C 13/001 . {-Bindings therefor}
 - A63C 13/003 . {-Means thereof for preventing slipping, e.g. crampons, e.g. on frame or shoe plate}
 - A63C 13/005 . {-Frames therefor}
 - A63C 13/006 . {-Shoe support thereof, e.g. plate, movable relative to the frame}
 - A63C 13/008 . {-Adjustable heel support therefor, e.g. climbing wedge}
- U A63C 17/00 Roller skates; Skate-boards**
- A63C 17/0006 . {-Accessories}
 - A63C 17/0013 . . {-Devices used in combination with the skate but not fixed to it, e.g. supporting frames, sail, sticks, auxiliary wheel aid [\[B62D 51/06\]](#) Uniaxle walk-type tractors}
 - A63C 17/002 . . {-Covers; Guards}
 - A63C 17/0026 . {-Roller skates used otherwise than standing or sitting on them, e.g. body skates}
 - A63C 17/0046 . {-with shock absorption or suspension system}
 - A63C 17/006 . {-with wheels of different size or type}
 - A63C 17/0066 . {-with inclined wheel, i.e. not perpendicular to the surface it rolls on}
 - A63C 17/0073 . {-with offset wheel, i.e. wheel contact point to surface offset from other associated wheel}
 - A63C 17/008 . {-with retractable wheel, i.e. movable relative to the chassis out of contact from surface}
 - A63C 17/0086 . {-Roller skates adjustable in length to fit the size of the foot}
 - A63C 17/0093 . {-Mechanisms transforming leaning into steering through an inclined geometrical axis, e.g. truck ([A63C 17/011](#) takes precedence)}
- U A63C 17/01 . Skateboards ([A63C 17/02](#) to [A63C 17/28](#) take precedence; { rolling devices on skis [A63C 5/035](#)})

- A63C 17/018
- U A63C 17/04
 - • {-Ice skateboards}
- U A63C 17/06
 - with wheels arranged otherwise than in two pairs ({(A63C 17/01 takes precedence)})
- U A63C 17/06
 - • single-track type
- A63C 17/065
 - • • {-with movements during use of the foot plate or shoe relative to the chassis, e.g. inline clap skate}
- A63C 17/08
 - • • {-Single-wheel type with single axis }
- U A63C 17/22
 - Wheels for roller skates
- A63C 17/223
 - • {-Wheel hubs}
- U **A63C 19/00**

Design or layout of playing courts, rinks, bowling greens or areas for water-skiing; Covers therefor ({(golf courses [A63B 69/3691](#)); water roundabouts [A63G 3/00](#) ; construction of surfaces of foundations [E01C](#); roofs [E04B 7/00](#); buildings or groups of buildings for sports [E04H 3/10](#); swimming or splash baths or pools [E04H 4/00](#); coverings for baths [E04H 4/06](#))}
- U A63C 19/06
 - Apparatus for setting-out or dividing courts
- A63C 19/065
 - • {-Line markings, e.g. tapes; Methods therefor}

Project: N/A (A63F)

- U **A63F 1/00**

Card games (aspects of games using an electronically generated display having two or more dimensions showing representations related to the game [A63F 13/00](#); card games played on a gaming machine [G07F 17/32](#))
- U A63F 1/06
 - Card games appurtenances

WARNING
The following classes are not complete because of a pending reorganisation:
[A63F 1/062](#): see also [A63F 1/06](#) and [A63F 1/062](#) [A63F 1/065](#): see also [A63F 1/06](#) and [A63F 1/065](#) [A63F 1/067](#): see also [A63F 1/06](#) and [A63F 1/067](#)
- A63F 1/062
 - • {-Boxes or cases for cards}
- A63F 1/065
 - • {-Devices for bidding}
- A63F 1/067
 - • {-Tables or similar supporting structures}
- U **A63F 3/00**

Board games; Raffle games (racing games, traffic games, or obstacle games characterised by figures moved by action of the players [A63F 9/14](#))

WARNING
Reorganisation pending for the following groups: [A63F 3/00003](#), [A63F 3/00047](#), [A63F 3/00053](#), [A63F 3/00056](#), [A63F 3/00059](#), [A63F 3/00173](#), [A63F 3/00261](#), [A63F 3/0052](#), [A63F 3/00529](#), [A63F 3/00533](#), [A63F 3/0402](#), [A63F 3/0497](#), [A63F 3/0605](#), [A63F 3/061](#), [A63F 3/0615](#), [A63F 3/062](#), [A63F 3/0635](#), [A63F 3/0655](#). See also this group and its subgroups
- A63F 3/00003
 - {-Types of board games (chess [A63F 3/02](#); educational board games [A63F 3/04](#))}
- A63F 3/00006
 - • {-Board games played along a linear track, e.g. game of goose, snakes and ladders, along an endless track ([A63F 3/00028](#) to [A63F 3/00157](#), [A63F 3/04](#) take precedence)}
- A63F 3/00028
 - • {-Board games simulating indoor or outdoor sporting games, e.g. bowling, basketball, boxing, croquet, athletics, jeu de boules, darts, snooker, rodeo (racing games played on boards [A63F 3/00082](#); indoor games played with small balls [A63F 7/00](#))}
- A63F 3/00031
 - • • {-Baseball or cricket board games}
- A63F 3/00041
 - • • {-Football, soccer or rugby board games}

- A63F 3/00044 . . . {-Tennis or squash board games}
- A63F 3/00047 . . . {-Basketball board games}
- A63F 3/0005 . . . {-Golf or putting board games}
- A63F 3/00053 . . . {-Snooker, pool or billiard board games}
- A63F 3/00056 . . . {-Darts board games}
- A63F 3/00059 . . . {-Bowling board games}
- A63F 3/00063 . . {-Board games concerning economics or finance, e.g. trading}
- A63F 3/00069 . . . {-Stock-market games}
- A63F 3/00072 . . . {-played along an endless track, e.g. monopoly ([A63F 3/00069](#) takes precedence)}
- A63F 3/00075 . . {-War games}
- A63F 3/00082 . . {-Racing games (racing games characterised by figures moved by action of the player [A63F 9/14](#))}
- A63F 3/00085 . . . {-Sailing races}
- A63F 3/00088 . . {-Board games concerning traffic or travelling (trading [A63F 3/00063](#); racing [A63F 3/00082](#); teaching the highway code [A63F 3/0494](#))}
- A63F 3/00091 . . . {-concerning space ship navigation}
- A63F 3/00094 . . {-Ticktacktoe}
- A63F 3/00097 . . {-Board games with labyrinths, path finding, line forming (labyrinths in boxes with small balls [A63F 7/04](#); other labyrinth games [A63F 9/0078](#))}
- A63F 3/001 . . {-Board games concerning astrology, religion, or fortune-telling (fortune-telling games [A63F 9/181](#))}
- A63F 3/00119 . . {-Board games concerning music, theatre, cinema, or art}
- A63F 3/00138 . . {-Board games concerning voting, political or legal subjects; Patent games}
- A63F 3/00145 . . {-Board games concerning treasure-hunting, fishing, hunting (capturing fishing games [A63F 9/305](#))}
- A63F 3/00148 . . {-Board games concerning westerns, detectives, espionage, pirates, murder, disasters, shipwreck rescue operations (rodeo [A63F 3/00028](#); history [A63F 3/0449](#))}
- A63F 3/00151 . . {-Backgammon}
- A63F 3/00154 . . {-Mastermind}
- A63F 3/00157 . . {-Casino or betting games (horse races [A63F 3/00082](#))}
- A63F 3/00173 . {-Characteristics of game boards, alone or in relation to supporting structures or playing piece}
- A63F 3/00176 . . {-Boards having particular shapes, e.g. hexagonal, triangular, circular, irregular}
- A63F 3/00214 . . {-Three-dimensional game boards}
- A63F 3/0023 . . {-Foldable, rollable, collapsible or segmented boards ([A63F 3/027](#) takes precedence)}
- A63F 3/0052 . . {-with a plurality of boards used during one game, i.e. separate game boards or playing areas}
- A63F 3/00529 . . {-Board game without game board}
- A63F 3/00533 . . {-Connection of game board or part of game board to supporting structure}
- A63F 3/00574 . . {-Connections between board and playing pieces}
- A63F 3/00634 . . . {-Sliding connections, e.g. playing pieces sliding in a groove}
- A63F 3/00643 . {-Electric board games; Electric features of board games (electric word or number games [A63F 3/0421](#); computer chess [G06F](#); electric raffle games [A63F 3/081](#))}

- A63F 3/00694 · {-Magnetic board games (other games using magnetically moved or magnetically held pieces [A63F 9/34](#))}
- A63F 3/00697 · {-Playing pieces}
- A63F 3/00895 · {-Accessories for board games ([A63F 3/00697](#) takes precedence; game accessories of general use [A63F 11/00](#))}
- U A63F 3/02 · Chess; Similar board games
- A63F 3/027 · · {-Pocket chess}
- U A63F 3/04 · Geographical or like games; Educational games (educational appliances in general [G09B](#))
- A63F 3/0402 · · {-for learning languages}
- A63F 3/0434 · · {-Geographical games (travelling [A63F 3/00088](#))}
- A63F 3/0497 · · {-Games about time, e.g. telling the time}
- U A63F 3/06 · Lottos or bingo games; Systems, apparatus or devices for checking such games {(small boxes with balls used for generating random numbers [A63F 7/048](#); lottery apparatus [G07C 15/00](#); lottery gaming stations, online lottery or bingo [G07F 17/329](#); printing processes for lottery tickets [B41M 3/005](#))}
- A63F 3/0605 · · {-Lottery games}
- WARNING
not complete, reorganisation pending
- A63F 3/061 · · · {-in which the players select their own numbers, e.g. Lotto}
- A63F 3/0615 · · · {-based on sporting events, e.g. football pools}
- A63F 3/062 · · {-Bingo games, e.g. Bingo card games}
- A63F 3/0625 · · {-Devices for filling-in or checking}
- A63F 3/0635 · · · {-Punchers for filling-in or checking lotto or bingo games}
- A63F 3/064 · · · {-Electric devices for filling-in or checking}
- A63F 3/0645 · · {-Electric lottos or bingo games}
- A63F 3/065 · · {-Tickets or accessories for use therewith ([A63F 3/0625](#) takes precedence)}
- A63F 3/0655 · · · {-Printing of tickets, e.g. lottery tickets}
- A63F 3/069 · · · {-having a message becoming legible by tearing-off non-adhesive parts}
- U **A63F 5/00** **Roulette games (aspects of games using an electronically generated display having two or more dimensions showing representations related to the game [A63F 13/00](#))**
- A63F 5/0005 · {-Automatic roulette}
- A63F 5/0011 · {-Systems for braking, arresting, halting or stopping}
- A63F 5/0017 · · {-Braking effect by electric or magnetic field}
- A63F 5/0023 · · {-by pushing or keeping an element between notches}
- A63F 5/0029 · · · {-using gravity}
- A63F 5/0035 · · · · {-free moving element, e.g. ball}
- A63F 5/0041 · · · {-with a resilient element, e.g. spring}
- A63F 5/0047 · · · · {-with adjustable tension}
- A63F 5/0052 · · {-Braking effect by friction surface}
- A63F 5/0058 · · {-with variable actuation means, e.g. handbrake}
- A63F 5/0064 · · · {-electrical}
- A63F 5/007 · · {-Details about the compartments or sectors, e.g. sectors having different sizes}
- A63F 5/0076 · · {-Driving means}

- A63F 5/0082 • • {-electrical}
- A63F 5/0088 • {-with a plurality of balls used during one game}
- A63F 5/0094 • {-with a plurality of roulette wheels ([A63F 5/043](#) takes precedence)}
- U A63F 5/04 • Disc roulettes; Dial roulettes; Teetotums; Dice-tops
- A63F 5/041 • • {-Teetotums; Dice-tops}
- A63F 5/043 • • {-using concentric discs or rings}
- A63F 5/045 • • {-using a rotating wheel and a fixed indicator, e.g. fortune wheels}
- A63F 5/046 • • • {-with a horizontal wheel, i.e. wheel with a vertical rotation axle}
- U **A63F 7/00** **Indoor games using small moving playing bodies, e.g. balls, discs or blocks (board games, raffle games [A63F 3/00](#); roulette games [A63F 5/00](#); miniature bowling games [A63D 3/00](#); bagatelle or similar games [A63D 13/00](#); billiards, pocket billiards [A63D 15/00](#))**
- WARNING
- Groups not complete pending reclassification: [A63F 7/022](#), [A63F 7/0656](#), [A63F 7/0616](#), [A63F 7/062](#), [A63F 7/0624](#), [A63F 7/0632](#), [A63F 7/064](#), [A63F 7/0644](#), [A63F 7/0648](#), [A63F 7/0656](#), [A63F 7/24](#), [A63F 7/2418](#), [A63F 7/2427](#), [A63F 7/249](#), [A63F 7/265](#), [A63F 7/28](#), [A63F 7/30](#), [A63F 7/3055](#), [A63F 7/306](#), [A63F 7/307](#), [A63F 7/34](#), [A63F 7/36](#), [A63F 7/382](#). See also this group and its subgroups
- A63F 7/0005 • {-played on a table, the ball or other playing body being rolled or slid from one side of the table in more than one direction or having more than one entering position on this same side, e.g. shuffle boards (miniature bowling-alleys [A63D 3/00](#); goalposts per se [A63F 7/305](#))}
- A63F 7/0058 • {-electric ([A63F 7/027](#), [A63F 7/3065](#) take precedence)}
- U A63F 7/02 • using falling playing bodies or playing bodies running on an inclined surface, e.g. pinball games {(bagatelle or similar games [A63D 13/00](#))}
- A63F 7/022 • • {-Pachinko }
- U A63F 7/04 • using balls to be shaken or rolled in small boxes, {e.g. comprising labyrinths}
- A63F 7/044 • • {-Hand-held boxes with balls rolled, e.g. towards holes, by tilting the box ([A63F 7/382](#), [A63F 7/041](#) take precedence; tilttable on a support [A63F 7/386](#))}
- U A63F 7/06 • Games simulating outdoor ball games, e.g. hockey { or football if physically beneficial for the human body [A63B 67/00](#)}
- A63F 7/0604 • • {-Type of ball game ([A63F 7/0672](#) and [A63F 7/0684](#) take precedence)}
- WARNING
- not complete, reorganisation pending
- A63F 7/0608 • • • {-Baseball}
- A63F 7/0612 • • • {-Basketball}
- A63F 7/0616 • • • {-Football or soccer}
- A63F 7/062 • • • • {-Penalty shooting}
- A63F 7/0624 • • • {-Croquet }
- A63F 7/0628 • • • {-Golf}
- A63F 7/0632 • • • {-Hockey}
- A63F 7/0636 • • • • {-Ice-hockey}
- A63F 7/064 • • • {-Petanque}
- A63F 7/0644 • • • {-Polo}
- A63F 7/0648 • • • • {-Water-polo}
- A63F 7/0652 • • • {-Tennis}

- A63F 7/0656 . . . {-Volleyball}
- A63F 7/0684 . . {-with play figures slidable or rotatable about a vertical axis ([A63F 7/0672](#) takes precedence)}
- A63F 7/0688 . . {-with operation by foot}
- A63F 7/0692 . . . {-Kicking}
- A63F 7/0696 . . . {-using a pedal}
- U A63F 7/22 . . in which the playing bodies are projected through the air {(not used, see subgroups of [A63F 7/06](#))}
- U A63F 7/24 . . Devices controlled by the player to project or roll-off the playing bodies (arrangement of such devices in table alleys, miniature bowling-alleys or bowling games [A63D 3/02](#); in bagatelle or billiards [A63D 13/00](#), [A63D 15/00](#))
 - A63F 7/2409 . . . {-Apparatus for projecting the balls}
 - A63F 7/2418 {-with two projecting mechanisms working under different angles }
 - A63F 7/2427 {-with laterally movable, slidable projecting mechanism}
 - A63F 7/2436 {-Hand-held or connected to a finger, e.g. cues, clubs, sticks}
 - A63F 7/2472 {-Projecting devices with actuating mechanisms, e.g. triggers, not being connected to the playfield }
 - A63F 7/2481 {-with a projection mechanism actuated by a spring or other elastic member}
 - A63F 7/249 {-projecting the playing bodies through the air, e.g. with a jump}
- U A63F 7/26 . . . Electric or magnetic
 - A63F 7/265 {-using a magnet for movement of the ball}
 - A63F 7/30 . . {-Details of the playing surface, e.g.} obstacles; { Goal posts; } Targets;
 - Scoring or pocketing devices; -Playing-body-actuated sensors, e.g. switches;
 - Tilt indicators; { Means for detecting misuse or errors}
 - A63F 7/305 . . . {-Goal-posts; Winning posts for rolling-balls}
 - A63F 7/3055 {-with means for closing or opening a hole, covering, blocking or uncovering, unblocking a target }
 - A63F 7/306 {-with a score counter}
 - A63F 7/3065 {-Electric}
 - A63F 7/307 {-with a score counter}
 - A63F 7/3075 {-imparting energy to the ball, e.g. bumper-kickers, reprojectors }
- U A63F 7/36 . . Constructional details not covered by groups [A63F 7/24](#) to [A63F 7/34](#), { i.e. constructional details of rolling boards, rims or play tables}, e.g. frame, game boards, guide tracks,
 - A63F 7/3603 . . . {-Rolling boards with special surface, e.g. air cushion boards}
 - A63F 7/3622 . . . {-Specially shaped rolling boards for the balls, e.g. ball tracks}
 - A63F 7/38 . . . Playing surfaces movable during play{, i.e. games played on a non-stationary surface, e.g. the ball intended to be in permanent motion-(balls to be shaken or rolled in small boxes [A63F 7/04](#); eccentric weights put into orbital motion by nutating movement of the user [A63B 21/0608](#))}
 - A63F 7/382 {-held by the user, e.g. spinning hoops, whirling amusement devices, orbiting toys}
 - A63F 7/386 {-Rolling boards adapted to be rocked during play}
 - A63F 7/388 {-Ball games with balls rolled on two movable long sticks}

- U A63F 9/00 Games not otherwise provided for (aspects of games using an electronically generated display having two or more dimensions showing representations related to the game [A63F 13/00](#) {miscellaneous sporting games [A63B 67/00](#)})**
- WARNING**
Groups incomplete pending reclassification reorganisation: [A63F 9/0243](#), [A63F 9/0495](#), [A63F 9/0601](#), [A63F 9/0602](#), [A63F 9/0604](#), [A63F 9/0611](#), [A63F 9/0612](#), [A63F 9/0641](#), [A63F 9/0666](#), [A63F 9/0669](#), [A63F 9/0807](#), [A63F 9/0834](#), [A63F 9/0838](#), [A63F 9/0842](#), [A63F 9/0857](#), [A63F 9/0861](#), [A63F 9/0865](#), [A63F 9/0869](#), [A63F 9/0873](#), [A63F 9/1208](#), [A63F 9/1252](#), [A63F 9/1288](#). See also this group and its subgroups
- A63F 9/0073 · {-Games for obtaining a particular arrangement of playing pieces in a plane or space ([A63F 9/08](#) takes precedence; ticktacktoe [A63F 3/00094](#); three-dimensional chess-like games [A63F 3/00214](#))}
- A63F 9/0078 · {-Labyrinth games ([A63F 3/00097](#), [A63F 7/04](#) take precedence)}
- A63F 9/0079 · {-Games using compressed air, e.g. with air blowers, balloons, vacuum ([A63F 7/066](#) and [A63F 7/3603](#) take precedence)}
- U A63F 9/02** · Shooting or hurling games (throwing-implements for sports or recreational use [A63B 65/00](#); throwing or projecting toys per se [A63H 33/18](#); { gun simulators [F41A 33/00](#), e.g. light- or radiation-emitting guns [F41A 33/02](#); practice apparatus for gun-aiming [F41G 3/26](#), e.g. using a light-emitting device [F41G 3/2616](#)}; targets, target ranges, bullet catchers [F41J](#), { photo-electric hit-detector systems [F41J 5/02](#))}
- U A63F 9/0204** · {-Targets therefor (for ball games [A63B 63/00](#))}
- A63F 9/0208 · · {-the projectile being connectable to the target, e.g. using hook and loop-type fastener, hooks}
- A63F 9/0243 · · · {-Movable targets}
- A63F 9/0278 · · {-Projectiles ([A63F 9/0208](#), [A63F 9/0247](#) and [A63F 9/0252](#) take precedence)}
- U A63F 9/04** · Dice (dice tops [A63F 5/04](#) { D}); Dice-boxes; Mechanical dice-throwing devices {(casino or betting games played on boards [A63F 3/00157](#))}
- A63F 9/0402 · · {-Rolling boards}
- A63F 9/0406 · · {-Dice-throwing devices, e.g. dice cups}
- A63F 9/0415 · · {-Details of dice, e.g. non-cuboid dice}
- A63F 9/0468 · · {-Electronic dice; electronic dice simulators}
- A63F 9/0495 · · {-Dice-boxes or similar storing means}
- WARNING**
not complete, reorganisation pending
- U A63F 9/06** · Patience; Other games for self-amusement
- WARNING**
Groups [A63F 9/0601](#) to [A63F 9/0604](#) are not complete pending reclassification; see also this groups and its other subgroups
- A63F 9/0601 · · {-for animals}
- A63F 9/0602 · · {-Solitary games adapted for a single player}
- A63F 9/0604 · · {-based on the use of colours}
- A63F 9/0611 · · {-Solitary games adapted for multiple players}
- A63F 9/0612 · · {-Electronic puzzles}
- A63F 9/0641 · · {-using a marker or means for drawing, e.g. pen, pencil, chalk}

- A63F 9/0666 . . {matching elementary shapes to corresponding holes}
- A63F 9/0669 . . {-Tesselation}
- U A63F 9/08 . . Puzzles provided with elements movable in relation, {i.e. movably connected}, to each other
- U A63F 9/0803 . . . {Two-dimensional puzzles with slideable or rotatable elements or groups of elements, the main configuration remaining unchanged}
- A63F 9/0807 {-requiring vacant positions or gap migration, e.g. two-dimensional sliding puzzles}
- U A63F 9/0826 . . . {Three-dimensional puzzles with slidable or rotatable elements or groups of elements, the main configuration remaining unchanged, e.g. Rubik`s cube (elements rotatable about just one axis, e.g. discs stacked as a cylinder [A63F 9/0811](#))}
- A63F 9/083 {-with vacant positions or gap migration}
- A63F 9/0834 {-comprising only two layers, e.g. with eight elements}
- A63F 9/0838 {-with an element, e.g. invisible core, staying permanently in a central position having the function of central retaining spider and with groups of elements rotatable about at least three axes intersecting in one point}
- A63F 9/0842 {-each group consisting of again a central element and a plurality of additional elements rotatable about three orthogonal axes at both ends, the additional elements being rotatable about at least two axes, e.g. Rubik`s cube}
- A63F 9/0857 {-with elements slidably connected to a visible central body, e.g. beads in grooves}
- A63F 9/0861 {-with elements slidably connected to neighbouring elements, e.g. with hollow interior}
- A63F 9/0865 {-with a plurality of single elements rotatably connected to a central body which are characterised only by design, e.g. shape, use of colours or symbols}
- A63F 9/0869 {-with groups of elements rotating about at least three axes not intersecting in one point, e.g. toroidal shapes}
- A63F 9/0873 {-a sphere rotatable with respect to an inner sphere}
- U A63F 9/10 . . Two-dimensional jig-saw puzzles
- A63F 9/1011 . . . {-Composition of faces, i.e. visages, using individual pieces representing parts thereof}
- A63F 9/1044 . . . {-Display boards therefor}
- U A63F 9/12 . . Three-dimensional jig-saw puzzles
- A63F 9/1204 . . . {-Puzzles consisting of non-interlocking identical blocks, e.g. children's block puzzles}
- A63F 9/1208 . . . {-Connections between puzzle elements}
- A63F 9/1252 . . . {-using pegs, pins, rods or dowels as puzzle elements}
- A63F 9/1288 . . . {-Sculpture puzzles}
- A63F 9/24 . . {-Electric games;} Games using electronic circuits not otherwise provided for {(video games [A63F 13/00](#), computers for game playing per se **G06F19/00B**; computerized gaming systems [G07F 17/32](#))}
- U A63F 9/30 . . Capturing games for grabbing or trapping objects, e.g. fishing games
- A63F 9/305 . . {-Fishing games (with magnetic pieces [A63F 9/34](#))}

- U A63F 11/00** **Game accessories of general use { e.g. score counters, boxes}**
NOTE
 Game accessories specially adapted for a particular type of game are classified in one of the groups [A63F 1/00](#) to [A63F 9/00](#) covering the particular game

WARNING

Groups not complete, pending reclassification: [A63F 11/0025](#); [A63F 11/0051](#); [A63F 11/0074](#). See also this group]

- A63F 11/0002 · {-Dispensing or collecting devices for tokens or chips (dispensers for game pieces in chain reaction games [A63F 9/28](#); coin freed apparatus for games [G07F 17/32](#))}
- A63F 11/0011 · {-Chance selectors ([A63F 7/048](#), [A63F 9/04](#) take precedence)}
- A63F 11/0025 · {-Tools}
- A63F 11/0051 · {-Indicators of values, e.g. score counters}
- A63F 11/0074 · {-Game concepts, rules or strategies}
- U A63F 13/00** **Video games, i.e. games using an electronically generated display having two or more dimensions{(Gaming systems which provide a financial reward [G07F 17/32](#))}**
- U A63F 13/25 · Output arrangements for video game devices
- A63F 13/28 · · responding to control signals received from the game device for affecting ambient conditions, e.g. for vibrating players' seats, activating scent dispensers or affecting temperature or light (controlling the output signals based on the game progress [A63F 13/50](#)-)
- U A63F 13/50 · Controlling the output signals based on the game progress
- U A63F 13/53 · · involving additional visual information provided to the game scene, e.g. by overlay to simulate a head-up display [HUD] or displaying a laser sight in a shooting game
- U A63F 13/537 · · · using indicators, e.g. showing the condition of a game character on screen
- A63F 13/5378 · · · · for displaying an additional top view, e.g. radar screens or maps (using two or more virtual cameras concurrently [A63F 13/5252](#)-)
- U A63F 13/70 · Game security or game management aspects
- U A63F 13/79 · · involving player-related data, e.g. identities, accounts, preferences or play histories
- A63F 13/798 · · · for assessing skills or for ranking players, e.g. for generating a hall of fame (computing the game score [A63F 13/46](#)-)

Project: N/A (A63G)

- U A63G 31/00** **Amusement arrangements {(hoop exercising apparatus driven by the user [A63B 19/00](#))}**

A63G 31/007 · {-involving water}

WARNING

Not complete pending a reorganisation. See also [A63G 31/00](#) and subgroups

Project: N/A (A63H)

- U A63H 11/00** **Self-movable toy figures**
- U A63H 11/18 · Figure toys which perform a realistic walking motion

- U A63H 11/20
- • with pairs of legs, e.g. horses
- WARNING
New group [A63H 11/20](#) introduced in November 2005 is not complete. Documents from [A63H 11/18](#) are in the process of being reorganised to the new group
- A63H 11/205
- • • {-performing turtle-like motion}
- U A63H 27/00 **Toy aircraft; Other flying toys (toys with parachutes [A63H 33/20](#)); {Starting or launching devices therefor}**
- A63H 27/02
- Model aircraft
- A63H 27/06
- Jet-propelled flying toys, e.g. aeroplanes ([A63H 27/04](#), [A63H 27/12](#) take precedence)
- A63H 27/12
- Helicopters ([A63H 27/04](#) takes precedence); -Flying tops
- U A63H 33/00 **Other toys**
- U A63H 33/04
- Building blocks, strips, or similar building parts
- A63H 33/048
- {-to be assembled using hook and loop-type fastener or the like}

Project: N/A (B01B)

- U B01B 1/00 **Boiling; Boiling apparatus for physical or chemical purposes (preparation of starch [C08B 30/00](#); sugar industry [C13](#); steam generation [F22](#); domestic boilers [F24](#)); {Evaporation in general}**
- B01B 1/005
- {-Evaporation or evaporation apparatus for physical or chemical purposes, e.g. evaporation of liquids for gas phase reactions (separation by evaporation [B01D](#); evaporation in chemical vapor deposition or similar processes [C23C](#); cooling by evaporation [F01P 9/02](#); evaporation of fuels to be feeded to combustion apparatus, e.g. burners [F23D](#); refrigeration involving evaporation [F25B](#); drying involving evaporation [F26B](#); evaporation for preparing samples for analysis [G01N](#))}

Project: N/A (B01D)**B01D**

SEPARATION (~~-~~separating solids from solids by wet methods [B03B](#), [B03D](#); by pneumatic jigs or tables [B03B](#); by other dry methods [B07](#); magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high-voltage electric fields [B03C](#); centrifuges, vortex apparatus [B04](#); presses per se for squeezing-out liquid from liquid-containing material [B30B 9/02](#) ; treatment of water [C02F](#), e.g. softening by ion-exchange [C02F 1/42](#) ; { arrangements of air intake cleaners in gas turbine plants [F02C 7/05](#) } ; arrangements or mounting of filters in air-conditioning, air-humidification or ventilation [F24F 13/28](#)-)

NOTE

This subclass covers:

- evaporation, distillation, crystallisation, filtration, dust precipitation, gas cleaning, absorption, adsorption;
- similar processes which are not concerned with, or limited to, separation (except in the case of absorption or adsorption).

In this subclass the terms or expressions are used with the meaning indicated:

- "filtration" and analogous terms include straining solids from fluids;
- "filter medium" is a porous material or porous arrangement of material used to filter solids from fluids;

- "filtering element" is a section of filter medium in addition to parts to which the medium is demountably or permanently fixed, including other sections of medium, end caps, peripheral frames or edge strips, but excluding housings;
- "filter housing" is the fluid-constraining impervious vessel, whether open or closed, which contains, or is adapted to contain, one or more filtering elements or filter media;
- "filter chamber" is the space within a housing, where filtering elements or filter media are located. Partitions may divide a single housing into a plurality of chambers;
- "filtering apparatus" consists of filtering elements combined with housings, cleaning arrangements, motor or the like parts, which are characteristic of the particular type of apparatus. Ancillary devices such as pumps or valves are considered part of a filtering apparatus when inside the apparatus. Ancillary devices performing similar or different unit operation such as comminutors, mixers or non-filtering separators, whether or not inside the apparatus, are not considered part of a filtering apparatus. The term does not extend to apparatus, e.g. washing machines, of which the filter forms only a part. For apparatus used in drying or evaporation, [F26](#) takes precedence over [B01D](#).
Group [B01D 59/00](#) takes precedence over the other groups of this subclass and over other subclasses in class [B01](#)

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

B01D 19/0454	covered by	
B01D 9/00		
B01D 15/04	covered by	B01J 39/00
to	B01J 49/02	
B01D 17/022	covered by	
B01D 17/0202		
B01D 17/025	covered by	
B01D 17/0208		
B01D 17/028	covered by	
B01D 17/0211		
B01D 17/032	covered by	
B01D 17/0214		
B01D 17/035	covered by	
B01D 17/0205		
B01D 17/038	covered by	
B01D 17/0217		
B01D 17/05	covered by	
B01D 17/047		
B01D 17/09	covered by	
B01D 17/005		
B01D 17/12	covered by	
B01D 17/00		
B01D 25/133	covered by	
B01D 25/285		
B01D 25/168	covered by	
B01D 25/285		
B01D 25/21	covered by	
B01D 25/164		

[B01D 29/075](#) covered by [B01D 29/62](#)
, [B01D 29/76](#)
[B01D 29/37](#) covered by [B01D 29/336](#)
, [B01D 29/356](#)
[B01D 33/052](#) covered by
[B01D 33/64](#)
[B01D 35/01](#) covered by
[B01D 36/001](#)
[B01D 61/26](#) covered by
[A61M 1/1656](#)
[B01D 61/34](#) covered by [A61M 1/16](#)

5. The group [B01D 24/00](#) was introduced in March 1989. This group includes subject matter of [B01D 23/00](#) , [B01D 25/06](#) , [B01D 25/10](#) , [B01D 29/0027](#) , [B01D 33/0032](#) and [B01D 33/0054](#) .

6. Documents from the backlog of the group [B01D 23/00](#) , and the subgroups [B01D 25/06](#) , [B01D 25/10](#) , [B01D 29/0027](#) , [B01D 33/0032](#) and [B01D 33/0054](#) are in the process of being revised and also systematically transferred to [B01D 24/00](#) .

7. The groups [B01D 29/01](#) to [B01D 29/43](#) and [B01D 29/50](#) to [B01D 29/965](#) were introduced in March 1989; these subgroups include the subject matter of the subgroups of groups [B01D 29/0002](#) , which are from this date no longer use for the classification of new documents.

8. The documents from the backlog of the subgroups of group [B01D 29/0002](#) are in the process of being systematically transferred to the other subgroups of group [B01D 29/00](#) .

11. The documents from the backlog of the subgroups of group [B01D 33/0003](#) are in the process of being systematically transferred to the other subgroups of group [B01D 33/00](#) .

9. Groups [B01D 25/16](#) , [B01D 25/18](#) and [B01D 25/20](#) are no longer used for the classification of new. Patent documents are continuously being reclassified to groups [B01D 29/44](#) , [B01D 29/46](#) and [B01D 29/48](#) .

10. The groups [B01D 25/04](#) , [B01D 25/08](#) , [B01D 25/121](#) , [B01D 25/122](#) , [B01D 25/124](#) , [B01D 25/125](#) , [B01D 25/14](#) , are no longer used for classification of new documents from December 1, 2011 onwards. The backlog of those groups are being continuously reclassified to groups [B01D 25/00](#) , [B01D 29/00](#) and subgroups.

B01D 1/00

Evaporating ({ evaporation in general, e.g. of liquids for gas phase reactions [B01B 1/005](#) } ; removal of incrustation [B08B](#); preparation of starch [C08B 30/00](#) ; sugar industry [C13](#); prevention of incrustation [C23F](#); drying solid materials or objects by evaporating liquids therefrom [F26](#)-)

- U B01D 1/0011 · {Heating features}
- B01D 1/0017 · {Use of electrical or wave energy} (-[B01D 1/0029](#) takes precedence-)
- U B01D 1/0029 · {Use of radiation}
- B01D 1/0035 · · {Solar energy} (-for treatment of water [C02F 1/14](#)-)
- U B01D 1/0041 · {Use of fluids}
- B01D 1/0047 · · {in a closed circuit} (-[B01D 3/007](#) takes precedence-)
- B01D 1/0058 · {Use of waste energy from other processes or sources, e.g. combustion gas} (-for water treatment [C02F 1/16](#)-)
- U B01D 1/06 · Evaporators with vertical tubes
- B01D 1/08 · · with short tubes (-[B01D 1/12](#) { [B01D 1/065](#) } take precedence)
- B01D 1/10 · · with long tubes, e.g. Kestner evaporators (-[B01D 1/12](#) { [B01D 1/065](#) } take precedence)
- B01D 1/14 · with heated gases or vapours (or liquids) in contact with the liquid

- B01D 1/16 • by spraying (~~B01D 1/22~~ takes precedence-)
- B01D 1/18 • • to obtain dry solids (~~B01D 1/24~~ takes precedence-)
- B01D 1/20 • • Sprayers (~~in general B05B-~~)
- B01D 1/22 • by bringing a thin layer of the liquid into contact with a heated surface(~~B01D 1/065~~ takes precedence-)}
- U B01D 1/222 • • {In rotating vessels; vessels with movable parts}
- B01D 1/228 • • • {horizontally placed cylindrical container or drum (~~B01D 1/223~~ takes precedence-)}
- U B01D 1/28 • with vapour compression
- B01D 1/2881 • • {Compression specifications (*e.g. pressure, temperature, processes*)}(~~e.g. pressure, temperature, processes~~)}
- B01D 1/2884 • • {Multiple effect compression (~~B01D 1/2815~~ , ~~B01D 1/2828~~ , ~~B01D 1/2834~~ and ~~B01D 1/2837~~ take precedence-)}
- B01D 1/289 • • {Compressor features (*e.g. constructions, details, cooling, lubrication, driving systems*)}(~~e.g. constructions, details, cooling, lubrication, driving systems~~)}
- B01D 3/00** **Distillation or related exchange processes in which liquids are contacted with gaseous media, e.g. stripping** ({ evaporation in general, e.g. of liquids for gas phase reactions [B01B 1/005](#) } ; gas chromatography [B01D 15/08](#) ; destructive distillation [C10B](#) ; preparation of alcoholic beverages by distillation [C12G 3/12-](#))
- U B01D 3/06 • Flash distillation
- B01D 3/065 • • {Multiple-effect flash distillation (*more than two traps*)}(~~more than two traps~~)}
- B01D 3/08 • in rotating vessels; Atomisation on rotating discs ({ [B01D 1/222](#) } , [B01D 3/10](#) take precedence-)
- B01D 3/10 • Vacuum distillation (~~B01D 3/12~~ takes precedence-)
- B01D 3/14 • Fractional distillation {or use of a fractionation or rectification column}
- B01D 3/16 • • Fractionating columns in which vapour bubbles through liquid (~~packing elements [B01J 19/30](#) , [B01J 19/32-](#)~~)
- B01D 3/32 • • Other features of fractionating columns; { Constructional details of fractionating columns not provided for in groups [B01D 3/16](#) to [B01D 3/30-](#)}
- B01D 5/00** **Condensation of vapours; Recovering volatile solvents by condensation** (~~B01D 8/00~~ takes precedence; condensers [F28B-](#))
- U B01D 5/0003 • {by using heat-exchange surfaces for indirect contact between gases or vapours and the cooling medium}
- B01D 5/0018 • • {Dome shaped (~~B01D 5/0066~~ takes precedence-)}
- U B01D 5/0057 • {in combination with other processes}
- B01D 5/0075 • • {with heat exchanging (~~B01D 5/0039~~ takes precedence-)}
- U B01D 5/0078 • {characterised by auxiliary systems or arrangements}
- B01D 5/0084 • • {Feeding or collecting the cooling medium (~~B01D 5/0087~~ takes precedence-)}
- B01D 5/0096 • • {Cleaning (~~cleaning in general [B08B-](#)~~)}
- B01D 7/00** **Sublimation** (~~B01D 8/00~~ takes precedence; freeze-drying [F26-](#))
- B01D 7/02 • Crystallisation directly from the vapour phase (~~into single crystals [C30B 23/00-](#)~~)
- B01D 8/00** **Cold traps; Cold baffles** (~~pumps for evacuating by condensing or freezing [F04B 37/08-](#)~~)
- B01D 9/00** **Crystallisation** (~~crystallisation directly from the vapour phase [B01D 7/02](#) ; making single crystals [C30B](#) ; { crystallisation as part of the Bayer process also classified in [C01F 7/14](#) }~~)

- B01D 9/0004
- {cooling by heat exchange (-by evaporation of components of the mixture to be separated [B01D 9/0013](#) ; refrigeration machines [F25B-](#))}
- U B01D 9/0018
- {Evaporation of components of the mixture to be separated}
- B01D 9/0027
- · {by means of conveying fluid, e.g. spray-crystallisation (-spray-drying [F26B-](#))}
- B01D 9/0031
- · {by heating (-[B01D 9/0022](#) , [B01D 9/0027](#) take precedence)}
- B01D 9/0063
- {Control or regulation (control per se [G05](#))}
- B01D 9/02
- from solutions {not used}
- U B01D 11/00**
- Solvent extraction**
- U B01D 11/02
- of solids
- NOTE
- Combinations of characteristics of individual groups, e.g. [B01D 11/0226](#) and [B01D 11/028](#) are expressed as [B01D 11/0226 +B01D 11/028](#)
- U B01D 11/0215
- · {Solid material in other stationary receptacles}
- B01D 11/0223
- · · {Moving bed of solid material (-see also [B01D 11/0261-](#))}
- B01D 11/0234
- · · · {using other slow rotating arms or elements, whereby the general transport direction of the solids is not parallel to the rotation axis, e.g. perpendicular (-[B01D 11/0238](#) takes precedence)}
- U B01D 11/0253
- · · {Fluidised bed of solid materials}
- B01D 11/0257
- · · · {using mixing mechanisms, e.g. stirrers, jets (-[B01D 11/0242](#) takes precedence)}
- B01D 11/0269
- · {Solid material in other moving receptacles (-[B01D 11/0238](#) takes precedence)}
- U B01D 11/0292
- · {Treatment of the solvent}
- B01D 11/0296
- · · {Condensation of solvent vapours (-condensation in general [B01D 5/00-](#))}
- U B01D 11/04
- of solutions which are liquid
- U B01D 11/0446
- · {Juxtaposition of mixers-settlers}
- B01D 11/0453
- · · {with narrow passages limited by plates, walls, e.g. helically coiled tubes (-[B01D 11/0461](#) takes precedence)}
- B01D 15/00**
- Separating processes involving the treatment of liquids with solid sorbents (-using liquid sorbents [B01D 11/00](#) ; ion exchange processes or materials, sorbent materials in general [B01J](#), e.g. sorbents for chromatography [B01J 20/281](#) ; for investigating or analysing materials [G01N 30/00-](#)); Apparatus therefor**
- U B01D 15/08
- Selective adsorption, e.g. chromatography
- NOTE
- In order that group [B01D 15/08](#) may provide a basis for a complete search with respect to chromatography in general, all subject matter of general interest is classified in this group even if it is classified primarily in the application-oriented groups, for example dairy products [A23C 9/148](#) , treatment of blood, e.g. [A61M 1/36](#) , optically active organic compounds [C07B 57/00](#) or peptides [C07K 1/16](#)
- U B01D 15/26
- · characterised by the separation mechanism
- B01D 15/38
- · · involving specific interaction not covered by one or more of groups [B01D 15/265](#) to [B01D 15/36](#)

B01D 17/00 Separation of liquids, not provided for elsewhere, e.g. by thermal diffusion (-devices for separating or removing fatty or oily substances or similar floating material from water, waste water, or sewage [C02F 1/40](#) ; cleaning or keeping clear the surface of open water from oil or like materials [E02B 15/04](#) ; arrangements for separating lubricants from refrigerants [F25B 43/02](#)-)

NOTE

in this group, documents are classified and arranged according to a combination system limited to the symbols of the group and subgroups of [B01D 17/00](#) . In this system each combination is indicated, also of subgroups depending from the same group, e.g. [B01D 17/041](#) +[B01D 17/042](#)

U B01D 19/00

Degasification of liquids

- U B01D 19/0005
- B01D 19/001
- B01D 19/0036
- B01D 19/0042
- B01D 19/0052
- B01D 19/0063
- B01D 19/0068
- B01D 19/0073
- B01D 19/0089
- B01D 19/02
- {with one or more auxiliary substances}
 - • {by bubbling steam through the liquid (-[B01D 19/0042](#) , [B01D 19/0047](#) and [B01D 19/0052](#) take precedence-)}
 - {Flash degasification (the other groups take precedence)}
 - {modifying the liquid flow (-[B01D 19/0021](#) takes precedence-)}
 - • {in rotating vessels, vessels containing movable parts or in which centrifugal movement is caused (-[B01D 19/0026](#) takes precedence-)}
 - {Regulation, control including valves and floats (-for construction and details of valves [F16K](#)-)}
 - {General arrangements, e.g. flowsheets (-~~[B01D 19/0063](#) takes precedence~~ [B01D 19/0063](#) takes precedence)}
 - {-by a method not covered by groups [B01D 19/0005](#) to [B01D 19/0042](#)-}
 - • {using a magnetic field (-magnetic separation in general [B03C 1/00](#)-)}
 - Foam dispersion or prevention (-during boiling [B01B 1/02](#) ; during fermentation [C12](#)-)

B01D 21/00

Separation of suspended solid particles from liquids by sedimentation ({ separation of ores or the like by sedimentation [B03B 5/48](#) to [B03B 5/60](#) } ; differential sedimentation [B03D 3/00](#) ; {purification of water, waste water, sewage or sludge [C02F](#), e.g.} devices for separating or removing fatty or oily substances or similar floating material from water, waste water or sewage [C02F 1/40](#)-)

WARNING

The following groups are not complete: [B01D 21/0006](#), see also [B01D 21/00](#) [B01D 21/0018](#), see also [B01D 21/00](#) [B01D 21/0054](#) , see also [B01D 21/00](#) [B01D 21/0057](#) , see also [B01D 21/00](#) [B01D 21/003](#), see also [B01D 21/00](#) [B01D 21/0036](#) , see also [B01D 21/00](#) [B01D 21/0087](#), see also [B01D 21/00](#) [B01D 21/2416](#) , see also [B01D 21/2405](#) [B01D 21/2422](#) , see also [B01D 21/2405](#) [B01D 21/2427](#), see also [B01D 21/24](#) [B01D 21/2433](#), see also [B01D 21/24](#) [B01D 21/262](#), see also [B01D 21/26](#) [B01D 21/265](#), see also [B01D 21/26](#) [B01D 21/267](#), see also [B01D 21/26](#) [B01D 21/28](#) , see also [B01D 21/28](#) [B01D 21/302](#) , see also [B01D 21/30](#) **[B01D21/30B](#)**, see also [B01D 21/30](#)]

- B01D 21/0009
- B01D 21/0024
- B01D 21/003
- {Settling tanks making use of electricity or magnetism (-electric ultra filters [B01D 61/425](#) ; filters making use of electricity or magnetism [B01D 35/06](#) ; magnetic or electrostatic separation [B03C](#)-)}
 - {Inlets or outlets provided with regulating devices, e.g. valves, flaps (-[B01D 21/24](#) takes precedence-)}
 - {Sedimentation tanks provided with a plurality of compartments separated by a partition wall (-[B01D 21/0039](#) takes precedence-)}

- B01D 21/0033
- B01D 21/0084
- B01D 21/0087
- B01D 21/0096
- B01D 21/01
- B01D 21/02
- B01D 21/26
- B01D 21/265
- B01D 23/00 -
B01D 43/00**
- Filtration; Filtering material, regeneration thereof ({ aquarium filters A01K 63/04 ; filters for cigars and cigarettes A24D 3/00 ; filters for coffee or tea-making machines A47J 31/06 ; filters for frying fat A47J 37/12 ; filters for suction cleaners A47L 9/10 } ; blood or infusion liquid filters A61M 5/165 ; { liquid-liquid separation, e.g. for filtering elements made hydrophilic or hydrophobic, B01D 12/00 , B01D 17/00 , B01D 43/00 ; filtering material and its regeneration, as well as filtering aids, B01D 39/00 ; gas or air filters in general B01D 46/00 ; filtration devices for laboratory use B01L ; "dewatering" ore or coal slurry B03B 5/48 ; magnetic filters B03C 1/00 } ; screens or sieves per se B07B 1/00 ; { filters for lubricating and cooling systems in turning, boring or milling machines B23Q 11/10 ; filters for cooling systems in grinding machines B24B 55/00 } ; extrusion filters B29C 47/68 ; { filter presses B30B 9/02 ; purification of process water, drinking water and waste water C02F ; filters for alcoholic beverages C12H 1/00 } ; filtering spinning solution or melt D01D 1/10 ; { filters for washing machines D06F 39/10 ; filters or strainers for papermaking D21D ; filters in water collecting systems E03B 3/18 , E03B 7/07 ; subsoil filters for boreholes E21B 43/02 ; air filters for internal-combustion engines F02M 35/02 ; filters for pumps F04B 39/16 , F04D 29/70 ; filters in pipe systems F16L 55/24 } ; filtration of lubricants F16N 39/06 ; { filters for volume measuring apparatus G01F 15/12 })**
- B01D 23/00**
- Gravity filters (-with moving filtering elements B01D 33/0035-)**
- B01D 23/005
- U B01D 23/10
- B01D 23/16
- B01D 23/20
- B01D 23/26
- B01D 23/28

B01D 24/00 **Filters comprising loose filtering material, i.e. filtering material without any binder between the individual particles or fibres thereof (-B01D 27/02 takes precedence-)**

NOTE

See WARNING after subclass title, particularly items (7), (8) and (14)

- B01D 24/001 · {Making filter elements (not provided for elsewhere)(-see also [B01D 25/001](#) , [B01D 27/005](#) , [B01D 29/012](#) , [B01D 29/111](#) , [B01D 33/0093](#)-)}
- U B01D 24/002 · {with multiple filtering elements in parallel connection}
- B01D 24/005 · · {Filters being divided into a plurality of cells or compartments (-[B01D 24/004](#) takes precedence-)}
- U B01D 24/02 · with the filter bed stationary during the filtration
- B01D 24/04 · · the filtering material being clamped between pervious fixed walls (-[B01D 24/10](#) , [B01D 24/20](#) take precedence-)
- U B01D 24/10 · · the filtering material being held in a closed container
- B01D 24/12 · · · Downward filtration, the filtering material being supported by pervious surfaces (-[B01D 24/18](#) takes precedence-)
- B01D 24/14 · · · Downward filtration, the container having distribution or collection headers or pervious conduits (-[B01D 24/18](#) takes precedence-)
- B01D 24/16 · · · Upward filtration (-[B01D 24/18](#) takes precedence-)
- B01D 24/28 · with the filter bed moving during the filtration (-with the filter bed fluidised [B01D 24/36](#)-)
- B01D 24/34 · with the filtering material and its pervious support moving (-tipping buckets, trays or like sections [B01D 33/327](#)-)
- B01D 24/36 · with the filter bed fluidised during the filtration (-with the filter bed being stationary [B01D 24/02](#)-)
- U B01D 24/38 · Feed or discharge devices
- U B01D 24/40 · · for feeding
- B01D 24/405 · · · {Special treatment of the feed stream before contacting the filtering material, e.g. cutting (-[B01D 35/24](#) , [B01D 37/02](#) , [B01D 37/03](#) take precedence-)}
- B01D 24/46 · Regenerating the filtering material in the filter (-[B01D 24/44](#) takes precedence-)
- B01D 24/4605 · · {by scrapers, brushes, nozzles or the like placed on the cake-side of the stationary filtering material and only contacting the external layer (-[B01D 24/4631](#) takes precedence-)}
- B01D 24/4668 · · {by moving the filtering element (-[B01D 24/4605](#) and [B01D 24/4631](#) take precedence-)}
- B01D 24/4694 · · {~~containing filter material retaining means(e.g. screens, balls)~~{*containing filter material retaining means (e.g. screens, balls)* placed on the surface of the filter material}
- U B01D 24/48 · integrally combined with devices for controlling the filtration
- U B01D 24/4807 · · {Handling the filter cake for purposes other than regenerating}
- B01D 24/4846 · · · {Retarding cake deposition on the filter during the filtration period, e.g. using stirrers (-[B01D 24/407](#) takes precedence-)}
- B01D 24/4876 · · {in which the filtering elements are moved between filtering operations; particular measures for removing or replacing the filtering elements (-[B01D 24/46](#) , [B01D 24/4807](#) take precedence-)}

B01D 25/00 Filters formed by clamping together several filtering elements or parts of such elements (-disc filters [B01D 29/39](#)-)**NOTE**

See WARNING after subclass title, particularly items (7), (8), (12), (13) and (14)

- B01D 25/001 • {Making filtering elements (not provided for elsewhere; see also [B01D 24/001](#) , [B01D 27/005](#) , [B01D 29/012](#) , [B01D 29/111](#) , [B01D 33/0093](#)-)}
- B01D 25/002 • {Clamping devices (-[B01D 25/12](#) and subgroups take precedence-)}
- B01D 25/04 • with screens or sheets, e.g. cloths, paper (-[B01D 25/12](#) takes precedence-)
- B01D 25/12 • Filter presses, i.e. of the plate and frame type{(-filter presses in which the liquid is removed by pressing-out solid matter [B30B](#)-)}
- B01D 25/124 • • {Pressing-out operation after filtration, e.g. of the cake (-presses in general [B30](#)-)}
- B01D 25/127 • • with one or more movable filter bands arranged to be clamped between the press plates or between a plate and a frame during filtration, e.g. zigzag endless filter bands (-[B01D 25/172](#) , [B01D 25/176](#) , [B01D 25/19](#) take precedence-)
- B01D 25/14 • • Clamping means {clamping of filter cloth or similar securing means}
- U B01D 25/16 • Edge filtering elements, i.e. using contiguous impervious surfaces
- B01D 25/164 • • Chamber-plate presses, i.e. the sides of the filtering elements being clamped between two successive filtering plates (-[B01D 25/127](#) , [B01D 25/172](#) , [B01D 25/176](#) , [B01D 25/19](#) take precedence-)
- B01D 25/172 • • Plate spreading means (-removal of filter cakes [B01D 25/32](#)-)
- B01D 25/21 • • Plate and frame presses (-[B01D 25/172](#) , [B01D 25/176](#) , [B01D 25/19](#) take precedence-)
- B01D 25/28 • Leaching or washing filter cakes in the filter {handling the filter cake for purposes other than regenerating}
- U B01D 25/30 • Feeding devices;{Discharge devices}
- B01D 25/307 • • {with internal recirculation through the filtering element (-[B01D 37/02](#) takes precedence-)}
- U B01D 25/32 • Removal of the filter cakes
- B01D 25/34 • • by moving,{e.g. rotating,}the filter elements{(-[B01D 25/172](#) , [B01D 25/19](#) take precedence-)}
- B01D 25/343 • • • {Particular measures for replacing or isolating one or more filtering elements; Transport systems for the filtering apparatus (-[B01D 25/28](#) , [B01D 25/32](#) , [B01D 25/346](#) , [B01D 25/36](#) take precedence-)}
- B01D 25/38 • • by moving parts, e.g. scrapers, contacting stationary filter elements {sprayers}
- U **B01D 27/00 Cartridge filters of the throw-away type**
- NOTE**
- See WARNING after subclass title, particularly item (14)
- B01D 27/005 • {Making filter elements (not provided for elsewhere)(-see also [B01D 24/001](#) , [B01D 25/001](#) , [B01D 29/012](#) , [B01D 29/111](#) , [B01D 33/0093](#)-)}
- B01D 27/02 • with cartridges made from a mass of loose {granular or fibrous}material

B01D 29/00

Other filters with filtering elements stationary during filtration, e.g. pressure or suction filters, or filtering elements thereof~~{(B01D 24/00 , B01D 25/00 and B01D 27/00 take precedence)}~~

NOTE

See WARNING after subclass title, particularly items (7), (8), (9), (10) ,(12) and (14)

- U B01D 29/0002 • {Aspects of other filters with filtering elements stationary during filtration, or of filtering elements thereof}
- U B01D 29/0018 • • {Filters with screens or sheets, e.g. cloth, paper}
- U B01D 29/0022 • • • {Filters with corrugated, folded, or wound sheets}
- B01D 29/0025 • • • • {allowing a coaxial stream through the filtering element ~~(-for cartridge filters B01D 27/06-)}~~}
- U B01D 29/0029 • • {Bag, cage, hose, tube, sleeve, or like filters}
- B01D 29/0031 • • • {Pressing-out operation after filtration, e.g. by means of membranes ~~(-filter presses per se B01D 25/12-)}~~}
- B01D 29/0043 • • • {having rigid self-supporting filtering material ~~(-B01D 29/0068 takes precedence-)}~~}
- U B01D 29/0047 • • • {with multiple filtering units}
- B01D 29/005 • • • • {connected in parallel ~~(-B01D 29/0056 takes precedence-)}~~}
- B01D 29/0052 • • • • {connected in series ~~(-B01D 29/0059 takes precedence-)}~~}
- B01D 29/0068 • • {Filters with hollow discs side-by-side on or around one or more tubes ~~(-with elements moving during filtration B01D 33/0048 , B01D 33/0051-)}~~}
- B01D 29/0072 • • Filters integrally combined with devices for controlling the filtration ~~(-for shutting-off elements or changing over from one element to another B01D 35/12 , B01D 35/14 ; controlling filtration processes B01D 37/04-)~~}
- B01D 29/0075 • • {Regeneration of the filtering material in the filter ~~(-for two separate filter elements placed in different units B01D 35/12-)}~~}
- B01D 29/0077 • • • {by scrapers, brushes, nozzles or the like placed on the cake-side of the filters ~~(-B01D 29/0084 takes precedence-)}~~}
- B01D 29/0084 • • • {by moving the filter element ~~(-B01D 29/0088 takes precedence-)}~~}
- B01D 29/0093 • {Making filtering elements (not provided for elsewhere)~~(-see also B01D 23/005 , B01D 25/001 , B01D 27/005-)}~~}
- B01D 29/0095 • {Flat filtering elements ~~(-B01D 25/12 , B01D 25/26 , B01D 29/0015 , B01D 29/0068 take precedence-)}~~}
- B01D 29/01 • with flat filtering elements ~~(-B01D 29/39 takes precedence-)~~}

NOTE

If the construction of the filtering element itself is of minor importance the document is classified in the subgroups [B01D 29/01](#) , [B01D 29/014](#) , [B01D 29/016](#) or [B01D 29/018](#) ; otherwise in the subgroups [B01D 29/03](#) to [B01D 29/07](#)

- B01D 29/012 • • {Making filtering elements ~~(-making bag, cage, hose, tube, sleeve or like filtering elements B01D 29/111-)}~~}
- B01D 29/014 • • {with curved filtering elements ~~(-construction B01D 29/035 , B01D 29/071-)}~~}
- U B01D 29/05 • • supported
- U B01D 29/07 • • • with corrugated, folded or wound filtering sheets
- B01D 29/071 • • • • {with curved filtering elements ~~(-B01D 29/072 , B01D 29/073 take precedence-)}~~}

- B01D 29/09
 - with filtering bands, e.g. movable between filtering operations{(-[B01D 25/121](#) takes precedence-)}
- U B01D 29/11
 - with bag, cage, hose, tube, sleeve or like filtering elements
 - NOTE**
 - If the construction of the filtering element itself is of minor importance the document is classified in the subgroups [B01D 29/11](#) , [B01D 29/114](#) and [B01D 29/117](#) , otherwise in the subgroups [B01D 29/13](#) to **B01D29/37**
- B01D 29/114
 - • {arranged for inward flow filtration (-[B01D 29/15](#) , [B01D 29/33](#) take precedence-)}
- B01D 29/117
 - • {arranged for outward flow filtration (-[B01D 29/23](#) , [B01D 29/35](#) take precedence-)}
- U B01D 29/13
 - • Supported filter elements
- U B01D 29/15
 - • • arranged for inward flow filtration
- B01D 29/17
 - • • • open-ended {the arrival of the mixture to be filtered and the discharge of the concentrated mixture are situated on both opposite sides of the filtering element}
- U B01D 29/23
 - • • arranged for outward flow filtration
- B01D 29/25
 - • • • open-ended {the arrival of the mixture to be filtered and the discharge of the concentrated mixture are situated on both opposite sides of the filtering element}
- U B01D 29/39
 - with hollow discs side by side on, or around, one or more tubes, e.g. of the leaf type
- B01D 29/43
 - • mounted otherwise than transversely on the tube {mounted otherwise than axially on the tube}
- B01D 29/50
 - with multiple filtering elements, characterised by their mutual disposition (-[B01D 29/39](#) takes precedence-)
- B01D 29/62
 - Regenerating the filter material in the filter (-devices for taking out of action one or more units of multi-unit filters, e.g. for regeneration, [B01D 35/12](#)-)
- B01D 29/76
 - Handling the filter cake in the filter for purposes other than for regenerating (-[B01D 29/94](#) takes precedence-)
- U B01D 29/80
 - • for drying
- U B01D 29/82
 - • • by compression
- B01D 29/828
 - • • • {using screws (-[B01D 29/6476](#) takes precedence-)}
- B01D 29/86
 - • Retarding cake deposition on the filter during the filtration period, e.g. using stirrers{(-[B01D 29/908](#) takes precedence-)}
- U B01D 29/88
 - having feed or discharge devices
- B01D 29/885
 - • {with internal recirculation through the filtering element (-[B01D 37/02](#) takes precedence-)}
- U B01D 29/90
 - • for feeding
- B01D 29/904
 - • • {directing the mixture to be filtered on the filtering element in a manner to clean the filter continuously (-[B01D 29/115](#) , [B01D 29/118](#) , [B01D 29/17](#) , [B01D 29/25](#) , [B01D 29/336](#) , [B01D 29/356](#) , [B01D 29/902](#) , [B01D 29/908](#) take precedence-)}
- B01D 29/906
 - • • {Special treatment of the feed stream before contacting the filtering element, e.g. cutting (-[B01D 35/24](#) , [B01D 37/02](#) , [B01D 37/03](#) take precedence-)}
- B01D 29/96
 - in which the filtering elements are moved between filtering operations; Particular measures for removing or replacing the filtering elements; Transport systems for filters (-[B01D 29/09](#) , [B01D 29/70](#) take precedence-)

B01D 33/00

Filters with filtering elements which move during the filtering operation (-filters comprising loose filtering material moving or fluidised during filtration [B01D 24/28](#) to [B01D 24/36](#) ; centrifuges [B04B](#)-)

NOTE

See WARNING after subclass title, particularly items (7), (8), (11) and (14)

- U B01D 33/0003 · {Aspects of filters with filtering elements which move during the filtering operation}
- B01D 33/0006 · · {with rotating filtering surfaces (-rotating brush filters [B01D 35/10](#)-)}
- B01D 33/0009 · · · {-with cylindrical filtering surfaces, e.g. hollow drums, rotating drum filters for paper making [D21B](#)-}
- B01D 33/0058 · · · {with filtering surfaces travelling along conveyers (-tipping bucket type [B01D 35/08](#) ; brush filters [B01D 35/10](#)-)}
- U B01D 33/0061 · · {Accessories and components}
- U B01D 33/0064 · · · {Devices for handling the filter cake, e.g. washing, discharging}
- B01D 33/0067 · · · · {with scrapers, brushes, nozzles or the like placed on the cake-side of the filter (-[B01D 33/0074](#) takes precedence-)}
- B01D 33/009 · · · {Pressure distribution systems (-pressure distribution systems for filters with tipping buckets or trays [B01D 35/08](#)-)}
- B01D 33/0093 · {Making filter elements (not provided for elsewhere)(-see also [B01D 24/001](#) , [B01D 25/001](#) , [B01D 27/005](#) , [B01D 29/012](#) , [B01D 29/111](#)-)}
- B01D 33/0096 · · {moving rectilinearly (filters [B01D 35/10](#))}
- B01D 33/01 · with translationally moving filtering elements, e.g. pistons (-[B01D 33/04](#) to [B01D 33/327](#) take precedence-)
- B01D 33/06 · with rotary cylindrical filtering surfaces, e.g. hollow drums (-[B01D 33/044](#) takes precedence; { rotating drums for paper-making [D21B](#) })
- U B01D 33/15 · with rotary plane filtering surfaces
- B01D 33/17 · · with rotary filtering tables (-tables divided into separately tiltable buckets, trays or like sections [B01D 33/327](#)-)
- B01D 33/29 · the movement of the filter elements being a combination of movements (-[B01D 33/19](#) takes precedence-)
- B01D 33/333 · with individual filtering elements moving along a closed path (-tipping buckets, trays or like sections [B01D 33/327](#)-)
- B01D 33/35 · with multiple filtering elements characterised by their mutual disposition ({ [B01D 33/042](#) } , [B01D 33/21](#) take precedence-)
- B01D 33/44 · Regenerating the filter material in the filter (-devices for taking out of action one or more units of multi-unit filters, e.g. for regeneration, [B01D 35/12](#)-)
- B01D 33/46 · · by scrapers, brushes {nozzles}or the like acting on the cake-side of the filtering element{(-[B01D 33/503](#) takes precedence-)}
- B01D 33/58 · Handling the filter cake in the filter for purposes other than for regenerating (-[B01D 33/76](#) takes precedence-){the filter cake remaining on the filtering element}
- B01D 33/70 · having feed or discharge devices (-[B01D 33/82](#) takes precedence-)
- U B01D 33/72 · · for feeding
- B01D 33/725 · · · {Special treatment of the feed stream before contacting the filtering element, e.g. cutting (-[B01D 35/24](#) , [B01D 37/02](#) , [B01D 37/03](#) take precedence-)}
- U B01D 33/80 · Accessories

- B01D 33/803
- {in which the filtering elements are moved between filtering operations (-[B01D 33/52](#) takes precedence-); Particular measures for removing or replacing the filtering elements; Transport systems for filters}
- U B01D 35/00** **Other filtering devices; Auxiliary devices for filtration; Filter housing constructions**
- NOTE
See WARNING after subclass title, particularly item (14)
- B01D 35/005
- {Filters specially adapted for use in internal-combustion engine lubrication or fuel systems, not of special interest for [B01D 23/00](#) - [B01D 33/00](#) (-internal-combustion engine lubricating systems [F02M](#) ; lubrication in general [F16N](#)-)}
- B01D 35/02
- Filters adapted for location in special places, e.g. pipe-lines, pumps, stop-cocks, (-[B01D 35/05](#) takes precedence; { water pipe system filters [E03B 3/18](#) , [E03B 7/07](#) ; dirt catchers in sewers [E03F](#); filters or strainers for pipe-lines in general [B08B](#), [E03F](#); object or dirt catching devices in sinks or the like [E03C 1/26](#) ; suction strainers or filters for pumps [F04B 53/005](#) , [F04D 29/70](#) })
- B01D 35/027
- · rigidly mounted in or on tanks or reservoirs (-[B01D 35/04](#) takes precedence-)
- B01D 35/04
- · Plug, tap, or cock filters {filtering elements mounted in or on a faucet}
- B01D 35/06
- Filters making use of electricity or magnetism (-ultrafiltration, microfiltration [B01D 61/14](#) ; electrodialysis, electro-osmosis [B01D 61/42](#) ; devices comprising filters and magnetic separators [B03C 1/30](#)-)
- B01D 35/10
- Brush filters {Rotary brush filters}
- B01D 35/14
- Safety devices specially adapted for filtration (-preventing or minimising fires or explosions [A62C](#)-); Devices for indicating clogging (-incorporated in a throw-away filter [B01D 27/10](#)-)
- B01D 35/16
- Cleaning-out devices {e.g. for removing the cake from the filter casing or for evacuating the last remnants of liquid}
- B01D 35/20
- Vibrating the filters (-regenerating filter material by vibrations in filters with stationary filtering elements [B01D 29/72](#) ; discharging the filter cake by vibrations in filters with moving filtering elements [B01D 33/54](#) , [B01D 33/76](#)-)
- B01D 35/22
- Directing the mixture to be filtered on to the filters in a manner to clean the filters{(-[B01D 29/904](#) takes precedence-)}
- B01D 35/26
- Filters with built-in pumps {filters provided with a pump mounted in or on the casing(-aquarium pumps or filters [A01K 63/04](#)-)}
- U B01D 35/30**
- Filter housing constructions
- B01D 35/301
- · {Constructions of two or more housings (-[B01D 35/12](#) takes precedence-)}
- B01D 35/34
- · open-topped (-[B01D 35/31](#) takes precedence-)
- U B01D 36/00** **Filter circuits or combinations of filters with other separating devices**
- NOTE
See WARNING after subclass title, particularly item (14)
- B01D 36/003
- {Filters in combination with devices for the removal of liquids (-[B01D 35/185](#) takes precedence-)}
- B01D 36/02
- Combinations of filters of different kinds (-[B01D 29/50](#) , [B01D 33/35](#) take precedence-)
- B01D 37/00** **Processes of filtration (-processes specially adapted for filtering gases [B01D 46/00](#)-)**
- NOTE
See WARNING after subclass title, particularly item (14)

- B01D 37/02
- Precoating the filter medium; Addition of filter aids to the liquid being filtered{(-devices for feeding reagents [C02F 1/685](#) and sub-groups; filter aids-)}
- U B01D 39/00** **Filtering material for liquid or gaseous fluids**
- B01D 39/08
- Filter cloth, i.e. woven, knitted or interlaced material (-metallic [B01D 39/10](#)-)
- WARNING
Groups [B01D 39/083](#) and [B01D 39/086](#) are incomplete pending a reorganisation, see also [B01D 39/08](#)
- B01D 39/14
- Other self-supporting filtering material; {Other filtering material(-non-woven fabrics in general [D04H 3/00](#)-)}
- U B01D 39/16**
- • of organic material, e.g. synthetic fibres
- B01D 39/1607
- • • {the material being fibrous (-[B01D 39/18](#) takes precedence-)}
- B01D 39/18
- • • the material being cellulose or derivatives thereof ({ cork or peat [B01D 39/1646](#) } ; making filter paper [D21F 11/14](#)-)
- B01D 39/20
- • of inorganic material, e.g. asbestos paper, metallic filtering material of non-woven wires (porous ceramic material{ [C04B 38/00](#) } ; sintering metals [C22C 1/04](#) ; { making porous sintered metal bodies [B22F 3/10](#) , honeycomb filters [B01D 46/2418](#) , materials used for filtering exhaust gases of an internal combustion engine [F01N/022](#), ceramic honeycomb structures [C04B 38/0006](#))}
- B01D 39/2055
- • • {Carbonaceous material (-solid sorbent compositions comprising free carbon [B01J 20/20](#)-)}
- WARNING
Groups [B01D 39/2058](#) to [B01D 39/2065](#) are not complete, see also [B01D 39/20](#)
- U B01D 41/00** **Regeneration of the filtering material or filter elements outside the filter for liquid or gaseous fluids**
- B01D 41/04
- of rigid self-supporting filtering material
- B01D 43/00** **Separating particles from liquids, or liquids from solids, otherwise than by sedimentation or filtration (-flotation processes [B03D 1/00](#) ; drying solid materials or objects [F26B](#))**
- B01D 45/00 - B01D 59/00** **Separating dispersed particles from gases or vapours (-suction cleaner filters [A47L 9/10](#) ; filters for breathing-protection purposes [A62B 23/00](#) ; filtering air for vehicles [B60H 3/06](#) ; separating pneumatically-conveyed materials from propelling gas [B65G 53/60](#) ; exhaust or silencing apparatus for machines or engines having means for removing solid constituents of exhaust [F01N 3/02](#) ; air cleaners for the intakes of gas-turbine or jet-propulsion plants [F02C 7/05](#) , of combustion engines [F02M 35/024](#) , of compressors [F04B 39/16](#) ; filtering in air-conditioning [F24F 3/16](#)-)**
- B01D 45/04
- by utilising inertia (-[B01D 45/12](#) takes precedence-)
- B01D 45/12
- by centrifugal forces (-centrifuges [B04B](#) ; cyclones [B04C](#)-)
- B01D 46/00** **Filters {i.e. particle separators}or filtering processes specially modified for separating dispersed particles from gases or vapours (-filtering elements [B01D 23/00](#) to [B01D 35/00](#) ; filtering material [B01D 39/00](#) ; their regeneration outside the filters [B01D 41/00](#)-)**
- U B01D 46/0002**
- {Casings; Housings; Frame constructions}
- B01D 46/0005
- • {Mounting of filtering elements within casings, housings or frames (-[B01D 46/2422](#) takes precedence-)}
- U B01D 46/0039**
- {with flow guiding by feed or discharge devices}

- U B01D 46/0041
 - • {for feeding}
- B01D 46/0046
 - • • {provoking a tangential stream (~~B01D 46/0045~~ takes precedence)}
- B01D 46/0052
 - {with filtering elements moving during filtering operation (~~B01D 46/22~~ , ~~B01D 46/32~~ take precedence)}
- B01D 46/0057
 - {Regenerating the filter material in the filter (~~B01D 46/04~~ , ~~B01D 46/48~~ take precedence)}
- B01D 46/0067
 - • {by acting counter-currently on the filtering surface (e.g. *flushing*) (~~e.g. flushing~~)}
- U B01D 46/10
 - Particle separators, e.g. dust precipitators, using filter plates, sheets, or pads having plane surfaces, {i.e. axial filtering}
- B01D 46/16
 - • arranged on non-filtering conveyers {or supports}
- U B01D 46/24
 - Particle separators, e.g. dust precipitators, using rigid hollow filter bodies
- U B01D 46/2403
 - • {characterised by the physical shape or structure of the filtering element}
- B01D 46/2418
 - • • {Honeycomb filters (~~used for filtering exhaust gases of an internal combustion engine F01N 3/022~~ ; ceramic honeycomb structures per se ~~C04B 38/0006~~)}
- U B01D 46/2451
 - • • • {characterized by the geometrical structure, shape, pattern or configuration or parameters related to the geometry of the structure, e.g. thickness, cell density}
- B01D 2046/2492
 - • • • {Other shapes or configurations not covered by groups ~~B01D 46/2474~~ to ~~B01D 2046/2488~~}
- U B01D 46/42
 - Auxiliary equipment or operation thereof
- B01D 46/48
 - • Removing dust other than cleaning filters {e.g. by using collecting trays}
- B01D 46/52
 - Particle separators, e.g. dust precipitators, using filters embodying folded {corrugated or wound sheet} material
- B01D 46/528
 - • {using wound sheets (~~B01D 46/527~~ takes precedence)}
- B01D 47/00**

Separating dispersed particles from gases, air or vapours by liquid as separating agent (~~B01D 45/10~~ takes precedence; fractionating columns or parts thereof ~~B01D 3/16~~)
- U B01D 47/02
 - by passing the gas or air or vapour over or through a liquid bath
 - WARNING
Groups ~~B01D 47/021~~ to ~~B01D 47/028~~ are not complete pending reclassification; see also this group
- B01D 47/022
 - • {by using a liquid curtain (~~B01D 47/06~~ takes precedence)}
- B01D 47/025
 - • {by contacting gas and liquid with a static flow mixer (~~B01D 47/14~~ takes precedence)}
- B01D 47/028
 - • {by directing the gas through a wetted wire mesh or a perforated plate (~~B01D 47/14~~ takes precedence)}
- B01D 47/12
 - Washers with plural different washing sections (~~B01D 47/14~~ takes precedence)
- B01D 47/14
 - Packed scrubbers (~~packing elements B01J 19/30~~ , ~~B01J 19/32~~)
- U **B01D 50/00**

Combinations of devices for separating particles from gases or vapours
- B01D 50/002
 - {Combinations of devices relating to groups ~~B01D 45/00~~ and ~~B01D 46/00~~}
- B01D 50/004
 - {Combinations of devices relating to groups ~~B01D 45/00~~ and ~~B01D 47/00~~}
- B01D 50/006
 - {Combinations of devices relating to groups ~~B01D 46/00~~ and ~~B01D 47/00~~}
- B01D 50/008
 - {Combinations of devices relating to groups ~~B01D 45/00~~ and ~~B01D 46/00~~ and ~~B01D 47/00~~}

- B01D 51/00** Auxiliary pre-treatment of gases or vapours to be cleaned (preventing dust fires [A62C](#); pretreatment specially adapted for magnetic or electrostatic separation [B03C](#))
- B01D 51/02 · Amassing the particles, e.g. by flocculation{(-amassing by electric fields [B03C 3/0175](#)-)}
- B01D 51/10 · Conditioning the gas to be cleaned
- B01D 53/00** Separation of gases or vapours; Recovering vapours of volatile solvents from gases; Chemical or biological purification of waste gases, e.g. engine exhaust gases, smoke, fumes, flue gases, aerosols,(-recovery of volatile solvents by condensation [B01D 5/00](#) ; sublimation [B01D 7/00](#) ; cold traps, cold baffles [B01D 8/00](#) ; working-up undefined gaseous mixtures obtained by cracking hydrocarbon oils [C10G 70/00](#) ; cleaning coal gas [C10K](#) ; working-up of natural gas, or synthetic natural gas, [C10L 3/10](#) ; separation of difficult-to-condense gases or air by liquefaction [F25J](#) ; for investigating materials [G01N 30/00](#)-)
- NOTE
Group [B01D 53/34](#) takes precedence over groups [B01D 53/02](#) to [B01D 53/32](#)
- B01D 53/02 · by adsorption, e.g. preparative gas chromatography{(-solid sorbent compositions [B01J 20/00](#) , preparation of inorganic compounds or elements [C01](#)-)}
- NOTE
In group [B01D 53/02](#) and subgroups it is desirable to add indexing codes relating to adsorbents, components to be removed, main components in the product gas stream or type of gas or vapour treatment chosen from groups [B01D 2253/00](#) , [B01D 2256/00](#) , [B01D 2257/00](#) or [B01D 2259/00](#)
- B01D 53/025 · · {with wetted adsorbents; Chromatography (analytical chromatography [G01N 30/00](#) - [G01N 30/96](#) ; for liquids [B01D 15/08](#)-)}
- B01D 53/04 · · with stationary adsorbents{(-[B01D 53/025](#) takes precedence-)}
- B01D 53/0454 · · · {Controlling adsorption (controlling temperature swing adsorption [B01D 53/0462](#) , controlling pressure swing adsorption [B01D 53/047](#)-)}
- NOTE
In groups [B01D 53/0462](#) and [B01D 53/047](#) to [B01D 53/0476](#) it is desirable to add indexing codes chosen from [B01D 2259/40007](#) to [B01D 2259/40081](#) relating to controlling and processing aspects of pressure or temperature swing adsorption
- B01D 53/06 · · with moving adsorbents, e.g. rotating beds{(-[B01D 53/025](#) takes precedence-)}
- U B01D 53/14 · by absorption
- B01D 53/18 · · Absorbing units; Liquid distributors therefor (-[B01D 3/16](#) , [B01D 3/26](#) , [B01D 3/30](#) take precedence; packing elements [B01J 19/30](#) , [B01J 19/32](#)-)
- B01D 53/22 · by diffusion (manufacturing semi-permeable membranes [B01D 67/00](#) ; form, structure or properties of semi-permeable membranes [B01D 69/00](#) ; material for semi-permeable membranes [B01D 71/00](#)-)
- B01D 53/229 · · {Integrated processes (*Diffusion and at least one other process, e.g. adsorption, absorption*)}{(*Diffusion and at least one other process, e.g. adsorption, absorption*)}
- B01D 53/24 · by centrifugal force (-centrifuges [B04B](#) ; cyclones [B04C](#)-)
- B01D 53/30 · Controlling by gas-analysis apparatus (-regulating non electrical variables in general [G05D](#)-)

- U B01D 53/34 · Chemical or biological purification of waste gases
 - U B01D 53/38 · · Removing components of undefined structure
 - B01D 53/40 · · · Acidic components (~~B01D 53/44~~ takes precedence)
 - B01D 53/42 · · · Basic components (~~B01D 53/44~~ takes precedence)
 - U B01D 53/46 · · Removing components of defined structure
 - U B01D 53/48 · · · Sulfur compounds
 - B01D 53/50 · · · · Sulfur oxides (~~B01D 53/60~~ takes precedence)
 - U B01D 53/54 · · · Nitrogen compounds
 - B01D 53/56 · · · · Nitrogen oxides (~~B01D 53/60~~ takes precedence)
 - B01D 53/72 · · · Organic compounds not provided for in groups [B01D 53/48](#) to [B01D 53/70](#), e.g. hydrocarbons
 - B01D 53/74 · · General processes for purification of waste gases; Apparatus or devices specially adapted therefor (~~B01D 53/92~~ takes precedence)
 - U B01D 53/86 · · · Catalytic processes
 - U B01D 53/8643 · · · · {Removing mixtures of carbon monoxide or hydrocarbons and nitrogen oxides}
 - B01D 53/8646 · · · · · {Simultaneous elimination of the components (~~B01D 53/8656~~ takes precedence)}
 - B01D 53/8668 · · · · {~~Removing organic compounds not provided for in [B01D 53/8603](#) to [B01D 53/8665](#)~~}
 - B01D 53/8671 · · · · {~~Removing components of defined structure not provided for in [B01D 53/8603](#) to [B01D 53/8668](#)~~}
 - U B01D 53/8678 · · · · {Removing components of undefined structure}
 - B01D 53/8681 · · · · · {Acidic components (~~B01D 53/8687~~ takes precedence)}
 - B01D 53/8684 · · · · · {Basic components (~~B01D 53/8687~~ takes precedence)}
 - B01D 53/92 · · of engine exhaust gases (exhaust{or silencing}apparatus{for internal combustion engines, machines or engines in general}, having means for purifying,{rendering innocuous} or otherwise treating exhaust gases [F01N 3/00](#))
 - U B01D 53/94 · · · by catalytic processes
 - U B01D 53/9404 · · · · {Removing only nitrogen compounds}
 - U B01D 53/9409 · · · · · {Nitrogen oxides}
 - U B01D 53/9413 · · · · · · {Processes characterised by a specific catalyst}
- WARNING**
Groups [B01D 53/9418](#) to [B01D 53/9427](#) are not complete pending a reorganisation. See also [B01D 53/9413](#)
- B01D 53/9422 · · · · · · {for removing nitrogen oxides by NOx storage or reduction by cyclic switching between lean and rich exhaust gases (~~LNT, NSC, NSR~~)}(~~LNT, NSC, NSR~~)
 - B01D 53/944 · · · · {Simultaneously removing carbon monoxide, hydrocarbons or carbon making use of oxidation catalysts (~~three-way-catalysts (TWC) [B01D 53/9445](#)~~)}

- B01D 53/9459 . . . {Removing one or more of nitrogen oxides, carbon monoxide, or hydrocarbons by multiple successive catalytic functions; systems with more than one different function, e.g. zone coated catalysts (-layered catalysts with only one function [B01D 53/9413](#) , [B01D 53/944](#) or [B01D 53/945-](#))}

WARNING

Groups [B01D 53/9459](#) to [B01D 53/9477](#) are not complete pending a reorganisation. See also [B01D 53/9459](#)

B01D 57/00 Separation, other than separation of solids, not fully covered by a single other group or subclass, e.g. [B03C](#)

- B01D 57/02 . by electrophoresis (-treatment of water, waste water, sewage or sludge by electrophoresis [C02F 1/469](#) ; electrophoretic production of compounds or non-metals [C25B 7/00](#) ; investigating or analysing materials by using electrophoresis [G01N 27/26-](#))

B01D 59/00 Separation of different isotopes of the same chemical element (preventing occurrence of critical conditions when producing fissile material [G21](#); shielding from radioactivity [G21F](#))

- B01D 59/38 . Separation by electrochemical methods (-in general [B01J-](#))
- B01D 59/44 . Separation by mass spectrography (-particle spectrometer or separator tubes [H01J 49/00-](#))
- B01D 59/50 . Separation involving two or more processes covered by different groups selected from groups [B01D 59/02](#) , [B01D 59/10](#) , [B01D 59/20](#) , [B01D 59/22](#) , [B01D 59/28](#) , [B01D 59/34](#) , [B01D 59/36](#) , [B01D 59/38](#) , [B01D 59/44](#)

B01D 61/00 - B01D 71/00 Processes of separation using semi-permeable membranes, e.g. dialysis, osmosis, ultrafiltration; Apparatus specially adapted therefor; Semi-permeable membranes or their production (-separation of gases or vapours by diffusion [B01D 53/22](#) ; treatment of milk by dialysis, reverse osmosis or ultrafiltration [A23C 9/142](#) , by electrodialysis [A23C 9/144](#) ; artificial kidneys [A61M 1/14](#) ; { manufacture of films of plastics [B29](#) , [C08J 5/18](#) , of ion-exchange membranes [C08J 5/22](#) } ; treatment of water by dialysis, osmosis or reverse osmosis [C02F 1/44](#) , by electrodialysis [C02F 1/469](#) ; apparatus for enzymology or microbiology with dialysis means [C12M 1/12](#) ; production or purification of sugar juices, e.g. by osmosis, [C13D3/16](#) ; extraction of sugar from molasses, e.g. by osmosis, [C13J1/08](#) ; diaphragms for electrolysis [C25B 13/00](#) , [C25C 7/04](#) ; osmosis as energy source [F03G 7/00-](#))

NOTE

In groups [B01D 61/00](#) to [B01D 71/00](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place (in respect of [B01D 71/00](#) , see also Note (1) following that group)

WARNING

Attention is drawn to the WARNING after the subclass title of [A61M](#)

- B01D 61/002 . {Forward osmosis, direct osmosis (-actuators for pressure retarded osmosis [F03G 7/005-](#))}
- U B01D 61/02 . Reverse osmosis; Hyperfiltration;{Nanofiltration}
- B01D 61/025 . . {Reverse osmosis; Hyperfiltration (-[B01D 61/022](#) takes precedence-)}
- B01D 61/027 . . {Nanofiltration (-[B01D 61/022](#) takes precedence-)}
- U B01D 61/14 . Ultrafiltration; Microfiltration
- B01D 61/145 . . {Ultrafiltration (-[B01D 61/142](#) takes precedence-)}
- B01D 61/147 . . {Microfiltration (-[B01D 61/142](#) takes precedence-)}
- B01D 61/24 . Dialysis; {Membrane extraction(-dialysate solution flow [A61M 1/1656-](#))}

- B01D 61/32
 - B01D 61/42
 - U B01D 61/44
 - U B01D 61/46
 - B01D 61/48
 - B01D 61/58
- • Controlling or regulating{(-Measuring ultrafiltrate during dialysis [A61M 1/16-](#))}
 - Electro dialysis; Electro-osmosis {Electro-ultrafiltration}
 - • Ion-selective electro dialysis
 - • • Apparatus therefor
 - • • • having one or more compartments filled with ion-exchange material {e.g. electrodeionisation}
 - Multistep processes{(-comprising reverse osmosis or hyperfiltration steps [B01D 61/022](#); comprising ultrafiltration or microfiltration steps [B01D 61/142](#))}
- NOTE
- In group [B01D 61/58](#) specific process steps within the multistep process are indexed by codes chosen from [B01D 61/02](#) to [B01D 61/56](#)

U B01D 67/00 Processes specially adapted for manufacturing semi-permeable membranes for separation processes or apparatus

NOTE

In group [B01D 67/00](#) it is desirable to add the indexing codes relating to membrane preparation chosen from groups [B01D 2323/00](#) to [B01D 2323/42](#)

- U B01D 67/0002
 - B01D 67/0006
 - U B01D 67/0009
 - B01D 67/0013
 - U B01D 67/0039
 - B01D 67/0069
 - U B01D 67/0081
 - B01D 67/0088
- {Organic membrane formation}
 - • {by chemical reactions (-in-situ polymerisation, polycondensation, cross-linking or reaction for manufacturing composite membranes [B01D 69/125-](#))}
 - • {by phase separation, sol-gel transition, evaporation or solvent quenching}
 - • • {Casting processes (-hollow fibre membrane manufacturing methods [B01D 69/08-](#))}
 - {Inorganic membrane formation}
 - • {by deposition from the liquid phase, e.g. electrochemical deposition (-[B01D 67/0046](#) takes precedence)}
 - {After-treatment of organic or inorganic membranes}
 - • {Physical treatment with compounds, e.g. swelling, coating or impregnation (-involving chemical reactions [B01D 67/0093-](#))}

U B01D 69/00 Semi-permeable membranes for separation processes or apparatus characterised by their form, structure or properties; Manufacturing processes specially adapted therefor

NOTES

In this group, the following term is used with the meaning indicated:

- "properties" covers those of a mechanical, physical or chemical nature

Manufacturing processes, if considered of interest, are also classified in group [B01D 67/00](#)

WARNING

The following sub-groups of [B01D 69/00](#) are incomplete. Documents presently classified in the hierarchically higher groups are in the process of reclassification

[B01D 69/043](#)
[B01D 69/046](#)
[B01D 69/081](#)
[B01D 69/082](#)
[B01D 69/084](#)
[B01D 69/085](#)
[B01D 69/087](#)
[B01D 69/088](#)
[B01D 69/105](#)

[B01D 69/141](#)
[B01D 69/144](#)
[B01D 69/145](#)
[B01D 69/147](#)
[B01D 69/148](#)

B01D 69/08 · Hollow fibre membranes (–manufacture of hollow fibres [D01D 5/24](#) ,
[D01F 1/08](#)–)

U B01D 71/00 Semi-permeable membranes for separation processes or apparatus characterised by the material; Manufacturing processes specially adapted therefor

NOTES

In this group, if the material is a composition it is classified according to the constituent present in the highest proportion. This constituent is classified according to the last place rule (see Note before group [B01D 61/00](#)). If there is more than one constituent present in equal highest proportions, then each of these constituents is classified according to the last place rule

Manufacturing processes, if considered of interest, are also classified in group [B01D 67/00](#)

- U B01D 71/02 · Inorganic material
- B01D 71/028 · · {Molecular sieves, e.g. zeolites, silicalite (–[B01D 71/021](#) takes precedence–)}
- U B01D 71/06 · Organic material
- B01D 71/44 · · Polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of groups [B01D 71/26](#) to [B01D 71/42](#)
- B01D 71/72 · · Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of the groups [B01D 71/46](#) to [B01D 71/70](#)
- B01D 71/74 · · Natural macromolecular material or derivatives thereof (–[B01D 71/08](#) ,
[B01D 71/24](#) take precedence–)
- B01D 71/76 · · Macromolecular material not specifically provided for in a single one of groups [B01D 71/08](#) to [B01D 71/74](#) (–rubbers in general [B01D 71/24](#)–)
- U B01D 2201/00 Details relating to filtering apparatus**
- U B01D 2201/30 · Filter housing constructions
- B01D 2201/307 · · ~~Filtering elements contained in an insert body mounted in a filter housing (double casing)~~ *Filtering elements contained in an insert body mounted in a filter housing (double casing)*, e.g. to avoid contamination when removing or replacing the filter element
- B01D 2201/34 · Seals or gaskets for filtering elements (–for removable closures, lids, caps or filter heads [B01D 2201/304](#)–)
- B01D 2201/64 · Filters having floating elements (–floating filters [B01D 35/05](#)–)
- U B01D 2202/00 Details concerning evaporation, distillation or condensation**
- B01D 2202/10 · Use of a micro-device for separation (–micro-reactors [B01J 19/00](#)–)
- U B01D 2221/00 Applications of separation devices**
- B01D 2221/04 · Separation devices for treating liquids from earth drilling, mining (–separation of well effluents [E21B 43/34](#) , flotation in general [B03D 1/00](#)–)
- B01D 2221/10 · Separation devices for use in medical, pharmaceutical or laboratory applications, e.g. separating amalgam from dental treatment residues (–apparatus for dental treatment [A61C 17/04](#)–)
- B01D 2221/12 · Separation devices for treating rain or storm water (storm water treatment [E03F](#))

- U B01D 2239/00 Aspects relating to filtering material for liquid or gaseous fluids**
- U B01D 2239/02
B01D 2239/025
- Types of fibres, filaments or particles, self-supporting or supported materials
 - • comprising nanofibres (-apparatus incorporating such gas filtering material see [B01D 46/546-](#))
- U B01D 2239/04
B01D 2239/0407
B01D 2239/0435
B01D 2239/0442
B01D 2239/0457
- Additives and treatments of the filtering material
 - • comprising particulate additives, e.g. adsorbents (-apparatus incorporating gas filtering material [B01D 46/0036-](#))
 - • Electret (-apparatus incorporating such gas filtering material [B01D 46/0032-](#))
 - • Antimicrobial, antibacterial, antifungal additives (-apparatus incorporating such gas filtering material [B01D 46/0028-](#))
 - • Specific fire retardant or heat resistant properties (-apparatus incorporating such gas filtering material [B01D 46/0093-](#))
- U B01D 2239/06
B01D 2239/065
- Filter cloth, e.g. knitted, woven non-woven; self-supported material
 - • More than one layer present in the filtering material (-apparatus incorporating such gas filtering material [B01D 2275/10-](#))
- U B01D 2239/069
B01D 2239/0695
- • Special geometry of layers
 - • • Wound layers (-apparatus incorporating such gas filtering material [B01D 2275/105-](#))
- WARNING**
This group is not complete, see also [B01D 39/1684](#)
- U B01D 2239/12
B01D 2239/1208
- Special parameters characterising the filtering material
 - • Porosity (-apparatus incorporating such gas filtering material [B01D 2275/30](#) to [B01D 2275/307-](#))
- U B01D 2247/00 Details relating to the separation of dispersed particles from gases, air or vapours by liquid as separating agent**
- B01D 2247/02
B01D 2247/04
B01D 2247/10
- Enhancing the particle separation by electrostatic or magnetic effects (-[B01D 2247/102](#) takes precedence; electrostatic or magnetic separation [B03C-](#))
 - Regenerating the washing fluid (-recovering paint spray booth [B05B 15/1266-](#))
 - Means for removing the washing fluid dispersed in the gas or vapours (-separating dispersed particles from gases by gravity, inertia or centrifugal forces [B01D 45/00-](#))
- U B01D 2251/00 Reactants**
- U B01D 2251/10
B01D 2251/108
- Oxidants
 - • Halogens or halogen compounds (-hydrogen halides [B01D 2251/50-](#))
- U B01D 2251/20
B01D 2251/21
- Reductants
 - • Organic compounds not provided for in groups [B01D 2251/206](#) or [B01D 2251/208](#)
- U B01D 2252/00 Absorbents, i.e. solvents and liquid materials for gas absorption**
- B01D 2252/10
U B01D 2252/20
B01D 2252/205
- Inorganic absorbents (-chemical reactants [B01D 2251/00-](#))
 - Organic absorbents
 - • Other organic compounds not covered by [B01D 2252/00](#) to [B01D 2252/20494](#)
- U B01D 2253/00 Adsorbents used in separation treatment of gases and vapours**
- U B01D 2253/10
- Inorganic adsorbents

- B01D 2253/112
- Metals or metal compounds not provided for in [B01D 2253/104](#) or [B01D 2253/106](#)
- U B01D 2255/00** **Catalysts**
- B01D 2255/20
- Metals or compounds thereof (~~-noble metals [B01D 2255/10](#)~~)
- U B01D 2257/00** **Components to be removed**
- B01D 2257/70
- Organic compounds not provided for in groups [B01D 2257/00](#) to [B01D 2257/602](#)
- B01D 2257/704
- Solvents not covered by groups [B01D 2257/702](#) to [B01D 2257/7027](#)
- B01D 2257/90
- Odorous compounds not provided for in groups [B01D 2257/00](#) to [B01D 2257/708](#)
- B01D 2257/93
- Toxic compounds not provided for in groups [B01D 2257/00](#) to [B01D 2257/708](#)
- U B01D 2259/00** **Type of treatment**
- B01D 2259/12
- Methods and means for introducing reactants (~~-for catalytic processes [B01D 53/90](#)~~)
- U B01D 2259/40
- Further details for adsorption processes and devices
- U B01D 2259/40083
- Regeneration of adsorbents in processes other than pressure or temperature swing adsorption
- B01D 2259/40086
- by using a purge gas (~~-[B01D 2259/4009](#) takes precedence~~)
- U B01D 2259/45
- Gas separation or purification devices adapted for specific applications
- B01D 2259/455
- for transportable use (~~-portable devices [B01D 2259/4541](#)~~)
- U B01D 2279/00** **Filters adapted for separating dispersed particles from gases or vapours specially modified for specific uses**
- B01D 2279/50
- for air conditioning (~~-air-conditioning systems comprising filters [F24F 3/1603](#)~~)
- B01D 2279/55
- for cleaning appliances, e.g. suction cleaners (~~-suction cleaners comprising filters [A47L 9/10](#)~~)
- B01D 2279/60
- for the intake of internal combustion engines or turbines (~~-intake systems for vehicles comprising filters [F02M 35/024](#)~~)
- B01D 2279/65
- for the sterilisation of air (~~-disinfection, sterilisation or deodorization of air [A61L 9/00](#)~~)
- B01D 2317/00** **Membrane module arrangements within a plant or an apparatus (~~-membrane assemblies within one housing [B01D 2319/00](#)~~)**
- B01D 2319/00** **Membrane assemblies within one housing (~~-module or elements arrangements within a plant or an apparatus [B01D 2317/00](#)~~)**

Project: N/A (B01F)

- U B01F 3/00** **Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed ~~{([C08J 3/02](#) takes precedence)}~~**
- B01F 3/04
- ~~{gases or vapours with liquids (mixing non-alcoholic beverages with gases [A23L 2/54](#); { for medical purposes [A61M 16/14](#)}) [M1110]}~~
- U B01F 3/04007
- {Introducing a liquid into a gaseous medium, e.g. preparation of aerosols (for air-conditioning [F24F 6/00](#))}
- U B01F 3/04021
- {by spraying or atomising of the liquid (apparatus for spraying or atomising per se [B05B](#); evaporating by spraying [B01D 1/16](#))}
- U B01F 3/04028
- {using rotating elements, e.g. rolls, brushes}
- B01F 3/04042
- {with additional rotating elements mounted on the same axis, e.g. fans, for moving the gas}
- U B01F 3/04049
- {using nozzles}

- B01F 3/04056 {-High pressure atomization, i.e. the liquid is atomized and sprayed by a jet at high pressure}
- B01F 3/04063 {-Internal mixer atomization, i.e. liquid and gas are mixed and atomized in a jet nozzle before spraying}
- B01F 3/04099 . {-Introducing a gas or vapour into a liquid medium, e.g. producing aerated liquids (methods for the preparation of non-alcoholic beverages, e.g. of carbonated water [A23L 2/00](#); bottling liquids, e.g. combined with aerating or carbonating [B67C 3/00](#); dispensing beverages on draught combined with carbonating [B67D 1/0057](#), [B67D 1/025](#), [B67D 1/0406](#), [B67D 1/0418](#); dispensing beverages by gas pressure from storage containers, e.g. syphons [B67D 1/04](#); biological treatment of water, waste water or sewage [C02F 3/00](#); impregnating wine with carbon dioxide [C12G 1/06](#); gas introduction means for enzymology or microbiology apparatus [C12M 1/04](#))}
- U B01F 3/0446 . . . {using flow mixing means for introducing the gas, e.g. in conduits or in vessels ([B01F 3/04106](#), [B01F 3/0876](#) take precedence; distillation in which liquids are contacted with gaseous media [B01D 3/00](#); jet regulation with aerating means for fresh water plumbing installations [E03C 1/084](#))}
- U B01F 3/04468 {by moving liquid and gas in counter current (absorbing units for separating gases or vapours [B01D 53/18](#); in heat exchange apparatus [F28C 3/06](#))}
- U B01F 3/04475 {the liquid flowing in a thin film to absorb the gas (fractional distillation with fractionating columns in which vapour bubbles through liquid [B01D 3/16](#))}
- B01F 3/04482 {-the liquid film or layer flowing over a horizontal or inclined surface, e.g. perforated}
- B01F 3/04489 {-the liquid film or layer flowing over a vertical surface, e.g. a mesh}
- U B01F 3/04503 {by circulating the flow in guiding constructions or conduits}
- U B01F 3/0451 {being at least partially immersed in the liquid, e.g. in a closed circuit ([B01F 3/04602](#) takes precedence)}
- B01F 3/04524 {-the guiding constructions being baffles for guiding the flow up-and-down or from left-to-right}
- U B01F 3/0473 . . . {Surface aerating, e.g. by cascading, spraying or projecting a liquid into a gaseous atmosphere (direct-contact heat exchange apparatus, the heat-exchange media being a liquid and a gas or a vapour [F28C 3/06](#))}
- B01F 3/04737 {-by cascading, spraying or projecting a liquid into a gaseous atmosphere ([B01F 3/04765](#) takes precedence)}
- B01F 3/04744 {-Surface aerating by cascading the liquid}
- B01F 3/04751 {-Surface aerating using liquid falling from orifices in a gaseous atmosphere, the orifices being exits from perforations, tubes, chimneys}
- B01F 3/04758 {-Surface aerating using nozzles for projecting the liquid as a jet}
- B01F 3/12 . liquids with solids ({[B01F 1/00](#) takes precedence;} displacing one liquid by another in dispersions of solids in liquids [B01D 12/00](#)-)
- U B01F 3/20 . Pretreatment of the materials to be mixed ({[B28C 5/404](#), [B29B 7/905](#) take precedence)}
- B01F 3/2007 . . {-Coating solid components}
- B01F 3/2014 . . {-Cooling components}
- B01F 3/2021 . . {-Degassing, deaerating components; replacing one gas within the components by another gas}
- B01F 3/2028 . . {-Drying components, e.g. in order to mix them in solid state}
- B01F 3/2035 . . {-Submitting components to electrical energy fields to charge or ionize them}
- B01F 3/2042 . . {-Evaporating solvents, dispersion liquid, e.g. water, at least partially}

- B01F 3/205
 - • {-Extracting components to be mixed from a stream of fluid or from a solid containing them, e.g. by adsorption, absorption or distillation}
- B01F 3/2057
 - • {-Filtering components}
- B01F 3/2064
 - • {-Freezing components, e.g. to mix them in solid state}
- B01F 3/2071
 - • {-Grinding components}
- B01F 3/2078
 - • {-Heating components, e.g. melting}
- B01F 3/2085
 - • {-Irradiating components}
- B01F 3/2092
 - • {-Sieving components}
- U B01F 3/22
 - Aftertreatment of the mixture
- B01F 3/2207
 - • {-Coating the solid mixture}
- B01F 3/2215
 - • {-Cooling the mixture}
- B01F 3/2223
 - • {-Venting, degassing, ventilating of gases, fumes or toxic vapours from the mixture}
- B01F 3/223
 - • {-Drying the mixture}
- B01F 3/2238
 - • {-Submitting a mixture to electrical energy fields, e.g. corona discharge}
- B01F 3/2246
 - • {-Evaporating a carrier, e.g. liquid carbon dioxide, e.g. used to dissolve, disperse, emulsify, other components which are difficult to be mixed; Evaporating liquid components}
- B01F 3/2253
 - • {-Extracting components from the mixture, e.g. by adsorption, absorption, distillation}
- B01F 3/2261
 - • {-Filtering the mixture}
- B01F 3/2269
 - • {-Freezing the mixture}
- B01F 3/2276
 - • {-Grinding the mixture}
- B01F 3/2284
 - • {-Heating the mixture}
- B01F 3/2292
 - • {-Irradiating the mixture}
- U **B01F 5/00**
 - **Flow mixers (sprayers, atomisers [B05B](#)); Mixers for falling materials, e.g. solid particles ([B01F 13/04](#) takes precedence; centrifugal mixers [B04](#))**
- B01F 5/0057
 - {-Mixing by creating a vortex flow, e.g. by tangentially introducing jets (apparatus using free vortex flow in general [B04C](#))}
- B01F 5/006
 - • {-wherein the vortex flows in a spherical shaped receptacle or chamber}
- B01F 5/0062
 - • {-wherein the vortex is created by two or more jets introduced tangentially in separate mixing chambers or consecutively in the same mixing chamber}
- B01F 5/0065
 - • {-with additional mixing means other than vortex mixers, e.g. the vortex chamber being positioned in another mixing chamber}
- U B01F 5/0068
 - • {-Characterised by the arrangement of the discharge opening}
- B01F 5/0071
 - • • {-the mixing chamber being vertical with the outlet tube at its upper side}
- B01F 5/0074
 - • • {-the mixing chamber being vertical and having an outlet tube at its bottom whose inlet is at a higher level than the inlet of the vortex creating jet, e.g. the jet being introduced at the bottom of the mixing chamber}
- U B01F 5/0077
 - {-Mixing heads, i.e. compact mixing units or modules, using mixing valves for feeding and mixing at least two components (for homogenizing mixtures [B01F 5/0661](#), mixing valves [F16K 11/00](#))}
- B01F 5/008
 - • {-of the mixing valve type}
- B01F 5/0082
 - {-Interdigital mixers, i.e. the substances to be mixed are divided in substreams which are rearranged in an interdigital or interspersed manner ([B01F 13/0066](#) takes precedence)}
- B01F 5/0085
 - {-Mixing drops, droplets, bodies of liquid which flow together or contact each other ([B01F 13/0069](#) takes precedence)}

- U B01F 5/02 · Jet mixers {(B01F 5/0057 take precedence; with gas agitation, i.e. for fluidisation B01F 13/02)}
- U B01F 5/0206 · · {comprising submerged injectors, e.g. nozzles, for injecting high pressure jets in a large volume or in a mixing chamber (B01F 3/04106 takes precedence; injecting an additional component in a conduit B01F 5/0403)}
- U B01F 5/0218 · · · {the injectors being movable, e.g. rotating}
- B01F 5/0225 · · · · {Pivoting, oscillating in a multidirectional way during jetting}
- B01F 5/0231 · · · · {-Rotating during jetting}
- B01F 5/0237 · · · · {-being vertically moved to bring the injector in or out of operative position}
- B01F 5/0243 · · · · {-being moved or transported between different locations during jetting}
- B01F 5/025 · · · · {-Moving to adjust the direction of jetting, the injectors being fixed during operation}
- U B01F 5/0256 · · {Mixing by intersecting jets (in a stream-impingement mixing head for polymers B29B 7/76)}
- B01F 5/0262 · · · {the intersecting jets having the configuration of sheets, cylinders or cones}
- B01F 5/0275 · · {-Mixing by jetting a component in a conduit for agitating its contents, i.e. using high pressure jets (injection under low pressure B01F 5/04; eductor type injector B01F 5/0413)}
- B01F 5/0281 · · {-characterized by the specific design of the jet injector}
- B01F 5/0287 · · · {-the jet injector being of the RESS (explosive rapid expansion of supercritical solutions) or FIMS (fluid injection of molecular spray) type, i.e. the liquid is jetted in an environment (gas or liquid) by nozzles, in conditions of significant pressure drop, with the possible generation of shock waves}
- B01F 5/0293 · · · {-the jet injector being of coanda type, i.e. having a surface to attract the jet for adjusting its direction}
- U B01F 5/04 · Injector mixers, {i.e. one or more components being added to a flowing main component (B01F 5/0057 takes precedence)}
- U B01F 5/0403 · · {Mixing conduits or tubes, i.e. conduits or tubes through which the main component is flown (mixing devices for gas burners F23D 14/62)}
- U B01F 5/0413 · · · {provided with a venturi element}
- U B01F 5/0418 · · · · {with two or more venturi elements}
- B01F 5/042 · · · · · {-used alternatively}
- B01F 5/0421 · · · · · {-used simultaneously}
- B01F 5/0423 · · · · · {-used successively}
- B01F 5/0425 · · · · {-characterized by the place of introduction of the main flow}
- B01F 5/0426 · · · · · {-the main flow being injected in the circumferential area of the venturi, creating an aspiration in the central part of the conduit}
- B01F 5/0428 · · · · · {-the main flow being injected in the central area of the venturi, creating an aspiration in the circumferential part of the conduit (B01F 5/043 takes precedence)}
- B01F 5/043 · · · · · {-Eductor or eductor type venturi, i.e. the main flow being injected through the venturi with high speed in the form of a jet}
- U B01F 5/045 · · · {the additional component being introduced in the centre of the conduit}
- U B01F 5/0453 · · · · {by using two or more injector devices}
- B01F 5/0455 · · · · · {-used alternatively}
- B01F 5/0456 · · · · · {-used simultaneously}
- B01F 5/0458 · · · · · {-used successively}
- B01F 5/046 · · · · · {-arranged concentrically}

- B01F 5/0461 {characterized by the specific design of the injector}
- B01F 5/0463 {-Perforated, multi-opening, with a plurality of holes}
- B01F 5/0465 {-Porous injectors}
- B01F 5/0466 {-Ring, torus, toroidal or coiled configurations}
- B01F 5/0468 {-Rotatable injectors}
- B01F 5/047 {-the opening for introducing the supplementary stream being a slit}
- U B01F 5/0471 . . . {the additional component being introduced at the circumference of the conduit}
- U B01F 5/0475 {the conduit having a plurality of openings in the axial direction or in the circumferential direction}
- B01F 5/0478 {-with a plurality of perforations in the axial direction only}
- B01F 5/048 {-with a plurality of perforations in the circumferential direction only and covering the whole circumference}
- B01F 5/0481 {-the perforations being a complete cut-out in the circumferential direction covering the whole diameter of the tube, i.e. having two consecutive tubes placed consecutively, the additional component being introduced between them}
- B01F 5/0483 {-with a plurality of perforations aligned in a row perpendicular to the flow direction}
- B01F 5/0485 {-with a plurality of perforations in the axial and circumferential direction covering the whole surface}
- B01F 5/0486 {-characterized by the specific design of the injector}
- B01F 5/0488 {-A slit extending in the longitudinal direction only}
- B01F 5/049 {-A slit extending in the circumferential direction only}
- B01F 5/0491 {-Rotatable, e.g. placed on a rotatable housing or conduit}
- B01F 5/0493 {-A bundle of similar tubes, each of them having feedings on the circumferential wall, e.g. as mixer for a reactor}
- U B01F 5/06 . . . {Mixers in which the components are pressed together through slits, orifices, or screens; { Static mixers; Mixers of the fractal type}{ [B01F 7/164](#), [B01F 7/225](#) take precedence;} turbo-mixers [B01F 5/16](#); colloid-mills [B02C](#); mixing valves [F16K 11/00](#)}
- B01F 5/0601 . . . {-Fractal mixers}
- U B01F 5/0602 . . . {Static mixers, i.e. mixers in which the mixing is effected by moving the components jointly in changing directions, e.g. in tubes provided with baffles or obstructions ([B01F 5/0661](#), [B01F 5/0682](#) take precedence)}
- U B01F 5/0603 . . . {the mixture or the components moving in an irregular path, e.g. radially ([B01F 5/0646](#) takes precedence)}
- B01F 5/0604 {-the mixer being composed of stacked plates between which the material is moving, e.g. the plates being provided with grooves or orifices}
- B01F 5/0605 {-by means of elements placed in the receptacle for moving or guiding the components}
- B01F 5/0606 {-using baffles}
- B01F 5/0607 {-using dams}
- B01F 5/0608 {-using plates with holes, the holes being displaced from one plate to the next one to force the flow to make a bending movement}
- U B01F 5/0609 . . . {Mixing tubes, e.g. the material being submitted to a substantially radial movement or to a movement partially in reverse direction}

- U B01F 5/064 {with means for dividing a flow of material into separate subflows and for repositioning and recombining these subflows; Cross-mixing, e.g. conducting the outer layer of the material nearer to the axis of the tube or vice-versa ([B01F 5/0496](#) takes precedence; using baffles [B01F 5/061](#), for falling particle mixers [B01F 5/246](#))}
- U B01F 5/0641 {the subflows consisting of at least two flat layers which are recombined, e.g. using means having restriction or expansion zones}
- B01F 5/0642 {-using a simple by-pass for separating and recombining the flow, e.g. by using branches of different length}
- U B01F 5/0646 {Mixers composed of several consecutive mixing tubes; Mixing tubes being deformed or bent, e.g. having varying cross-section or being provided with inwardly extending profiles, e.g. with internal screw-thread profile ([B01F 5/0656](#) takes precedence)}
- B01F 5/0647 {-Mixers with bended, curved, coiled, wounded mixing tubes or comprising elements for bending the flow}
- B01F 5/0648 {-Mixers with a strong change of direction in the conduit for homogenizing the flow}
- B01F 5/065 {-Mixers with scallop-shaped tubes or surfaces facing each other}
- B01F 5/0651 {-Mixers with a converging cross-section}
- B01F 5/0652 {-Mixers with a converging-diverging cross-section}
- B01F 5/0653 {-Mixers with a diverging cross-section}
- B01F 5/0654 {-Mixers with a diverging-converging cross-section}
- B01F 5/0655 {-Mixers with a succession of converging-diverging cross-sections, i.e. undulating cross-section}
- B01F 5/0656 {-Mixing tubes having therein a cylindrical or conical insert provided with grooves, e.g. the tube being provided with inwardly extending profiles or grooves ([B01F 5/0665](#) takes precedence)}
- B01F 5/0657 {-the insert being provided with helical grooves}
- B01F 5/0658 {-the insert being provided with a labyrinth of grooves or a distribution of protrusions}
- U B01F 5/0661 . . {Mixers in which the components are pressed through slits while introducing shear, e.g. the slits being formed by balls and their seats, by the spiro of helical springs ([B01F 7/0075](#) takes precedence)}
- B01F 5/0662 . . . {-characterized by the configuration of the surfaces forming the slits}
- B01F 5/0663 {-the slits being formed between opposed planar surfaces, e.g. pushed again each other by springs}
- B01F 5/0664 {-with a plurality of parallel slits, e.g. formed between stacked plates}
- B01F 5/0665 {-the slits being formed between opposed conical or cylindrical surfaces}
- B01F 5/0666 {-the slits being formed between the balls and the seats of a bearing-like construction}
- B01F 5/0667 {-the slits being formed between the helical windings of a spring-like construction or by deforming a spring}
- B01F 5/0668 {-the opposed surfaces being provided with grooves}
- B01F 5/0669 {-Axial grooves formed on opposed surfaces, e.g. on cylinders or cones}
- B01F 5/067 {-Circumferential grooves formed on opposed surfaces, e.g. on planar surfaces or on cylinders or cones}
- B01F 5/0671 {-Helical grooves formed on opposed surfaces, e.g. on cylinders or cones}
- B01F 5/0672 {-Crossing sets of grooves forming a labyrinth formed on opposed surfaces, e.g. on planar surfaces or on cylinders or cones}

- B01F 5/0673 {-Radial grooves formed on opposed surfaces, e.g. on planar surfaces}
- B01F 5/0675 {-Spiral grooves formed on opposed surfaces, e.g. on planar surfaces}
- B01F 5/0676 {-the grooves being formed on the outer surface of the cylindrical or conical core of the slits}
- B01F 5/0677 {-the grooves being formed on the inner surface of the cylindrical or conical housing of the slits}
- B01F 5/0678 . . . {-characterized by the relative position of the surfaces during operation}
- B01F 5/0679 {-the surfaces being maintained in a fixed position, spaced from each other, therefore maintaining the slit always open}
- B01F 5/068 {-the surfaces being maintained in a fixed but adjustable position, spaced from each other, therefore allowing the slit spacing to be varied ([B01F 5/0681](#) takes precedence)}
- B01F 5/0681 {-the surfaces being part of a valve construction, formed by opposed members in contact, e.g. automatic positioning caused by spring pressure}
- U B01F 5/0682 . . {-Mixers in which the components are pressed together through screens, plates provided with orifices, foam-like inserts, or through a bed of loose bodies, e.g. beads ([B01F 7/0075](#) takes precedence)}
- B01F 5/0687 . . . {-characterized by the elements through which the components are pressed together}
- B01F 5/0688 {-the components being pressed through orifices in elements, e.g. flat plates or cylinders, which obstruct the whole diameter of the tube}
- B01F 5/0689 {-the elements being cylinders or cones which obstruct the whole diameter of the tube, the flow changing from axial in radial and again in axial}
- B01F 5/069 {-the elements comprising means for adjusting the orifices}
- B01F 5/0691 {-the components being pressed through porous bodies, e.g. flat plates, blocks or cylinders, which obstruct the whole diameter of the tube ([B01F 5/0698](#) takes precedence)}
- B01F 5/0692 {-the porous bodies being cylinders or cones which obstruct the whole diameter of the tube, the flow changing from axial in radial and again in axial}
- B01F 5/0693 {-the components being pressed through sieves, screens or meshes which obstruct the whole diameter of the tube}
- B01F 5/0694 {-the sieves, screens or meshes being cylinders or cones which obstruct the whole diameter of the tube, the flow changing from axial in radial and again in axial}
- B01F 5/0695 {-the components being pressed through foam-like inserts or through a bed of loose bodies, e.g. balls}
- B01F 5/0696 {-through a bed of balls}
- B01F 5/0697 {-through a bed of fibres, steel wool or wood chips}
- B01F 5/0698 {-through a foam or expanded material body}
- U B01F 5/10 {-Circulation mixers, (e.g. at least part of the mixture being discharged from, and reintroduced into, a receptacle, e.g. with rotary stirrer ([B01F 5/02](#) takes precedence))}
- B01F 5/108 . . . {-provided with an internal pump to recirculate the material inside the receptacle}
- U B01F 5/12 {-Pump mixers, (i.e. the mixing taking place in the pump itself)}
- U B01F 5/14 {-of the gear type}
- B01F 5/145 {-using a Wankel pump}

- U B01F 7/00** **Mixers with rotary stirring devices in fixed receptacles, {i.e. movement of the receptacle not being meant to effect the mixing (B01F 13/08 takes precedence)}; Kneaders (B01F 13/04 takes precedence; {devices especially adapted for mixing foundry sand B22C 5/04})**
- B01F 7/00008 · {-Stirrers, i.e. rotary stirring devices (B01F 3/04539, B01F 3/04588, B01F 3/0478, B01F 7/028, B01F 11/0091 take precedence)}
 - B01F 7/00016 · {-Nature of the rotating mixing element}
 - B01F 7/00025 · . . {-Stirrers with replaceable wearing elements; Wearing elements therefor}
 - B01F 7/00033 · . . {-Characterised by the materials the stirrers are made of}
 - B01F 7/00041 · . . . {-with particular surface characteristics, e.g. coated, rough}
 - B01F 7/0005 · . . . {-Deformable stirrers (B01F 7/00208 takes precedence)}
 - B01F 7/00058 · {-with mechanical means to alter the position of the stirring elements}
 - B01F 7/00066 · {-deformable by centrifugal force}
 - B01F 7/00075 · {-the position of the stirring elements depending on the direction of rotation of the stirrer}
 - B01F 7/00083 · . . {-Stirrers made by deforming a plate}
 - B01F 7/00091 · . {-Mounting of the stirring elements on the stirrer shaft (B01F 7/00208 takes precedence)}
 - B01F 7/001 · . . . {-Fixing of the stirrer to the shaft}
 - B01F 7/00108 · . . . {-Disposition with respect to the rotating axis}
 - B01F 7/00116 · {-parallel with respect to the rotating axis}
 - B01F 7/00125 · {-perpendicular with respect to the rotating axis}
 - B01F 7/00133 · {-oblique with respect to the rotating axis}
 - B01F 7/00141 · {-directly mounted on the rotating axis}
 - B01F 7/0015 · {-on the free end of the rotating axis}
 - B01F 7/00158 · {-having stirring elements connected to the stirrer shaft each by a single radial rod, other than open frameworks}
 - B01F 7/00166 · {-of the anchor type, i.e. the stirring elements being connected to the rods by one end and extending parallel to the shaft axis}
 - B01F 7/00175 · {-having stirring elements connected to the stirrer shaft each by two or more radial rods, e.g. the shaft being interrupted between the rods, or of crankshaft type (B01F 7/00566 takes precedence)}
 - B01F 7/00183 · . . . {-with stirring elements moving with respect to the stirrer shaft, e.g. floating or comprising contracting chambers}
 - B01F 7/00191 · . . . {-having two or more mixing elements being concentrically mounted on the same shaft}
 - B01F 7/002 · . . {-Mounting of the rotating mixing element in respect to the receptacle}
 - B01F 7/00208 · . . . {-having elements for co operating with receptacle wall or bottom, e.g. for scraping (B01F 7/165 takes precedence)}
 - B01F 7/00216 · . . . {-occupying substantially the whole interior space of the receptacle}
 - B01F 7/00225 · . . . {-eccentrically arranged}
 - B01F 7/00233 · . . {-Configuration of the rotating mixing element}
 - B01F 7/00241 · . . . {-Centrifugal stirrers, i.e. having a radial outflow or turbine-type, e.g. with means to guide the flow}
 - B01F 7/0025 · . . . {-with arms, paddles, vanes or blades}
 - B01F 7/00258 · {-pin shaped}
 - B01F 7/00266 · {-anchor shaped}

- B01F 7/00275 {sickle shaped, i.e. curved in at least one direction }
- B01F 7/00283 {rake shaped or grid shaped}
- B01F 7/00291 {having vanes or blades, e.g. provided with orifices, extending parallel or oblique to the stirrer axis ([B01F 7/00233](#) takes precedence)}
- B01F 7/003 {having holes in the surface}
- B01F 7/00308 {paddle wheels}
- B01F 7/00316 {the blades extending oblique to the stirrer axis}
- B01F 7/00325 {the stirrer being a bent rod supported at one end only}
- B01F 7/00333 {spoon-shaped}
- B01F 7/00341 {Propellers, i.e. stirrers having an axial outflow, e.g. of the ship or aircraft propeller type or having means on the propeller to guide the flow}
- B01F 7/0035 {having holes in the surface}
- B01F 7/00358 {with guiding tubes or tubular segments fixed to and surrounding the tips of the propeller blades, e.g. with supplementary mixing elements on the outside of the tubes or the segments}
- B01F 7/00366 {the impeller being of airfoil, aerofoil type}
- B01F 7/00375 {the impeller being of hydrofoil type}
- B01F 7/00383 {the impeller being of Rushton type}
- B01F 7/00391 {Helices, i.e. stirrers comprising a helically shaped band; Stirrers composed of helically shaped band sections}
- B01F 7/004 {having holes in the surface}
- B01F 7/00408 {of the corkscrew type composed of a helically shaped band, e.g. flexible spiral springs}
- B01F 7/00416 {screws; Worms; Stirrers composed of screw sections}
- B01F 7/00425 {blade shaped}
- B01F 7/00433 {ribbon shaped, i.e. with an open space between the helical ribbon flight and the rotating axis}
- B01F 7/00441 {forming open frameworks or cages}
- B01F 7/0045 {with discs or disc like elements essentially perpendicular to the stirrer shaft axis, e.g. with stirring elements other than discs fixed thereon or with grooves on the sides of the discs}
- B01F 7/00458 {having holes in the surface}
- B01F 7/00466 {with separate elements other than discs fixed on the discs}
- B01F 7/00475 {the discs being made by deforming flat discs}
- B01F 7/00483 {cup shaped, e.g. semi sphere}
- B01F 7/00491 {with interconnected discs, forming open frameworks or cages}
- B01F 7/005 {shaped as cylinders, balls or rollers}
- B01F 7/00508 {having holes in the surface}
- B01F 7/00516 {Balls}
- B01F 7/00525 {Rollers}
- B01F 7/00533 {comprising paddles fixed thereon, e.g. with a total a diameter close to that of the surrounding receptacle}
- B01F 7/00541 {with cones, e.g. funnels}
- B01F 7/0055 {having holes in the surface}
- B01F 7/00558 {provided with brushes, sieves, grids, chains or springs ([B01F 7/00408](#) takes precedence)}
- B01F 7/00566 {with rigid wires or flexible rods}

- B01F 7/00575 {with a bent rod of non helical configuration supported at one end }
- B01F 7/00583 . . . {Openwork frame or cage stirrers not provided for elsewhere}
- B01F 7/00591 . . . {provided with tubes for guiding the material}
- B01F 7/006 . . . {having additional elements on the stirrer, other than for mixing}
- B01F 7/00608 {having elements for disintegrating, e.g. for milling ([B01F 7/1625](#),
[B01F 7/00358](#) take precedence)}
- B01F 7/00616 {having elements for cutting, e.g. knives}
- B01F 7/00625 . . . {Multistage systems, i.e. with a plurality of mixing elements mounted in
sequence on the same axis}
- B01F 7/00633 {provided with a plurality of similar elements}
- B01F 7/00641 {provided with a plurality of dissimilar elements}
- B01F 7/0065 {comprising helical elements and paddles}
- B01F 7/00658 . {Configuration of the rotating axis}
- B01F 7/00666 . . {Nature of the axis}
- B01F 7/00675 . . . {The axis being a flexible shaft}
- B01F 7/00683 . . {Construction of the axis}
- B01F 7/00691 . . . {The axis being composed of interconnected parts [M1106]}
- B01F 7/007 . . . {The axis being a hollow cylinder, e.g. for feeding a component
([B01F 7/024](#) takes precedence)}
- B01F 7/00708 . . . {The axis comprising stirring means and feeding or discharging means
fixed on the same axis}
- B01F 7/00716 . . . {the axis being adjustable in length, e.g. telescopic}
- B01F 7/00725 . . {Connection of the rotating axis with the drive}
- U B01F 7/0075 . {the mixer being composed of a stator-rotor system with movable slits
between surfaces facing each other, e.g. having intermeshing teeth or
cylinders or having orifices (with axial inflow and radial outflow for batch mixing
[B01F 7/1625](#); for mixtures of cement with other substances [B28C 5/0881](#); for
plastics [B29B 7/402](#))}
- B01F 7/00758 . . {the stator rotor system being formed by substantial flat surfaces}
- B01F 7/00766 . . . {provided with intermeshing elements}
- B01F 7/00775 . . . {provided with ribs, ridges or grooves on one surface}
- B01F 7/00783 . . . {the surfaces having a conical shape}
- B01F 7/00791 . . . {the relative position of the stator and the rotor, gap in between or gap with
the walls being adjustable}
- B01F 7/008 . . . {the stator rotor system being formed by conical or cylindrical surfaces, e.g.
curved surfaces}
- B01F 7/00808 . . . {provided with intermeshing elements}
- B01F 7/00816 . . . {provided with ribs, ridges or grooves on one surface}
- B01F 7/00825 . . . {the surfaces having a conical shape}
- B01F 7/00833 . . . {the relative position of the stator and the rotor, gap in between or gap with
the walls being adjustable}
- B01F 7/00841 . . {the mixer being composed of a stator-rotor system being formed by bearing
elements, e.g. roller bearings}
- U B01F 7/0085 . {the stirring devices being composed of two independently driven coaxial rotors
facing each other, e.g. having intermeshing teeth}
- B01F 7/00858 . . {with rotating surfaces facing each other}
- B01F 7/00866 . . . {provided with intermeshing elements}

- B01F 7/00875 . . . {-provided with ribs, ridges or grooves on one surface}
- B01F 7/00883 . . {-with rotating surfaces next to one another, e.g. on parallel axis}
- B01F 7/00891 . . . {-provided with intermeshing elements}
- B01F 7/009 . . . {-provided with ribs, ridges or grooves on one surface}
- U B01F 7/00925 . {-characterised by the orientation or disposition of the rotor axis, e.g. a plurality of mixing shafts with different or random orientation}
- B01F 7/00933 . . {-Variable, e.g. tiltable during the operation}
- B01F 7/00941 . . . {-the orientation of the rotating shaft being adjustable in the interior of the receptacle, e.g. by tilting the stirrer shaft during the mixing}
- B01F 7/0095 . . . {-the position of the rotating shaft being adjustable in the interior of the receptacle, e.g. to locate the stirrer in different locations during the mixing}
- B01F 7/00958 . . {-with a plurality of rotation axis}
- B01F 7/00966 . . . {-having different inclinations, e.g. non parallel}
- B01F 7/00975 . . . {-parallel}
- B01F 7/00983 . . . {-perpendicular}
- B01F 7/00991 . . . {-planetary ([B01F 7/14](#) and [B01F 7/30](#) take precedence)}
- U B01F 7/02 . with stirrers rotating about a horizontal or inclined axis
- B01F 7/021 . . {-rotating about an inclined axis}
- U B01F 7/16 . with stirrers rotating about a substantially vertical axis
- B01F 7/165 . . {-Pan-type mixers, i.e. mixers in which the stirring elements move along the bottom of a pan-shaped receptacle (with stirring elements moving along the wall or bottom of the receptacle for scraping in general [B01F 7/00208](#))}
- U B01F 7/30 . . with stirrers having planetary motion, {i.e. rotating about their own axis and about a vertical sun axis}
- B01F 7/305 . . . {-with at least one stirrer mounted on the sun axis}
- U B01F 9/00** **Mixers with rotating receptacles, {i.e. the rotary motion is imparted to effect the mixing}{([B01F 11/0002](#),) [B01F 13/04](#) take precedence); {Mixing the contents of packages or like independent containers by rotating them}**
- U B01F 9/0007 . {-the material flowing continuously through the receptacles from feed to discharge, e.g. the feed and discharge being at the same end}
- B01F 9/001 . . {-the feed and discharge openings being at opposite ends of the receptacle}
- B01F 9/0012 . . {-the feed and discharge openings being at the same side of the receptacle}
- U B01F 9/0014 . {-Mixing the contents of packages or like independent containers, e.g. tins, bottles, by rotating them}
- B01F 9/003 . . {-Construction details of the holders for the independent packages or receptacles}
- U B01F 9/0032 . {-Parts or components, e.g. receptacles, feeding or discharging means ([B01F 9/0009](#) takes precedence)}
- U B01F 9/0034 . . {-Receptacles, e.g. provided with liners}
- B01F 9/0036 . . . {-characterised by the shape or cross-section of the receptacle, e.g. of Y -, Z -, S -, or X shape}
- B01F 9/0038 {-Non-cylindrical sections, e.g. elliptical, irregular}
- B01F 9/004 {-Polygonal sections, e.g. triangular, square}
- B01F 9/0041 {-Conical, double-conical, diabolo shapes}
- B01F 9/0043 {-Cubic, cubical, polyhedral shapes}
- B01F 9/0045 {-S shapes}
- B01F 9/0047 {-Spherical shapes}

- B01F 9/0049 {-Toroidal shapes}
- B01F 9/005 {-V or W shapes}
- B01F 9/0052 {-X shapes}
- B01F 9/0054 {-Y or double Y shapes}
- U B01F 11/00 Mixers with shaking, oscillating, or vibrating mechanisms ([B01F 13/04](#) takes precedence)**
- U B01F 11/0005 . {Mixing the contents of independent containers, e.g. test-tubes, by shaking or oscillating them}
- U B01F 11/0017 . . {by pivoting the containers about an axis ([B01F 11/0025](#), [B01F 11/0031](#), [B01F 11/0034](#) take precedence)}
- B01F 11/002 . . . {-the containers being of the sandglass-type or being linked with their openings}
- B01F 11/004 . . {-the vibrations being caused by piezoelectric elements}
- U B01F 11/0042 . {Comprising a receptacle to only a part of which the movement is imparted; Periodically deforming flexible tubular members through which the material is flowing}
- U B01F 11/0045 . . {comprising a receptacle with a deformable part, e.g. a membrane, to which a motion is imparted}
- B01F 11/0048 . . . {-the motion being a linear movement to one part of the receptacle}
- B01F 11/0051 . . . {-the motion being a transversal movement to one part of the receptacle, e.g. by moving alternatively up and down the opposite edges of a closing lid to cause a pumping action}
- U B01F 11/0071 . {the material being directly submitted to a pulsating movement, e.g. by means of an oscillating piston or air column (solvent extraction of liquid solution comprising vibrating mechanisms [B01D 11/0438](#); stationary reactors of pulsating type [B01J 19/185](#))}
- B01F 11/0074 . . {-Mixing by successively aspirating a part of the mixture in a conduit, e.g. a piston, and reinjecting it through the same conduit into the receptacle}
- U B01F 11/008 . {the stirrers performing an oscillatory, vibratory or shaking movement ([B01F 11/0054](#), [B01F 11/04](#) take precedence)}
- B01F 11/0091 . . {-Stirrers constructions}
- U B01F 11/02 . Mixing by means of {high-frequency, e.g.} ultrasonic vibrations, {e.g. jets impinging against a vibrating plate}
- U B01F 11/0266 . . {with vibrating the receptacle or part of it}
- B01F 11/0275 . . . {-caused by hitting or striking the receptacle}
- U B01F 13/00 Other mixers; Mixing plant, including combinations of {mixers, e.g. of} dissimilar mixers**
- U B01F 13/0001 . {Mixers using electrical energy, other than for driving a motor ([B01F 3/0407](#), [B01F 3/04978](#), [B01F 3/0815](#), [B01F 3/1235](#) take precedence)}
- B01F 13/0003 . . {-the energy being electrical energy working on the ingredients or compositions for mixing them}
- B01F 13/0005 . . {-the energy being electric fields for electrostatically charging of the ingredients or compositions for mixing them}
- B01F 13/0006 . . {-the energy being magnetic or electromagnetic energy, radiation working on the ingredients or compositions for or during mixing them}
- B01F 13/0008 . . {-the energy being in the form of a laser to modify the characteristics or conditions of the products, e.g for heating}
- B01F 13/001 . . {-the energy being particle radiation working on the ingredients or compositions for or during mixing them}

- B01F 13/0011 · {-Mixers in which the mixing of the components is achieved by natural or induced convection}
- B01F 13/0016 · {-Movable or transportable mixing devices or plants}
- B01F 13/0018 · · {-Movable mixing devices, i.e. apt to be shifted or displaced from one place to another, e.g. by human force}
- B01F 13/002 · · · {-portable during use, e.g. hand-held ([B05C 17/00553](#) takes precedence, whisks comprising mixing wires [A47J 43/1087](#))}
- B01F 13/0022 · · · · {-Small portable bottles, flasks, vials, e.g. with means for mixing ingredients or for homogenizing their content, e.g. by hand shaking}
- B01F 13/0023 · · · · {-Of the syringe, cartridge type}
- B01F 13/0025 · · · · {-Of the pipette type}
- B01F 13/0027 · · · · {-Of the hand-held gun type}
- B01F 13/0028 · · · · {-Stirring devices adapted to be connected to a standard boring machine or other kind of domestic tool}
- B01F 13/003 · · · {-adapted to be mounted during use on a standard, base or support}
- B01F 13/0032 · · · {-movable by mechanical means, e.g. hoisting systems, grippers, lift trucks}
- B01F 13/0033 · · · {-movable by human force, e.g. kitchen or table devices}
- U B01F 13/0035 · · {-vehicle mounted (mixing devices for cement mounted on vehicles with provisions for mixing during transport [B28C 5/42](#))}
- B01F 13/0037 · · · {-the vehicle being self-propelled, e.g. truck mounted, provided with a motor, driven by tracks ([B01F 13/0038](#) to [B01F 13/0047](#) take precedence)}
- B01F 13/0038 · · · {-the vehicle being a carriage moving or driving along fixed or movable beams or bridges}
- B01F 13/004 · · · {-the vehicle being a trailer which is hand moved or coupled to self propelling vehicles}
- B01F 13/0042 · · · {-the vehicle being moved by human force}
- B01F 13/0044 · · · {-using rails for guiding the mixing installation during moving or displacing}
- B01F 13/0045 · · · {-using sledges or skids for moving or displacing the mixing installation}
- B01F 13/0047 · · · {-using driven tracks, caterpillars, crawler for moving or displacing the mixing installation}
- B01F 13/0049 · · {-Floating}
- U B01F 13/005 · · {-Mixers with loose mixing elements, e.g. balls, in a receptacle}
- B01F 13/0052 · · · {-using balls as loose mixing element}
- B01F 13/0054 · · · {-using bubbles as loose mixing element}
- B01F 13/0055 · · · {-using sliders or cylindrical elements as loose mixing element}
- B01F 13/0057 · · · {-using springs as loose mixing element}
- U B01F 13/0059 · · {-Micromixers}
- B01F 13/0061 · · · {-using specific means for arranging the streams to be mixed}
- B01F 13/0062 · · · · {-Hydrodynamic focussing}
- B01F 13/0064 · · · · {-Mixing chamber}
- B01F 13/0066 · · · · {-Interdigital streams, i.e. lamellae}
- B01F 13/0067 · · · · · {-The interdigital streams being concentric lamellae}
- B01F 13/0069 · · · {-the components flowing in the form of droplets ([B01F 3/0807](#) take precedence)}
- B01F 13/0071 · · · · {-the components to be mixed being combined in a single independent droplet, e.g. these droplets being divided by a non-miscible fluid or consisting of independent droplets}

- B01F 13/0072
 - . . . {the components being formed by independent droplets which are alternated, the mixing of the components being achieved by diffusion between droplets}
- B01F 13/0074
 - . . {using mixing means not otherwise provided for ([B01F 5/00](#), [B01F 7/00](#), [B01F 9/00](#), [B01F 11/00](#), [B01F 13/02](#) and [B01F 13/08](#) take precedence)}
- B01F 13/0076
 - . . . {using electrohydrodynamic (EHD) or electrokinetic (EKI) phenomena to mix or move the fluids}
- B01F 13/0077
 - . . . {using magnetohydrodynamic (MHD) phenomena to mix or move the fluids}
- B01F 13/0079
 - . . . {using heat to mix or move the fluids}
- B01F 13/0081
 - . . . {using induced convection or movement in the mixture to mix or move the fluids without mechanical means, e.g. thermodynamic instability, strong gradients, etc.}
- B01F 13/0083
 - . . . {using surface tension to mix, move or hold the fluids}
- B01F 13/0084
 - {using hydrophilic/hydrophobic surfaces}
- B01F 13/0086
 - {using roughness of the surfaces}
- B01F 13/0088
 - . . . {using a biological motor, i.e. biological molecules which are activated and movement is induced to stir a fluid}
- B01F 13/0089
 - . . . {using coupled electrorotation (CER) phenomena to mix or move fluids, or to sense properties of the mixture}
- B01F 13/0091
 - . . . {using ciliary stirrers to move or stir the fluids}
- B01F 13/0093
 - . . . {the mixing being achieved by diffusion between layers ([B01F 13/0069](#) takes precedence)}
- B01F 13/0094
 - . . . {the mixing being performed in a mixing chamber where the products are brought into contact}
- B01F 13/0096
 - . . . {using turbulence on microscale}
- U B01F 13/02
 - . Mixers with gas {or liquid} agitation, e.g. with air supply tubes {([B01F 3/04106](#) takes precedence; supplying ingredients in concrete mixers with a pneumatic or hydraulic conveyer [B28C 7/062](#); fluidising devices facilitating filling or emptying of containers [B65D 88/72](#))}

NOTE
The agitating fluid is not meant to mix with the material
- B01F 13/0222
 - . . {for mixing liquids ([B01F 13/0211](#), [B01F 13/0233](#), [B01F 13/0255](#) take precedence)}
- U B01F 13/04
 - . Mixers combined with safety devices {(safety devices in general [F16P](#))}
- B01F 13/042
 - . . {with a safety or relief valve}
- B01F 13/045
 - . . {Safety devices concerning the operation of the mixer}
- B01F 13/047
 - . . . {with locking, blocking or interlocking mechanisms for preventing operation of the actuation mechanism of the mixing device}
- U B01F 13/08
 - . Magnetic mixers; {Mixers having magnetically driven stirrers}
- U B01F 13/0827
 - . . {using supported or suspended stirring elements}
- B01F 13/0836
 - . . . {using an axis supported in several points for mounting the stirring element}
- B01F 13/0845
 - . . . {using a bearing, tube, opening or gap for internally supporting the stirring element}
- B01F 13/0854
 - . . . {supporting the stirring element in one point}
- B01F 13/0863
 - . . . {using a rod for supporting the stirring element, e.g. stirrer sliding on a rod or mounted on a rod sliding in a tube}
- B01F 13/0872
 - . . . {using a stud for supporting the stirring element}

- B01F 13/0881
 - • • {using a wire for supporting or suspending the stirring element, e.g. stirrer sliding on a wire}
- B01F 13/089
 - • • {the stirring element being suspended by one point}
- U B01F 13/10
 - Mixing plant, including combinations of {mixers, e.g. of} dissimilar mixers {{(B01F 13/0294 takes precedence)}
- U B01F 13/1002
 - • {for granular material}
- U B01F 13/1005
 - • • {with several silos arranged in a row or around a central delivery point, e.g. provided with proportioning means}
- B01F 13/1008
 - • • • {the silos being arranged in a circular configuration, i.e. in a circle around a central delivery point}
- U B01F 13/1013
 - • {Combinations of similar mixers, e.g. with rotary stirring devices in two or more receptacles (B01F 13/1002 takes precedence)}
- B01F 13/1016
 - • • {in two or more consecutive, i.e. successive, mixing receptacles or being consecutively arranged}
- B01F 13/1019
 - • • {in two or more alternative mixing receptacles, e.g. mixing in one receptacle and dispensing from another receptacle}
- B01F 13/1022
 - • • {mixing simultaneously in two or more mixing receptacles}
- U B01F 13/1025
 - • {Combinations of dissimilar mixers (B01F 13/1002 takes precedence)}
- B01F 13/1036
 - • • {in two or more alternative mixing receptacles, e.g. mixing in one receptacle and dispensing from another receptacle}
- B01F 13/1038
 - • • {mixing simultaneously in two or more mixing receptacles}
- B01F 13/1041
 - • {comprising mixers specially adapted for mixing in combination with disintegrating (B01F 7/048, B01F 13/1002 take precedence)}
- U B01F 13/1055
 - • {Mixing plant with mixing receptacles receiving material dispensed from several component receptacles, e.g. paint tins}
- B01F 13/1061
 - • • {with means for customizing the mixture on the point of sale, e.g. by sensing, receiving, analysing information about the characteristics of the mixture to be made}
- B01F 13/1063
 - • • • {using a computer for controlling information and converting it in a formula and a set of operation instructions, e.g. on the point of sale (data processing in buying-selling transactions G06F 17/602)}
- B01F 13/1066
 - • • {using stored recipes for determining the composition of the mixture to be produced, i.e. for determining the amounts of the basic components to be dispensed from the component receptacles}
- B01F 13/1069
 - • • {using data, i.e. barcodes, 3D codes or similar type of tagging information, as instruction or identification codes for controlling the dispensing and mixing operations}
- U B01F 15/00**
 - Accessories for mixers; { Auxiliary operations or auxiliary devices; Parts or details of general application}**
- U B01F 15/00019
 - {Washing or cleaning mixers, e.g. using knockers or scrapers; Inhibiting build-up of material on machine parts (cleaning in general B08B)}
- B01F 15/00038
 - • {using mechanical elements}
- B01F 15/00045
 - • • {using a brush for cleaning out rests of products}
- B01F 15/00051
 - • • {using pushers, i.e. a piston, for pushing out rests of products}
- B01F 15/00058
 - • • {using scrapers for cleaning mixers}
- B01F 15/00064
 - • {using one or some of the components of the mixture to wash-out the mixer}
- B01F 15/00071
 - • {Working under sterile conditions; Sterilizing the mixer or parts thereof (sterilizing in general A61L)}
- U B01F 15/00123
 - {Controlling; Testing; Measuring (B01F 15/0408 takes precedence)}

- B01F 15/00129 . . {-Measuring operational parameters ([B01F 15/00201](#) and [B01F 15/00207](#) take precedence)}
- B01F 15/00136 . . . {-Measuring flow rate}
- B01F 15/00142 {-Measuring mass flow rate}
- B01F 15/00149 {-Measuring volumetric flow rate}
- B01F 15/00155 . . . {-Measuring the level of material in a container or the position or shape of the upper surface of the material}
- B01F 15/00162 . . . {-Measuring pressure}
- B01F 15/00168 . . . {-Measuring speed of feeding material, e.g. bands or strips}
- B01F 15/00175 . . . {-Measuring temperature}
- B01F 15/00181 {-using infrared radiation thermometer or pyrometer, infrared sensors for temperature measurement without contact}
- B01F 15/00188 . . . {-Measuring volume}
- B01F 15/00194 . . . {-Measuring weight}
- U B01F 15/00207 . . {-Measuring properties of the mixtures, e.g. temperature, density, colour, vibration, noise ([B01F 15/00201](#) takes precedence)}
- B01F 15/00214 . . . {-Measuring colour or luminiscence}
- B01F 15/0022 . . . {-Measuring concentration, pH, pOH, p(ION), oxygen-demand ([B01F 15/00227](#) takes precedence)}
- B01F 15/00227 . . . {-Measuring electrical conductivity or dielectric constant of the mixture}
- B01F 15/00233 . . . {-Measuring density or solids or particle number}
- B01F 15/0024 . . . {-Measuring humidity, e.g. moisture content}
- B01F 15/00246 . . . {-Measuring viscosity}
- B01F 15/00259 . . {-characterized by the means for measuring parameters}
- B01F 15/00266 . . . {-Measuring parameters of mixture or components to be mixed by means of wireless sensors introduced in the mixture, e.g. using transponders or RFID tags}
- B01F 15/00272 . . . {-using radiation for measuring parameters of mixture or components to be mixed}
- B01F 15/00279 . . {-characterized by the type of control technique used}
- B01F 15/00285 . . . {-Controlling the mixing process by feed-back, i.e. a measured parameter of the mixture is measured, compared with the set-value and the feed values are corrected}
- B01F 15/00292 . . . {-Controlling the mixing process by feed-forward, i.e. a parameter of the components to be mixed is measured and the feed values are calculated}
- B01F 15/00298 . . . {-Controlling the mixing process by fuzzy control, i.e. a prescribed fuzzy rule}
- B01F 15/00305 . . . {-Controlling the mixing process from a remote server, e.g. by sending commands using radio, telephone, internet, local network, GPS or other means}
- B01F 15/00311 . . . {-Use of stored recipes for controlling the computer programs, e.g. for manipulation, handling, production, composition in mixing plants ([B01F 13/1066](#) takes precedence)}
- B01F 15/00318 . . . {-Use of data, i.e. barcodes, 3D codes or similar type of tagging information, as instruction or identification codes for controlling the computer programs, e.g. for manipulation, handling, production, compounding in mixing plants ([B01F 13/1069](#) takes precedence)}
- B01F 15/00324 . . . {-Controlling using ultrasonic waves during the operation}
- B01F 15/00331 . . {-characterized by the parameter being controlled}

- B01F 15/00337 . . . {-Controlling the position of baffles used to modify the flow in a conduit or a container}
- B01F 15/00344 . . . {-Controlling the amount of delivered fluid during a period}
- B01F 15/0035 . . . {-Controlling the level of the material in the mixer}
- B01F 15/00357 . . . {-Controlling pressure}
- B01F 15/00363 . . . {-Controlling speed during the operation}
- B01F 15/0037 {-Controlling the speed of feeding of at least one component to be mixed}
- B01F 15/00376 {-Controlling the speed of the mixing device during the operation}
- B01F 15/00383 {-Controlling the linear speed of the tip of a moving stirrer during the operation}
- B01F 15/00389 {-Controlling the speed of rotation of the mixing axis, stirrer or receptacle during the operation}
- B01F 15/00396 . . . {-Controlling temperature}
- B01F 15/00402 . . . {-Controlling time, i.e. duration, of at least one parameter during the operation}
- B01F 15/00409 {-Controlling the duration of the mixing process or parts of it}
- B01F 15/00415 {-Controlling the time of feeding of at least one of the components to be mixed}
- B01F 15/00422 . . . {-Controlling the volume of at least one component to be mixed}
- B01F 15/00428 . . . {-Controlling the weight of at least one component to be mixed}
- B01F 15/00435 . {-Drives, e.g. for reciprocating motion; Transmissions; Brakes; Couplings ([B01F 15/00201](#), [B01F 15/00668](#) take precedence; drives using magnetic couplings [B01F 13/08](#))}
- B01F 15/0048 . . {-Couplings therefor, e.g. with torque sensing means (couplings or clutches in general [F16D](#); measuring torque [G01L 3/00](#))}
- B01F 15/00487 . . {-Nature of the drive}
- B01F 15/00493 . . . {-Driven by acoustic force, e.g. acoustically induced bubbles, acoustic windmill, acoustic scallop}
- B01F 15/005 . . . {-Flow driven}
- B01F 15/00506 . . . {-Hand driven}
- B01F 15/00512 {-Shaking by hand a portable receptacle or stirrer for mixing}
- B01F 15/00519 . . . {-Battery driven}
- B01F 15/00525 . . . {-Gas driven}
- B01F 15/00532 . . . {-Gravity driven, e.g. by means of weights out of balance, plunger-weights moving in a cylinder}
- B01F 15/00538 . . . {-Motor driven, i.e. by means of an electric or IC motor}
- B01F 15/00545 . . . {-Hydraulically driven}
- B01F 15/00551 . . . {-Driven by optical pressure force, e.g. produced by a laser beam}
- B01F 15/00558 . . . {-Driven by solar energy}
- B01F 15/00564 . . . {-Driven by the rotation of the wheels during movement}
- B01F 15/00571 . . . {-Wind driven}
- B01F 15/00662 . {-Mounting or supporting mixing devices, e.g. independent stirrer units on receptacles; Mounting or supporting receptacles on frames or stands; Clamping or holding arrangements therefor}
- B01F 15/00668 . . {-Mounting or supporting stirrer shafts on receptacles}
- B01F 15/00675 . . . {-by supporting only one extremity of the shaft}
- B01F 15/00681 {-at the top of the receptacle}

- B01F 15/00688 {at the bottom of the receptacle, e.g. by studs}
- B01F 15/00694 {at a side wall of the receptacle}
- B01F 15/00701 {by supporting both extremities of the shaft}
- B01F 15/00707 {at the top and at the bottom of the receptacle, e.g. for performing a conical orbital movement about a vertical axis}
- B01F 15/00714 {at the side walls of the receptacle}
- B01F 15/0072 {by means of clamps, clamping arrangements for fixing attached stirrers or independent stirrer units}
- B01F 15/00727 {using inflatable arrangements for supporting a stirring element}
- B01F 15/00733 {Clamping or holding arrangements for mounting receptacles on mixing devices, e.g. for shaking, vibrating or rotating the receptacle}
- B01F 15/0074 {having a cup-shaped or cage-type form}
- B01F 15/00746 {having a jaw-type or finger-type shape}
- B01F 15/00753 {of the vertically movable, two-plates type}
- B01F 15/00766 {Holding arrangements for retaining loose elements of the mixing receptacle, e.g. for holding the handle of a can while it is being shaken}
- B01F 15/00772 {Supporting receptacles on frames or stands ([B01F 15/00733](#) takes precedence; frames of machines, stands as support for apparatus, in general [F16M](#))}
- U B01F 15/00824 {Receptacles ([B01F 9/0032](#), [B01F 15/00779](#) take precedence)}
- B01F 15/00831 {Nature of the receptacle}
- B01F 15/00837 {provided with liners, e.g. wear resistant or flexible liners}
- B01F 15/00844 {Surface characteristics, e.g. coated, rough}
- B01F 15/0085 {the mixing receptacle being flexible, e.g. flexible bags supported by rigid containers}
- B01F 15/00857 {the mixing receptacle or conduit being transparent or comprising transparent parts}
- B01F 15/00863 {Multi compartment receptacles}
- B01F 15/0087 {comprising compartments keeping the materials to be mixed separated until the mixing is initiated ([B65D 81/32](#) takes precedence)}
- B01F 15/00876 {Configuration of the interior}
- B01F 15/00883 {provided with baffles, plates or bars on the wall or the bottom}
- B01F 15/00889 {with horizontal baffles mounted on the walls}
- B01F 15/00896 {with vertical baffles mounted on the walls}
- B01F 15/00902 {provided with guide tubes on the wall or the bottom}
- B01F 15/00909 {Closely surrounding the rotating element}
- U B01F 15/00928 {General build-up of the mixers}
- B01F 15/00935 {the mixer being built-up from a plurality of modules or stacked plates comprising complete or partial elements of the mixer}
- B01F 15/00941 {the mixer or mixing elements being collapsible, i.e. when discharging the products}
- B01F 15/00948 {the complete mixer being collapsible, i.e. the housing can be collapsed}
- B01F 15/00954 {Preventing generation of dust or dirt; Sieves; Filters ([B01F 15/00019](#), [B01F 15/00779](#) take precedence)}
- B01F 15/00961 {Preventing generation of dust}
- B01F 15/00967 {using splash guards in mixers for avoiding dirt or projection of material}
- B01F 15/00974 {using filters in mixers, e.g. during venting}

- B01F 15/0098 . . . {-Filters for micro-living organisms, i.e. filtering of the mixture}
- B01F 15/00987 . . {-using sieves in mixers for purposes other than mixing, e.g. eliminating dust during venting}
- B01F 15/00993 . . {-Venting, degassing, ventilating of gases, fumes or toxic vapours during mixing}
- U B01F 15/02 . Feed or discharge mechanisms
- U B01F 15/0201 . . {-Feed mechanisms (with proportioning [B01F 15/04](#))}
- U B01F 15/0205 . . . {-comprising breaking packages or parts thereof, e.g. piercing or opening sealing elements between compartments or cartridges ([B65D 25/08](#), [B65D 81/32](#) take precedence)}
- B01F 15/0206 {-Breaking or perforating packages, containers, vials}
- B01F 15/0207 {-the package containing one of the components dissolves when in contact with the other component of the mixture ([B65D 65/46](#) takes precedence)}
- B01F 15/0208 {-Opening clips which seal openings between the compartments}
- B01F 15/0209 {-Dissolving the seal when in contact with one of the products to be mixed, thereby bringing the compartments in communication}
- B01F 15/021 {-Opening the seal between the compartments by application of heat}
- B01F 15/0211 {-Opening hooks which lock, close-off openings between compartments}
- B01F 15/0212 {-Piercing, perforating, melting membranes, closures which seal the compartments}
- B01F 15/0213 {-Opening valves which close-off openings between compartments}
- B01F 15/0215 {-Removing separation walls, plugs which close off the different compartments, e.g. by rotation, axially sliding}
- B01F 15/0222 . . . {-characterized by the relative arrangement of the containers for feeding or mixing the components}
- B01F 15/0223 {-the containers being connected coaxially before contacting the contents}
- B01F 15/0224 {-A container being placed inside the other before contacting the contents}
- B01F 15/0225 {-the containers being connected in a mouth-to-mouth, end-to-end disposition, i.e. the openings are juxtaposed before contacting the contents}
- B01F 15/0226 {-the containers being placed in parallel before contacting the contents}
- B01F 15/0227 . . . {-characterized by the means for feeding the components to the mixer}
- B01F 15/0229 {-using belts}
- B01F 15/023 {-using boxes, closable containers, sacks, carts}
- B01F 15/0231 {-using buckets, cups, open containers}
- B01F 15/0232 {-using capillary forces}
- B01F 15/0233 {-using centrifugal forces}
- B01F 15/0234 {-using gravity, e.g. from a hopper}
- B01F 15/0235 {-using a hopper}
- B01F 15/0236 {-using grippers}
- B01F 15/0237 {-using pistons, plungers, syringes}
- B01F 15/0238 {-using pneumatic pressure, overpressure, gas or air pressure in a closed receptacle or circuit system}
- B01F 15/0239 {-using propellers}
- B01F 15/024 {-using means for feeding components in a pulsating or intermittent manner}

- B01F 15/0241 {-using electrical pulses}
- B01F 15/0243 {-using pumps}
- B01F 15/0244 {-membrane pumps}
- B01F 15/0245 {-peristaltic pumps}
- B01F 15/0246 {-piezoelectric pumps}
- B01F 15/0247 {-piston pumps}
- B01F 15/0248 {-venturi pumps}
- B01F 15/0249 {-using rakes, plain plates with raking movement}
- B01F 15/025 {-using rollers}
- B01F 15/0251 {-using helical screws}
- B01F 15/0252 {-using shovels, scoops}
- B01F 15/0253 {-using slides, vibrating tables}
- B01F 15/0254 {-using sprayers, nozzles, jets}
- B01F 15/0255 {-using ink jet heads or cartridges, e.g. of the thermal bubble jet or piezoelectric type}
- B01F 15/0256 {-Squeezing a flexible container}
- B01F 15/0258 {-using vacuum, underpressure in a closed receptacle or circuit system}
- B01F 15/0259 {-using a syphon to create a suction of a component}
- B01F 15/026 {-using valves, gates, orifices, openings}
- B01F 15/0261 {-being adjustable}
- B01F 15/0262 {-using fans, turbines}
- B01F 15/0263 {-using vibrations, e.g. standing waves, ultrasonic vibrations}
- B01F 15/0264 {-With means for feeding the material with a fractal or tree-type distribution in a surface}
- B01F 15/0265 {-using means for feeding one phase surrounded by another phase without mixing during the feeding}
- U B01F 15/0266 . . . {Discharge mechanism}
- B01F 15/0274 . . . {-characterized by the means for discharging the components from the mixer}
- B01F 15/0275 {-using belts}
- B01F 15/0276 {-using gravity}
- B01F 15/0277 {-Discharging the components by overflow}
- B01F 15/0278 {-using pistons or plungers}
- B01F 15/0279 {-reciprocating in the mixing receptacle}
- B01F 15/028 {-using pneumatic pressure, overpressure, gas pressure in a closed receptacle or circuit system}
- B01F 15/0281 {-using means for discharging the mixture in a pulsating or intermittent manner}
- B01F 15/0282 {-using electrical pulses}
- B01F 15/0283 {-using pumps}
- B01F 15/0284 {-using venturi pumps}
- B01F 15/0286 {-using pushers}
- B01F 15/0287 {-using slides}
- B01F 15/0288 {-using a rotary discharge means, e.g. a screw beneath the receptacle ([B01F 15/0267](#) takes precedence)}
- B01F 15/0289 {-using helical screws}

- B01F 15/029 {using squeezing means on a deformable container}
- B01F 15/0291 {using suction, vacuum, e.g. with a pipette}
- B01F 15/0292 {using valves, gates, orifices, openings}
- B01F 15/0293 {-being adjustable}
- B01F 15/0294 {using fans or ventilators}
- B01F 15/0295 {using tilting or pivoting means for emptying the mixing receptacle}
- B01F 15/0296 {the mixing receptacle rotating in opposite directions for mixing and for discharging}
- B01F 15/0297 {using distributing means, e.g. manifold valves, multiple fittings for supplying the discharge components to a plurality of dispensing places}
- U B01F 15/04 . Forming a predetermined ratio of the substances to be mixed (controlling ratio of two or more flows of fluid or fluent material [G05D 11/02](#)){([G05D 11/00](#) takes precedence)}
- U B01F 15/0412 . . {Forming a predetermined ratio of two or more flows, e.g. using flow-sensing or flow controlling devices ([B01F 15/0408](#) takes precedence)}
- U B01F 15/0429 . . . {Flow control by valves, e.g. opening intermittently}
- B01F 15/0433 {the flow of one component operating the actuator of the valve, e.g. by deforming a membrane which operates de valve actuator}
- B01F 15/0437 . . . {the flow of substances to be mixed circulating in a closed circuit, e.g. from a container through valve, driving means, metering means, dispensing means, e.g. 3-way valve, and back to the container}
- U B01F 15/0441 . . {by feeding the components in predetermined amounts}
- B01F 15/0479 . . . {using flow rate controls for feeding the substances}

Project: N/A (B01J)**B01J**

CHEMICAL OR PHYSICAL PROCESSES, e.g. CATALYSIS, COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS (-processes or apparatus for specific applications, see the relevant places for these processes or apparatus, e.g. [F26B 3/08](#)-)

NOTES

In this subclass, the following terms or expressions are used with the meanings indicated :

- "solid particles" includes such particles whether catalysts, reactants or inert in solid, semi-solid or pasty state;
- "fluidised particles" means finely divided solid particles lifted and agitated by a stream of fluid;
- "fluidised bed-technique" means fluid-solid contacting technique in which finely divided particles are lifted and agitated by a rising stream of fluid, said stream having such a speed as to form a lower dense phase (the "bed") and an upper dilute fluidised phase of "fluidised particles";
- "processes conducted in the presence of solid particles" does not include processes wherein the only solid particles present are formed during the reaction.

In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups

WARNING

>

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B01J 37/025](#) covered by [B01J 37/02](#)

- B01J 2/00** Processes or devices for granulating materials, {e.g. fertilisers} in general (-granulating metals [B22F 9/00](#) , { granulating slag [C21B 3/06](#) } , ores or scrap [C22B 1/14](#) ; mechanical aspects of working of plastics or substances in a plastic state to make granules [B29B 9/00](#) ; processes for granulating fertilisers characterised by their chemical constitution, see the relevant groups in [C05B](#) to [C05G](#) ; chemical aspects of powdering or granulating of macromolecular substances [C08J 3/12](#)); Rendering particulate materials free flowing in general, e.g. making them hydrophobic
- B01J 2/003 · {followed by coating of the granules (-to prevent the granules sticking together [B01J 2/30](#)-)}
- B01J 2/006 · {Coating of the granules without description of the process or the device by which the granules are obtained (-to prevent the granules sticking together [B01J 2/30](#)-)}
- B01J 2/02 · by dividing the liquid material into drops, e.g. by spraying, and solidifying the drops (-evaporating by spraying [B01D 1/16](#)-)
- B01J 2/04 · · in a gaseous medium{-if combined with suspending the material in a gas, e.g. fluidised beds [B01J 2/16](#)-)}
- B01J 3/00** Processes of utilising sub-atmospheric or super-atmospheric pressure to effect chemical or physical change of matter; Apparatus therefor (-apparatus for compacting or sintering of metal powders [B22F 3/00](#) ; pressure vessels in general [F16J 12/00](#) ; pressure vessels for containing or storing compressed, liquefied or solidified gases [F17C](#) ; pressure vessels for nuclear reactors [G21C](#)-)
- B01J 3/002 · {-Component parts of these vessels not mentioned in [B01J 3/004](#) , [B01J 3/006](#) , [B01J 3/02](#) to [B01J 3/08](#) ; Measures taken in conjunction with the process to be carried out, e.g. safety measures-}
- B01J 3/004 · {Sight-glasses therefor (-see also [G02B](#)-)}
- U B01J 3/04 · Pressure vessels, e.g. autoclaves
- B01J 3/048 · · {Multiwall, strip or filament wound vessels (-for pressurised gas vessels [F17C 1/06](#) ; for making them [B29](#)-)}
- B01J 3/06 · Processes using ultra high pressure, e.g. for the formation of diamonds; Apparatus therefor, e.g. moulds, dies (-[B01J 3/04](#) takes precedence; presses in general [B30B](#)-)
- B01J 3/08 · · Application of shock-waves for chemical reactions or for modifying the crystal structure of substances, {e.g. reactions carried out by explosions or in a combustion engine-type reactor} (-blasting [F42D](#)-)
- B01J 4/00** Feed {or outlet} devices; Feed or outlet regulating devices (-feed or outlet devices for pressure vessels [B01J 3/02](#) ; { feeding of particles into and evacuation of particles out of the reactor [B01J 8/0015](#) })
- U B01J 4/001 · {Feed or outlet devices as such, e.g. feeding tubes}
- B01J 4/002 · · {Nozzle-type elements (-nozzle-type reactors [B01J 19/26](#)-)}
- B01J 4/04 · using osmotic pressure {using membranes, porous plates}
- B01J 6/00** {Heat treatments such as} Calcining; Fusing {Pyrolysis (-furnaces [F27D](#)-)}
- B01J 6/008 · {Pyrolysis reactions (-of hydrocarbons [C10G 9/00](#)-)}
- B01J 7/00** Apparatus for generating gases (-production of inert gas mixtures [B01J 19/14](#) ; for generating specific gases, see the relevant subclasses, e.g. [C01B](#) , [C10J](#) ; { in "air bags" on vehicles [B60R 21/26](#) ; for starter gas [F02C 7/26](#) ; blasting cartridges for producing gas under pressure [F42B 3/04](#) })

- B01J 8/00** **Chemical or physical processes in general, conducted in the presence of fluids and solid particles; Apparatus for such processes (-processes or devices for granulating material [B01J 2/00](#) ; furnaces [F27B](#) ; { heat exchange apparatus [F28C 3/10](#) ; [F28D 13/00](#) , [F28D 17/00](#) , [F28D 19/00](#) })**
- B01J 8/0005 • {Catalytic processes under superatmospheric pressure (-non-catalytic processes [B01J 3/00](#)-)}
- B01J 8/001 • {Controlling catalytic processes (-[B01J 8/1809](#) takes precedence-)}
- B01J 8/005 • {Separating solid material from the gas/liquid stream (-separation processes per se [B01D](#)-)}
- B01J 8/008 • {Details of the reactor or of the particulate material; Processes to increase or to retard the rate of reaction (-[B01J 8/0285](#) , [B01J 8/067](#) , [B01J 8/087](#) , [B01J 8/1836](#) take precedence-)}
- U B01J 8/02 • with stationary particles, e.g. in fixed beds
- U B01J 8/0207 • • {the fluid flow within the bed being predominantly horizontal}
- B01J 8/0221 • • • {in a cylindrical shaped bed (-[B01J 8/0214](#) takes precedence-)}
- B01J 8/0278 • • {Feeding reactive fluids (-for solid material [B01J 8/0015](#)-)}
- B01J 8/0285 • • {Heating or cooling the reactor (-for tubular reactors in furnaces [B01J 8/062](#)-)}
- U B01J 8/04 • • the fluid passing successively through two or more beds
- U B01J 8/0403 • • • {the fluid flow within the beds being predominantly horizontal}
- U B01J 8/0407 • • • • {through two or more cylindrical annular shaped beds}
- B01J 8/0415 • • • • • {the beds being superimposed one above the other (-[B01J 8/0434](#) takes precedence-)}
- B01J 8/0492 • • • {Feeding reactive fluids (-for solid material, see [B01J 8/0015](#)-)}
- U B01J 8/06 • • in tube reactors; the solid particles being arranged in tubes
- B01J 8/067 • • • {Heating or cooling the reactor (-[B01J 8/062](#) takes precedence-)}
- B01J 8/08 • with moving particles (-with fluidised particles [B01J 8/18](#)-)
- B01J 8/085 • • {Feeding reactive fluids (-for solid material, see [B01J 8/0015](#)-)}
- B01J 8/10 • • moved by stirrers or by rotary drums or rotary receptacles {or endless belts}
- B01J 8/14 • • moving in free vortex flow apparatus (-free vortex flow apparatus in general [B04C](#)-)
- B01J 8/16 • with particles being subjected to vibrations or pulsations (-[B01J 8/40](#) takes precedence-)
- B01J 8/18 • with fluidised particles{(-combustion apparatus with fluidised bed in general [F23C 10/00](#) ; furnaces with fluidised bed [F27B 15/00](#)-)}
- B01J 8/1818 • • {Feeding of the fluidising gas (-[B01J 8/44](#) takes precedence-)}
- B01J 8/1836 • • {Heating and cooling the reactor (-[B01J 8/42](#) takes precedence-)}
- B01J 8/1872 • • {Details of the fluidised bed reactor (-[B01J 8/1836](#) takes precedence-)}
- U B01J 8/20 • • with liquid as a fluidising medium
- U B01J 8/22 • • • gas being introduced into the liquid
- B01J 8/224 • • • • {the particles being subject to a circulatory movement (-[B01J 8/222](#) takes precedence-)}
- B01J 8/24 • • according to "fluidised-bed" technique (-[B01J 8/20](#) takes precedence; combustion apparatus in which combustion takes place in a fluidised bed of fuel or other particles [F23C 10/00](#)-)
- B01J 8/38 • • • with fluidised bed containing a rotatable device or being subject to rotation {or to a circulatory movement, i.e. leaving a vessel and subsequently re-entering it}

- B01J 8/384 · · · {being subject to a circulatory movement only (~~B01J 8/382~~ takes precedence-)}
- B01J 8/42 · · · with fluidised bed subjected to electric current or to radiations {this sub-group includes the fluidised bed subjected to electric or magnetic fields}
- B01J 10/00** **Chemical processes in general for reacting liquid with gaseous media other than in the presence of solid particles, or apparatus specially adapted therefor (~~B01J 19/08~~ takes precedence; separation, e.g. distillation, also combined with chemical reactions [B01D](#) , { e.g. [B01D 3/009](#) })**
- B01J 12/00** **Chemical processes in general for reacting gaseous media with gaseous media; Apparatus specially adapted therefor (~~B01J 3/08~~ , ~~B01J 8/00~~ , ~~B01J 19/08~~ take precedence-)**
- B01J 12/002 · {carried out in the plasma state (~~generating or handling plasma [H05H 1/00](#)-)}~~
- B01J 13/00** **Colloid chemistry, e.g. the production of colloidal materials or their solutions, not otherwise provided for; Making micro-capsules or micro-balloons (~~use of substances as emulsifying, wetting, dispersing or foam producing agents [B01F 17/00](#)~~)**
- B01J 13/0004 · {Preparation of sols (~~by physical processes [B01J 13/0086](#) , aerosols [B01J 13/0095](#)-)}~~
- B01J 13/0043 · · {containing elemental metal (~~for medical or diagnostical purposes [A61K](#) , [G01N](#)-)}~~
- B01J 13/0086 · {Preparation of sols by physical processes (~~colloid mills [B02C](#)-)}~~
- B01J 13/02 · Making micro-capsules or micro-balloons { for medical preparations [A61K 9/50](#)-}
- U B01J 13/06 · · by phase separation
- B01J 13/08 · · · Simple coacervation, i.e. addition of highly hydrophilic material (~~combined with spraying [B01J 13/043](#) ; combined with mechanical division [B01J 13/04](#)-)}~~
- U B01J 13/12 · · · removing solvent from the wall-forming material solution
- B01J 13/125 · · · · {by evaporation of the solvent (~~apparatus therefor [B01J 13/043](#)-)}~~
- B01J 14/00** **Chemical processes in general for reacting liquids with liquids; Apparatus specially adapted therefor (~~B01J 8/00~~ , ~~B01J 19/08~~ take precedence-)**
- B01J 15/00** **Chemical processes in general for reacting gaseous media with non-particulate solids, e.g. sheet material; Apparatus specially adapted therefor (~~B01J 19/08~~ takes precedence-)**
- B01J 16/00** **Chemical processes in general for reacting liquids with non-particulate solids, e.g. sheet material; Apparatus specially adapted therefor (~~B01J 19/08~~ takes precedence-)**
- B01J 19/00** **Chemical, physical, or physico-chemical processes in general (~~physical treatment of fibres, threads, yarns, fabrics, feathers or fibrous goods made from such materials, see the relevant places for such treatment, e.g. [D06M 10/00](#)~~); Their relevant apparatus (~~packings, fillings or grids specially adapted for biological treatment of water, waste water or sewage [C02F 3/10](#) ; splashing boards or grids specially adapted for trickle coolers [F28F 25/08](#)-)~~**
- B01J 19/0006 · {Controlling or regulating processes (~~controlling or regulating in general [G05](#)-)}~~
- U B01J 19/002 · · {Avoiding undesirable reactions or side-effects, e.g. avoiding explosions, or improving the yield by suppressing side-reactions}
- B01J 19/0026 · · · {Avoiding carbon deposits (~~inhibiting incrustation in general, [C23F 14/00](#) , [C23F 15/00](#)-)}~~

- B01J 19/0033
 - • {Optimisation processes, i.e. processes with adaptive control systems (-adaptive control systems per se [G05B 13/00](#)-)}
- B01J 19/004
 - • {Multifunctional apparatus for automatic manufacturing of various chemical products (-sequential reactions [B01J 19/0046](#)-)}
- B01J 19/0046
 - {Sequential or parallel reactions, e.g. for the synthesis of polypeptides or polynucleotides; Apparatus and devices for combinatorial chemistry or for making molecular arrays (-synthesis methods per se [C40B 50/00](#)-)}
- U B01J 19/0053
 - {Details of the reactor}
- B01J 19/0066
 - • {Stirrers (mixing per se [B01F](#))}
- B01J 19/0073
 - • {Sealings (-sealings for pressure vessels per se [F16J 15/00](#)-)}
- B01J 19/0093
 - {Microreactors, e.g. miniaturised or micro-fabricated reactors (-laboratory containers with capillary fluid transport in microfabricated channels or chambers [B01L 3/5027](#)-)}
- B01J 19/02
 - Apparatus characterised by being constructed of material selected for its chemically-resistant properties (-refractory details of furnaces [F27D](#)-)}
- B01J 19/06
 - Solidifying liquids (-making microcapsules [B01J 13/02](#)-)}
- B01J 19/08
 - Processes employing the direct application of electric or wave energy, or particle radiation; Apparatus therefor (-application of shock waves [B01J 3/08](#) ; generating or handling plasma [H05H 1/00](#)-)}
- U B01J 19/087
 - • {employing electric or magnetic energy}
- B01J 19/088
 - • • {giving rise to electric discharges (-for heating purposes [H05B 7/00](#) ; for the production of ozone [C01B 13/11](#) , [H01T 19/00](#)-)}
- B01J 19/10
 - • employing sonic or ultrasonic vibrations (-for auxiliary pretreatment of gases or vapours to be cleaned [B01D 51/08](#) ; for cleaning [B08B 3/12](#) ; { for degasification of liquids [B01D 19/0073](#) ; for mixing purposes [B01F 11/02](#) })
- U B01J 19/12
 - • employing electromagnetic waves
- B01J 19/121
 - • • {Coherent waves, e.g. laser beams (-lasers per se [H01S 3/00](#)-)}
- B01J 19/122
 - • • {Incoherent waves (-gamma-radiation [B01J 19/082](#)-)}
- B01J 19/14
 - Production of inert gas mixtures; Use of inert gases in general (-apparatus for generating gases [B01J 7/00](#) ; separation of gases or vapours [B01D 53/00](#) { application in storage tanks [B65D 90/44](#) })
- B01J 19/16
 - Preventing evaporation or oxidation of non-metallic liquids by applying a floating layer, e.g. of micro-balloons(-in storage tanks [B65D 90/42](#)-)}
- B01J 19/18
 - Stationary reactors having moving elements inside (-[B01J 19/08](#) , [B01J 19/26](#) take precedence-)
- B01J 19/1893
 - • {Membrane reactors (-membranes [B01D 71/00](#) ; catalytic membranes [B01J 35/065](#)-)}
- B01J 19/20
 - • in the form of helices, e.g. screw reactors (-thin-film reactors [B01J 10/02](#)-)}
- B01J 19/24
 - Stationary reactors without moving elements inside (-[B01J 19/08](#) , [B01J 19/26](#) take precedence; with stationary particles [B01J 8/02](#)-)}
- B01J 19/2455
 - • {provoking a loop type movement of the reactants (-tubular loop-type reactors [B01J 19/2435](#) ; loop reactors having moving elements inside [B01J 19/1868](#)-)}
- B01J 19/28
 - Moving reactors, e.g. rotary drums (-[B01J 19/08](#) takes precedence; centrifuges [B04B](#) ; rotary drum furnaces { [B01J 6/002](#) } , [F27B 7/00](#)-)}
- B01J 19/285
 - • {Shaking or vibrating reactors; reactions under the influence of low-frequency vibrations or pulsations (-for sonic and ultrasonic vibrations [B01J 19/10](#)-)}

- B01J 20/00** **Solid sorbent compositions or filter aid compositions; Sorbents for chromatography; Processes for preparing, regenerating or reactivating thereof** (-use of sorbent compositions in liquid separation [B01D 15/00](#) , use of filter aid compositions [B01D 37/02](#) ; use of sorbent compositions in gas separation [B01D 53/02](#) , [B01D 53/14](#))
- U B01J 20/02 · comprising inorganic material
- B01J 20/0203 · {comprising compounds of metals not provided for in [B01J 20/04](#) (-oxides or hydroxides thereof [B01J 20/06](#)-)}
- NOTE
Compounds classified in group [B01J 20/0203](#) and subgroups are also classified in [B01J 20/0274](#) according to the type of anion
- B01J 20/0248 · · {Compounds of B, Al, Ga, In, Tl (-[B01J 20/08](#) takes precedence-)}
- B01J 20/0251 · · {Compounds of Si, Ge, Sn, Pb (-[B01J 20/10](#) takes precedence-)}
- U B01J 20/0274 · · {characterised by the type of anion}
- B01J 20/0277 · · · {Carbonates of compounds other than those provided for in [B01J 20/043](#)-}
- B01J 20/0281 · · · {Sulfates of compounds other than those provided for in [B01J 20/045](#)-}
- B01J 20/0285 · · · {Sulfides of compounds other than those provided for in [B01J 20/045](#)-}
- B01J 20/0288 · · · {Halides of compounds other than those provided for in [B01J 20/046](#)-}
- B01J 20/0292 · · · {Phosphates of compounds other than those provided for in [B01J 20/048](#)-}
- B01J 20/0296 · · · {Nitrates of compounds other than those provided for in [B01J 20/04](#)-}
- U B01J 20/10 · comprising silica or silicate
- B01J 20/16 · · Alumino-silicates (-[B01J 20/12](#) takes precedence-)
- B01J 20/20 · comprising free carbon; comprising carbon obtained by carbonising processes (-active carbon [C01B 31/08](#)-)
- B01J 20/205 · · {Carbon nanostructures, e.g. nanotubes, nanohorns, nanocones, nanoballs (-carbon nanotubes per se [C01B 31/0206](#)-)}
- U B01J 20/22 · comprising organic material
- WARNING
Groups [B01J 20/223](#) and [B01J 20/226](#) are not complete, pending a reorganisation. See also [B01J 20/22](#)
- U B01J 20/223 · {containing metals, e.g. organo-metallic compounds, coordination complexes}
- B01J 20/226 · · {Coordination polymers, e.g. metal-organic frameworks [MOF], zeolitic imidazolate frameworks (ZIF)(-preparation of metal complexes containing carboxylic acid moieties [C07C 51/418](#) ; MOF's per se [C07F](#)-)}
- U B01J 20/26 · Synthetic macromolecular compounds
- WARNING
Groups [B01J 20/261](#) to [B01J 20/268](#) are not complete, pending a reorganisation. See also this group
- B01J 20/261 · · {obtained by reactions only involving carbon to carbon unsaturated bonds (macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds per se [C08F](#))}
- B01J 20/262 · · {obtained otherwise than by reactions only involving carbon to carbon unsaturated bonds, e.g. obtained by polycondensation (macromolecular compounds obtained otherwise than by reactions only involving unsaturated carbon-to-carbon bonds per se [C08G](#))}

- B01J 20/265
- • • {modified or post-treated polymers (~~polymer carriers or substrates subjected to further impregnating or coating [B01J 20/3208](#)~~)}
- U B01J 20/28
- characterised by their form or physical properties
- WARNING
- Groups [B01J 20/281](#) to [B01J 20/29](#) might be incomplete. A number of documents presently classified in [G01N 30/48](#) and [G01N 30/482](#) still need reclassification to one or more of these groups
- U B01J 20/28002
- • {characterised by their physical properties}
- U B01J 20/28004
- • • {Sorbent size or size distribution, e.g. particle size}
- B01J 20/28007
- • • • {with size in the range 1-100 nanometers, e.g. nano-sized particles, nanofibers, nanotubes, nanowires or the like (~~carbon nanostructures [B01J 20/205](#)~~)}
- U B01J 20/28014
- • {characterised by their form}
- B01J 20/28023
- • • {Fibres or filaments (~~fibres or filaments in the form of membranes [B01J 20/28038](#) ; [B01J 20/28007](#) takes precedence~~)}
- U B01J 20/281
- Sorbents specially adapted for preparative, analytical or investigative chromatography
- NOTE
- In groups [B01J 20/281](#) to [B01J 20/292](#) it is desirable to add indexing codes for aspects relating to sorbents specially adapted for preparative, analytical or investigative chromatography. The indexing codes are chosen from groups [B01J 2220/80](#) to [B01J 2220/86](#)
- B01J 20/282
- • Porous sorbents (~~ion exchange [B01J 39/00](#) to [B01J 41/00](#)~~)
- U B01J 20/30
- Processes for preparing, regenerating, or reactivating
- WARNING
- Groups [B01J 20/3007](#) to [B01J 20/3092](#) are not complete, pending a reorganisation. See also [B01J 20/30](#)
- U B01J 20/305
- • {Addition of material, later completely removed, e.g. as result of heat treatment, leaching or washing, e.g. for forming pores}
- B01J 20/3057
- • • {Use of a templating or imprinting material (~~molecularly imprinted polymers [B01J 20/268](#)~~); filling pores of a substrate or matrix followed by the removal of the substrate or matrix}
- B01J 20/3085
- • {Chemical treatments not covered by groups [B01J 20/3007](#) - [B01J 20/3078](#)
- B01J 20/3092
- • {Packing of a container, e.g. packing a cartridge or column (~~of chromatography columns [B01D 15/206](#)~~)}
- U B01J 20/34
- • Regenerating or reactivating
- B01J 20/3433
- • • {of sorbents or filter aids other than those covered by [B01J 20/3408](#) - [B01J 20/3425](#)}
- B01J 20/345
- • • {using a particular desorbing compound or mixture (~~elution or regeneration of stationary phases in liquid chromatography [B01D 15/08](#)~~)}
- B01J 20/3483
- • • {by thermal treatment not covered by groups [B01J 20/3441](#) - [B01J 20/3475](#), e.g. by heating or cooling}
- U **B01J 21/00**
- Catalysts comprising the elements, oxides, or hydroxides of magnesium, boron, aluminium, carbon, silicon, titanium, zirconium, or hafnium**
- U B01J 21/18
- Carbon
- B01J 21/185
- • {Carbon nanotubes (~~carbon nanotubes per se [C01B 31/0206](#)~~)}

- B01J 23/00** **Catalysts comprising metals or metal oxides or hydroxides, not provided for in group B01J 21/00 (-B01J 21/16 takes precedence-)**
- U B01J 23/38 • of noble metals
- B01J 23/54 • • combined with metals, oxides or hydroxides provided for in groups
[B01J 23/02](#) to [B01J 23/36](#)
- U B01J 23/56 • • • Platinum group metals
- U B01J 23/64 • • • • with arsenic, antimony, bismuth, vanadium, niobium, tantalum, polonium,
chromium, molybdenum, tungsten, manganese, technetium or rhenium
- B01J 23/648 • • • • • Vanadium, niobium or tantalum {or polonium}
- U B01J 23/70 • of the iron group metals or copper
- B01J 23/76 • • combined with metals, oxides or hydroxides provided for in groups
[B01J 23/02](#) to [B01J 23/36](#)
- U B01J 23/84 • • • with arsenic, antimony, bismuth, vanadium, niobium, tantalum, polonium,
chromium, molybdenum, tungsten, manganese, technetium or rhenium
- B01J 23/847 • • • • Vanadium, niobium or tantalum {or polonium}
- U B01J 23/85 • • • • Chromium, molybdenum or tungsten
- U B01J 23/88 • • • • • Molybdenum
- B01J 23/887 • • • • • • containing in addition other metals, oxides or hydroxides provided for
in groups [B01J 23/02](#) to [B01J 23/36](#)
- U B01J 23/89 • • combined with noble metals
- B01J 23/8933 • • • {also combined with metals, or metal oxides or hydroxides provided for in
groups [B01J 23/02](#) to [B01J 23/36](#)}
- U B01J 23/90 • Regeneration or reactivation
- B01J 23/92 • • of catalysts comprising metals, oxides or hydroxides provided for in groups
[B01J 23/02](#) to [B01J 23/36](#)
- U B01J 27/00** **Catalysts comprising the elements or compounds of halogens, sulfur, selenium, tellurium, phosphorus or nitrogen; Catalysts comprising carbon compounds**
- NOTE
- Metal catalysts or metal oxide catalysts activated or conditioned by halogens, sulfur or phosphorus, or compounds thereof are classified in the appropriate groups for metal or metal oxide catalysts
- U B01J 27/14 • Phosphorus; Compounds thereof
- B01J 27/16 • • containing oxygen {i.e. acids, anhydrides and their derivatives with N, S, B or
halogens without carriers or on carriers based on C, Si, Al or Zr; also salts of
Si, Al and Zr}
- B01J 27/18 • • • with metals {other than Al or Zr}
- U B01J 29/00** **Catalysts comprising molecular sieves{(molecular sieves per se [C01B](#))}**

NOTES

In this group, the following term is used with the meaning indicated:

- "zeolites" means:

(i) crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional, microporous lattice framework structure of tetrahedral oxide units;

(ii) compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by

gallium, germanium, phosphorus or boron.

If metals are introduced into the framework of the molecular sieve already in the synthesis stage, [B01J 29/86](#) to [B01J 29/89](#) take precedence.

Mixtures of molecular sieves are classified in [B01J 29/005](#) or [B01J 29/80](#) and receive indexing codes chosen from groups [B01J 29/03](#) to [B01J 29/89](#) to identify the individual constituents of these mixtures

- B01J 29/005
- {Mixtures of molecular sieves comprising at least one molecular sieve which is not an aluminosilicate zeolite, e.g. from groups [B01J 29/03](#) to [B01J 29/049](#) or [B01J 29/82](#) to [B01J 29/89](#)}
- B01J 29/03
- not having base-exchange properties{(-[B01J 29/005](#) takes precedence)}
- B01J 29/04
- having base-exchange properties, e.g. crystalline zeolites{(-[B01J 29/005](#) takes precedence)}
- B01J 29/046
- {Chromiasilicates; Aluminochromosilicates (-[B01J 29/005](#) takes precedence)}
- B01J 29/047
- {Germanosilicates; Aluminogermanosilicates (-[B01J 29/005](#) takes precedence)}
- B01J 29/048
- {Zincosilicates, Aluminozincosilicates (-[B01J 29/005](#) takes precedence)}
- U B01J 29/06
- Crystalline aluminosilicate zeolites; Isomorphous compounds thereof
- B01J 29/70
- of types characterised by their specific structure not provided for in groups [B01J 29/08](#) to [B01J 29/65](#)
- B01J 29/82
- Phosphates{(-[B01J 29/005](#) takes precedence)}
- B01J 29/86
- Borosilicates; Aluminoborosilicates{(-[B01J 29/005](#) takes precedence)}
- B01J 29/87
- Gallosilicates; Aluminogallosilicates; Galloborosilicates{(-[B01J 29/005](#) takes precedence)}
- B01J 29/88
- Ferrosilicates; Ferroaluminosilicates{(-[B01J 29/005](#) takes precedence)}
- B01J 29/89
- Silicates, aluminosilicates or borosilicates of titanium, zirconium or hafnium{(-[B01J 29/005](#) takes precedence)}

B01J 31/00

Catalysts comprising hydrides, coordination complexes or organic compounds (catalyst compositions used only in polymerisation reactions [C08](#);{(- [catalytic antibodies C12N 9/0002](#) -)};{([catalytic antibodies C12N 9/0002](#))})

NOTES

1. Group [B01J 31/003](#) takes precedence over groups [B01J 31/02](#) to [B01J 31/24](#) (catalytic antibodies [C12N 9/0002](#))

2. In this group, the following terms or expressions are used with the meanings indicated:

-"Organic compound" a compound in which carbon is bonded to (1)a second carbon; (2)at least one atom of hydrogen or halogen; or (3)nitrogen by a single or double bond; except cyanic acid (HOCN), cyanogen (NCCN), cyanamide (H2NCN), cyanogen halide (HalCN), hydrocyanic acid (HCN) isocyanic acid (HNCO) fulminic acid (HCNO)and metal carbides (MCCM) (catalysts comprising any of these exceptions or their salts [B01J 27/20](#) to [B01J 27/26](#) .

-"Organometallic compounds" includes all organic compounds wherein a metal or metalloid atom is bonded directly to a carbon fragment, the latter being formally anionic, no further neutral ligands being coordinated to the metal and the compound requiring no further cations for charge balance; e.g. M(1-CR3)n with M= main group metal, n= valency of metal and R= H or hydrocarbyl. (Compounds comprising anionic organonitrogen, organooxygen and organosulfur fragments, excluding carboxylates, with a metal bonded to these heteroatoms [B01J 31/02](#) to [B01J 31/0254](#) ; unsaturated carbon fragments in combination with transition metals [B01J 31/2282](#) .

-"Coordination complexes" includes any donor-acceptor compounds or complex ions comprising organic or inorganic, anionic or neutral

Lewis basic ligands, attached to a Lewis acid central metal or metal ion through one or several complexing donor atoms with at least one lone-pair of electrons, e.g. N, O, S, P, to provide at least a Sigma-bond. Typically the maximum number of same or different ligands according to the coordination number, spatial requirements of the ligand and electronic configuration of the metal is bound in a predictable geometry. Complexes of neutral, cationic or anionic hydrocarbon ligands with delocalised charge and/or bonding site, e.g. Pd-olefin complexes or metallocenes, are also included (the following groups take precedence: simple hydrocarbyl metal compounds, e.g. of main group metal(oids) [B01J 31/12](#) ; oxoacid salts [B01J 31/04](#) to [B01J 31/10](#) ; other compounds comprising anionic organonitrogen, organooxygen and organosulfur fragments with a metal bonded to these heteroatoms [B01J 31/02](#) to [B01J 31/0254](#) . -"Organometallic complexes" includes all coordination complexes comprising a M-C bond, e.g. metal carbonyls (complex cyanides such as $M_4[Fe(CN)_6]$ [B01J 27/26](#)). Included are furthermore complexes which are not strictly organometallic per se, e.g. comprising only N, O, S and/or P coordinated ligands, but are described as involving, or known to involve, organometallic intermediates and/or transition states during use, e.g. Group 8-10 metal complexes for a variety of catalytic reactions or steps thereof, such as oxidative addition, e.g. of ArX, hydrogenation, carbonylation, epoxidation, etc. -"Organic complexes" includes all coordination complexes comprising organic ligands (groups [B01J 31/1608](#) to [B01J 31/1895](#) take precedence). -"Polymer" includes any macromolecular substance (typically $M > 10000$ g/mol), which comprises repeating units made up of one or several kinds of atoms or groups of atoms, which are identically connected to one another. Oligomers, i.e. more than two identical repeating units connected to one another and typically $500 < M < 10000$ g/mol, are grouped with the respective polymers (polymers per se [C08](#)).

3. In this group, if two or more aspects are of equal importance, these are each classified, e.g. two components in a catalyst system such as:

- support and pendant or otherwise immobilised coordination complex; or
- coordination complex and essential additive.

However, if two components, even if separately added, are described as forming, or known to form, a coordination complex, only the latter is classified, e.g. phosphine and Group 8-10 metal such as rhodium. The groups [B01J 31/26](#) to [B01J 31/38](#) are not to be used for the central metals in coordination complexes but rather for separately added further inorganic ingredients.

Each specifically disclosed alternative is separately classified, i.e. specifically disclosed by ways of worked examples, specific claims and/or explicit alternatives therein.

4. When classifying in [B01J 31/00](#) , additional information for the catalysts is provided as follows:

(4-1) the specifically disclosed intended uses are indexed in [B01J 2231/00](#) ;

(4-2) general aspects of the complexes of group [B01J 31/16](#) and the specifically disclosed central metal(s) therein, as well as additional information regarding any special solvents used for any catalyst system of this group are indexed in [B01J 2531/00](#) .

(4-3) conceptual articles, e.g. reviews, are separately indexed in [B01J 2231/005](#) and [B01J 2531/001](#) ;

(4-4) additional information regarding the complexes or ligands classified in [B01J 31/16](#) to [B01J 31/24](#) and indexed in [B01J 2531/00](#) is indexed in [B01J 2540/00](#) , e.g. non-coordinating substituents on the ligand periphery]

- U B01J 31/02 • containing organic compounds or metal hydrides
- U B01J 31/0215 • • {Sulfur-containing compounds}
- B01J 31/0229 • • • {-also containing elements or functional groups covered by [B01J 31/0201](#) to [B01J 31/0214](#)-}
- U B01J 31/0231 • • {Halogen-containing compounds}

- B01J 31/0232
 - • • {also containing elements or functional groups covered by [B01J 31/0201](#) to [B01J 31/0228](#) (-perfluorinated sulfonyl compounds or moieties [B01J 31/0224](#) ; perfluorosulfonic acids [B01J 31/0227](#)-)}
- U B01J 31/0234
 - • {Nitrogen-, phosphorus-, arsenic- or antimony-containing compounds}
- U B01J 31/0255
 - • • {Phosphorus containing compounds}
- U B01J 31/0264
 - • • • {Phosphorus acid amides}
- B01J 31/0265
 - • • • • {Phosphazenes, oligomers thereof or the corresponding phosphazanium salts (-polyphosphazenes per se [C07F 9/067](#)-)}
- B01J 31/0271
 - • • {also containing elements or functional groups covered by [B01J 31/0201](#) to [B01J 31/0231](#)-}
- B01J 31/0272
 - • {containing elements other than those covered by [B01J 31/0201](#) to [B01J 31/0255](#)-}
- B01J 31/0274
 - • • {containing silicon (-ligands in coordination complexes [B01J 31/1608](#)-)}
- B01J 31/0275
 - • • {also containing elements or functional groups covered by [B01J 31/0201](#) to [B01J 31/0269](#)-}
- U B01J 31/0277
 - • {comprising ionic liquids, as components in catalyst systems or catalysts per se, the ionic liquid compounds being used in the molten state at the respective reaction temperature}
- U B01J 31/0278
 - • • {containing nitrogen as cationic centre}
- B01J 31/0285
 - • • • {also containing elements or functional groups covered by [B01J 31/0201](#) to [B01J 31/0274](#)-}
- U B01J 31/0287
 - • • {containing atoms other than nitrogen as cationic centre}
- B01J 31/0291
 - • • • {also containing elements or functional groups covered by [B01J 31/0201](#) to [B01J 31/0274](#)-}
- U B01J 31/0292
 - • • {immobilised on a substrate}
- U B01J 31/0295
 - • • • {by covalent attachment to the substrate, e.g. silica}
- B01J 31/0297
 - • • • • {the substrate being a soluble polymer, dendrimer or oligomer of characteristic microstructure of groups [B01J 31/061](#) to [B01J 31/068](#)-}
- B01J 31/04
 - • containing carboxylic acids or their salts((-[B01J 31/0277](#) to [B01J 31/0298](#) take precedence; multi-metal carboxylate complexes like Pd (II) acetate, i.e. Pd₃ (OAc)₆ or Cr(II)acetate, i.e. Cr₂(OAc)₄ [B01J 31/2226](#)-)}
- B01J 31/06
 - • containing polymers((-organometallic polymers [B01J 31/123](#) ; polymer-bound organometallic complexes [B01J 31/165](#) ; coordination polymers [B01J 31/1691](#)-)}
- U B01J 31/063
 - • • {Polymers comprising a characteristic microstructure}
- B01J 31/067
 - • • • {Molecularly imprinted polymers (-catalytic antibodies [C12N 9/0002](#)-)}
- B01J 31/069
 - • • {Hybrid organic-inorganic polymers, e.g. silica derivatized with organic groups (-nitrogen containing groups on mineral substrates [B01J 31/0254](#) ; organometallic polymers [B01J 31/123](#) ; coordination complexes immobilised on an inorganic support [B01J 31/1616](#) ; coordination polymers, e.g. metal-organic frameworks [B01J 31/1691](#)-)}
- U B01J 31/12
 - • containing organo-metallic compounds or metal hydrides
- B01J 31/123
 - • • {Organometallic polymers, e.g. comprising C-Si bonds in the main chain or in subunits grafted to the main chain (-[B01J 31/064](#) , [B01J 31/066](#) , [B01J 31/067](#) , [B01J 31/08](#) and [B01J 31/10](#) take precedence; polymer-bound organometallic complexes [B01J 31/165](#) ; coordination polymers [B01J 31/1691](#) ; catalysts for the preparation of polysiloxanes, e.g. Karstedt catalysts [C08G 77/08](#)-)}
- U B01J 31/16
 - containing coordination complexes

- B01J 31/1616
- {Coordination complexes, e.g. organometallic complexes, immobilised on an inorganic support, e.g. ship-in-a-bottle type catalysts (-catalysts comprising molecular sieves [B01J 29/00](#)-)}
- U B01J 31/165
- {Polymer immobilised coordination complexes, e.g. organometallic complexes}
- U B01J 31/1658
- • {immobilised by covalent linkages, i.e. pendant complexes with optional linking groups, e.g. on Wang or Merrifield resins}
- B01J 31/1675
- • • {the linkage being to an organometallic polymer covered by groups [B01J 31/123](#) to [B01J 31/127](#), e.g. polyhydrosiloxanes-}
- B01J 31/1691
- {Coordination polymers, e.g. metal-organic frameworks [MOF](-preparation of metal complexes containing carboxylic acid moieties [C07C 51/418](#); MOF's per se [C07F](#)-)}
- B01J 31/18
- containing nitrogen, phosphorus, arsenic or antimony (as complexing atoms, e.g. in pyridine ligands, or in resonance therewith, e.g. in isocyanide ligands C=N-R or as complexed central atoms (-double metal cyanides [B01J 27/26](#); N-heterocyclic carbenes [B01J 31/2265](#)-)}
- B01J 31/1845
- • {the ligands containing phosphorus (-phosphines [B01J 31/24](#)-)}
- B01J 31/24
- Phosphines (i.e. phosphorus bonded to only carbon atoms, or to both carbon and hydrogen atoms, including sp²-hybridised phosphorus compounds such as phosphabenzene, phosphole or anionic phospholide ligands (-complexes with parent phosphine PH₃ [B01J 31/1845](#)-)}
- B01J 31/2495
- • {Ligands comprising a phosphine-P atom and one or more further complexing phosphorus atoms covered by groups [B01J 31/1845](#) to [B01J 31/1885](#), e.g. phosphine/phosphinate or phospholyl/phosphonate ligands-}
- B01J 31/26
- containing in addition, inorganic metal compounds not provided for in groups [B01J 31/02](#) to [B01J 31/24](#)
- U B01J 35/00 Catalysts, in general, characterised by their form or physical properties**
- U B01J 35/02
- Solids
- B01J 35/026
- {Form of the solid particles (-[B01J 35/08](#) takes precedence-)}
- U B01J 37/00 Processes, in general, for preparing catalysts; Processes, in general, for activation of catalysts**
- B01J 37/02
- Impregnation, coating or precipitation ({ [B01J 37/0009](#) and [B01J 37/0018](#) take precedence } ; protection by coating [B01J 33/00](#)-)
- B01J 37/04
- Mixing((-[B01J 37/0009](#), [B01J 37/0018](#) take precedence-)}
- B01J 37/06
- Washing((-[B01J 37/0009](#), [B01J 37/0018](#) take precedence-)}
- B01J 37/08
- Heat treatment((-[B01J 37/0009](#), [B01J 37/0018](#) take precedence-)}
- U B01J 37/34
- Irradiation by, or application of, electric, magnetic or wave energy, e.g. ultrasonic waves; {Ionic sputtering; Flame or plasma spraying; Particle radiation}
- B01J 37/341
- {making use of electric or magnetic fields, wave energy or particle radiation} (-use of flames, plasma or lasers [B01J 37/349](#)-)}

**B01J 39/00 -
B01J 49/00** **Ion-exchange** (-treatment of milk [A23C 9/14](#) ; separation by liquid ion-exchangers [B01D](#) , e.g. [B01D 11/00](#) ; separation of isotopes [B01D 59/00](#) ; compounds *er se*, see the relevant classes, e.g. [C01](#) , [C07](#) , [C08](#) ; treatment of water [C02F 1/42](#) ; refining of hydrocarbon oils, in the absence of hydrogen, with solid sorbents [C10G 25/00](#) ; purification of sugar juices [C13B 20/14](#) ; extraction of sugar from molasses [C13B 35/06](#) ; extraction of metal compounds from ores or concentrates by wet processes [C22B 3/00](#) ; using ion-exchange for investigating or analysing materials [G01N 30/96](#) ; treating radioactively contaminated material [G21F 9/12](#)-)

NOTES

In groups [B01J 39/00](#) to [B01J 49/00](#) :

- Ion-exchange covers all processes whereby ions are exchanged between the solid exchanger and the liquid to be treated and wherein the exchanger is not soluble in the liquid to be treated
- Ion-exchange processes cover also ion-exchange in combination with complex or chelate forming reactions

In groups [B01J 39/00](#) to [B01J 49/00](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place

After the notation of [B01J 39/00](#) to [B01J 49/00](#) , and separated there from by a + sign, notations concerning other constituents may be added. These notations are selected from groups [B01J 39/00](#) and [B01J 41/00](#)

B01J 39/00 **Cation exchange; Use of material as cation exchangers; Treatment of material for improving the cation exchange properties** (-cation exchange chromatography processes [B01D 15/362](#))

- U [B01J 39/08](#) · Use of material as cation exchangers; Treatment of material for improving the cation exchange properties
- U [B01J 39/16](#) · · Organic material
- [B01J 39/18](#) · · · Macromolecular compounds{(-[B01J 39/165](#) takes precedence-)}

B01J 41/00 **Anion exchange; Use of material as anion exchangers; Treatment of material for improving the anion exchange properties** (-anion exchange chromatography processes [B01D 15/363](#))

- U [B01J 41/08](#) · Use of material as anion exchangers; Treatment of material for improving the anion exchange properties
- [B01J 41/085](#) · · {Organic material (-macromolecular compounds [B01J 41/12](#)-)}
- [B01J 41/10](#) · · Inorganic material (-carbon, coal or tar [B01J 41/18](#)-)

B01J 43/00 **Amphoteric ion-exchange, i.e. using ion-exchangers having cationic and anionic groups; Use of material as amphoteric ion-exchangers; Treatment of material for improving their amphoteric ion-exchange properties** (-ion-exchange chromatography processes [B01D 15/36](#)-)

B01J 45/00 **Ion-exchange in which a complex or a chelate is formed; Use of material as complex or chelate forming ion-exchangers; Treatment of material for improving the complex or chelate forming ion-exchange properties** (-ion-exchange chromatography processes [B01D 15/36](#)-)

B01J 47/00 **Ion-exchange processes in general; Apparatus therefor** (-ion-exchange chromatography processes or apparatus [B01D 15/08](#)-)

- U [B01J 47/02](#) · Column or bed processes
- [B01J 47/06](#) · · during which the ion-exchange material is subjected to a physical treatment, e.g. heat, electric current, irradiation, vibration (-electrodialysis, electro-osmosis [B01D 61/42](#)-)

- B01J 47/12
- characterised by the use of ion-exchange material in the form of sheets, ribbons or filaments, e.g. membranes (-electrodialysis, electro-osmosis [B01D 61/42-](#))
- B01J 47/14
- Controlling or regulating (-controlling or regulating in general [G05-](#))
- B01J 49/00**
- Regeneration or reactivation of ion-exchangers; Apparatus therefor (-ion-exchange chromatography processes or apparatus [B01D 15/08-](#))**
- U B01J 2219/00**
- Chemical, physical or physico-chemical processes in general; Their relevant apparatus**
- U B01J 2219/00781
- Aspects relating to microreactors
- B01J 2219/00889
- • Mixing (-micromixers [B01F 13/0059-](#))
- U B01J 2219/08
- Processes employing the direct application of electric or wave energy, or particle radiation; Apparatus therefor
- U B01J 2219/12
- • Processes employing electromagnetic waves
- U B01J 2219/1203
- • • Incoherent waves
- U B01J 2219/1206
- • • • Microwaves
- U B01J 2219/1209
- • • • • Features relating to the reactor or vessel
- U B01J 2219/1221
- • • • • • the reactor per se
- U B01J 2219/1224
- • • • • • • Form of the reactor
- U B01J 2219/123
- • • • • • • • Vessels in the form of a cup
- B01J 2219/1233
- • • • • • • • • Closure means, such as lids, caps, seals (-[B01J 3/03](#) takes precedence; pressure relief systems in the lid, e.g. rupture discs [B01J 2219/0027-](#))
- U B01J 2220/00**
- Aspects relating to sorbent materials**
- U B01J 2220/40
- Aspects relating to the composition of sorbent or filter aid materials
- B01J 2220/42
- • Materials comprising a mixture of inorganic materials (-materials coated or impregnated on a carrier [B01J 20/32-](#))
- B01J 2220/44
- • Materials comprising a mixture of organic materials (-materials coated or impregnated on a carrier [B01J 20/32-](#))
- B01J 2220/46
- • Materials comprising a mixture of inorganic and organic materials (-materials coated or impregnated on a carrier [B01J 20/32-](#))
- U B01J 2220/50
- Aspects relating to the use of sorbent or filter aid materials
- B01J 2220/64
- • In a syringe, pipette, e.g. tip or in a tube, e.g. test-tube or u-shape tube (-in columns [B01J 2220/58-](#))
- B01J 2220/66
- • Other type of housings or containers not covered by [B01J 2220/58](#) - [B01J 2220/64](#)
- B01J 2229/00**
- Aspects of molecular sieve catalysts not covered by [B01J 29/00](#)**
- U B01J 2229/30
- After treatment, characterised by the means used
- B01J 2229/34
- • Reaction with organic or organometallic compounds (-with organo-silicium compounds [B01J 2229/32-](#))
- B01J 2231/00**
- Catalytic reactions performed with catalysts classified in [B01J 31/00](#)**

NOTE

In this group indexing is done according to the specific catalytic reaction. In case of multiple catalytic activities only those are indexed which are specifically exemplified, i.e. by ways of worked examples, specific claims or explicit alternatives therein.

- U B01J 2231/10
 - Polymerisation reactions involving at least dual use catalysts, e.g. for both oligomerisation and polymerisation
- B01J 2231/14
 - • Other (co) polymerisation, e.g. of lactides, epoxides (-"ROMP", i.e. ring-opening metathesis polymerisation [B01J 2231/54](#)-)
- U B01J 2231/70
 - Oxidation reactions, e.g. epoxidation, (di)hydroxylation, dehydrogenation and analogues
- B01J 2231/76
 - • Dehydrogenation (-transfer-dehydrogenation of CH-XH [B01J 2231/641](#) ; transfer-dehydrogenation of -CHRCHR- via C-H activation [B01J 2231/46](#)-)

B01J 2531/00**Additional information regarding catalytic systems classified in [B01J 31/00](#)**NOTE

In this group the term "Metals" refers to the central metal in the coordination complexes ([B01J 31/16](#) to [B01J 31/24](#)), as used for the respective catalytic reaction, excluding carboxylates (see [B01J 31/04](#)) and other simple salts or organometallic compounds (see [B01J 31/12](#)). As to components, only those metals or solvents are indexed which are explicitly mentioned in the claims or the worked examples. As to compositional aspects, only those are provided for in the scheme below and are intended to be indexed, which provide additional information regarding the complexes and/or ligands classified in [B01J 31/16](#) to [B01J 31/24](#); indexing codes [B01J 2531/0286](#) to [B01J 2531/0297](#) are only used if these aspects are described as essential. Indexing codes [B01J 2531/0213](#) to [B01J 2531/0277](#) characterise the complexes on the basis of bond-type (linkage-type) thereby specifying the structural geometry of the complexes, while classification entries [B01J 31/16](#) to [B01J 31/24](#) are purely compositional subdivisions. The individual metals, the compositional aspects of complexes used and the solvents are indexed for each explicit alternative, according to the guideline above

- B01J 2531/001
 - General concepts, e.g. reviews, relating to catalyst systems and methods of making them, the concept being defined by a common material or method/theory

NOTE

When indexing in this group, only the focus is indexed in [B01J 2531/004](#) to [B01J 2531/007](#) and only if groups with closely related members are concerned, e.g. N-heterocyclic carbenes ([B01J 2531/004](#)), Pd-complexes ([B01J 2531/005](#)), added halide ([B01J 2531/007](#)). Otherwise the main code [B01J 2531/002](#) is used.

- U B01J 2531/02
 - Compositional aspects of complexes used, e.g. polynuclearity
- U B01J 2531/0269
 - • Complexes comprising ligands derived from the natural chiral pool or otherwise having a characteristic structure or geometry
- B01J 2531/028
 - • • comprising affinity tags, e.g. for recovery (-self-associating or modular catalysts [B01J 2531/0291](#)-)

Project: N/A (B01L)

- U B01L 1/00
 - **Enclosures; Chambers (fume cupboards [B08B](#); provided with manipulation devices, glove boxes [B25J](#); cooling chambers [F25D](#))**
- U B01L 1/02
 - Air-pressure chambers; Air-locks therefor
- B01L 1/025
 - • {-Environmental chambers (incubators for culturing cells [C12M 41/14](#), Test chambers to test weather resistance [G01N 17/002](#))}
- B01L 1/50
 - {-for storing hazardous materials in the laboratory, e.g. cupboards, waste containers}

- U B01L 3/00** Containers or dishes for laboratory use, e.g. laboratory glassware (bottles [B65D](#); apparatus for enzymology or microbiology { specially adapted for culturing} [C12M 1/00](#)); Droppers (receptacles for volumetric purposes [G01F](#))
- U B01L 3/02 · Burettes; Pipettes
- U B01L 3/021 · {Pipettes, i.e. with only one conduit for withdrawing and redistributing liquids}
- B01L 3/0213 · · · {Accessories for glass pipettes; Gun-type pipettes, e.g. safety devices, pumps}
- U B01L 3/0217 · · · {of the plunger pump type (medical syringes [A61M](#))}
- B01L 3/0237 · · · · {-Details of electronic control, e.g. relating to user interface}
- B01L 3/0241 · · {Drop counters; Drop formers (making arrays for combinatorial libraries [B01J 19/0046](#); automation of dispensing for analysis [G01N 35/10](#))}
- U B01L 3/0244 · · · {using pins}
- B01L 3/0248 · · · · {-Prongs, quill pen type dispenser}
- B01L 3/0251 · · · · {-Pin and ring type or pin in tube type dispenser}
- B01L 3/0255 · · · · {-characterized by the form or material of the pin tip}
- B01L 3/0258 · · · {-using stamps}
- B01L 3/0262 · · · {-using touch-off at substrate or container}
- B01L 3/0265 · · · {-using valves to interrupt or meter fluid flow, e.g. using solenoids or metering valves}
- B01L 3/0268 · · · {-using pulse dispensing or spraying, eg. inkjet type, piezo actuated ejection of droplets from capillaries}
- B01L 3/0272 · · · {-Dropper bottles}
- B01L 3/0286 · · {-Ergonomic aspects, e.g. form or arrangement of controls}
- B01L 3/0289 · · {-Apparatus for withdrawing or distributing predetermined quantities of fluid ([B01L 3/02](#) takes precedence; sample taking [G01N 1/00](#); sample taking within automatic analysers [G01N 35/00](#); volume measuring in general [G01F](#))}
- B01L 3/0293 · · · {-for liquids}
- B01L 3/0296 · · · · {-from piercable tubing, e.g. in extracorporeal blood sampling}
- B01L 3/50 · {-Containers for the purpose of retaining a material to be analysed, e.g. test tubes (devices for taking samples of blood [A61B 5/14](#))}
- B01L 3/502 · · {-with fluid transport, e.g. in multi-compartment structures (centrifugal-type cuvettes [G01N 21/07](#); analysis by separation into components [G01N 30/00](#); automatic analysers [G01N 35/00](#))}
- B01L 3/5021 · · · {-Test tubes specially adapted for centrifugation purposes (centrifuges [B04B 5/04](#))}
- B01L 3/50215 · · · · {-using a float to separate phases}
- B01L 3/5023 · · · {-with a sample being transported to, and subsequently stored in an absorbent for analysis}
- B01L 3/5025 · · · {-for parallel transport of multiple samples}
- B01L 3/50255 · · · · {-Multi-well filtration}
- B01L 3/5027 · · · {-by integrated micro-fluidic structures, i.e. dimensions of channels and chambers are such that surface tension forces are important, e.g. lab-on-a-chip ([B01L 3/5023](#) takes precedence; micromixers [B01F 13/0059](#); microreactors for synthesis [B01J 19/0093](#); micro-capillary devices in general [B81B 1/00](#))}
- B01L 3/502707 · · · · {-characterised by the manufacture of the container or its components (manufacture of micro-structural devices in general [B81C](#); by shaping or joining plastic parts [B29C 59/00](#) [B29C 65/00](#), by laminating [B32B 37/00](#))}

- B01L 3/502715 {characterised by interfacing components, e.g. fluidic, electrical, optical or mechanical interfaces}
- B01L 3/502723 {characterised by venting arrangements}
- B01L 3/50273 {characterised by the means or forces applied to move the fluids (micro pumps [F04B 19/006](#), of the membrane type [F04B 43/043](#))}
- B01L 3/502738 {characterised by integrated valves (microvalves [F16K 99/0001](#))}
- B01L 3/502746 {characterised by the means for controlling flow resistance, e.g. flow controllers, baffles ([B01L 3/502738](#) takes precedence)}
- B01L 3/502753 {characterised by bulk separation arrangements on lab-on-a-chip devices, e.g. for filtration or centrifugation (separation in general [B01D](#); micro-apparatus for analysis using electrophoresis [G01N 27/44791](#); sample preparation [G01N 1/28](#))}
- B01L 3/502761 {specially adapted for handling suspended solids or molecules independently from the bulk fluid flow, e.g. for trapping or sorting beads, for physically stretching molecules (investigating characteristics of particles [G01N 15/00](#))}
- B01L 3/502769 {characterised by multiphase flow arrangements}
- B01L 3/502776 {specially adapted for focusing or laminating flows}
- B01L 3/502784 {specially adapted for droplet or plug flow, e.g. digital micro-fluidics (automatic analysis using a stream of discrete samples in a tube system [G01N 35/08](#))}
- B01L 3/502792 {for moving individual droplets on a plate, e.g. by locally altering surface tension}
- B01L 3/5029 . . . {using swabs}
- B01L 3/505 . . {flexible containers not provided for above}
- B01L 3/5055 . . . {Hinged, e.g. opposable surfaces}
- B01L 3/508 . . {rigid containers not provided for above}
- B01L 3/5082 . . . {Test tubes per se}
- B01L 3/50825 {Closing or opening means, corks, bungs (closures for containers [B65D](#); means for removing stoppers [B67B 7/02](#))}
- B01L 3/5085 . . . {for multiple samples, e.g. micro-titration plates}
- B01L 3/50851 {specially adapted for heating or cooling samples (laboratory heating apparatus [B01L 7/00](#); incubators [C12M](#))}
- B01L 3/50853 {with covers or lids}
- B01L 3/50855 {using modular assemblies of strips or of individual wells}
- B01L 3/50857 {using arrays or bundles of open capillaries for holding samples}
- B01L 3/5088 . . . {confining liquids at a location by surface tension, e.g. virtual wells on plates, wires ([B01L 3/50857](#) takes precedence)}
- B01L 3/52 . . {Containers specially adapted for storing or dispensing a reagent ([B01L 3/02](#) takes precedence; containers for medical or pharmaceutical purposes [A61J 1/00](#); containers in general [B65D](#); storing or dispensing test elements [G01N 33/4875](#); automated reagent dispensing [G01N 35/1002](#))}
- B01L 3/523 . . {with means for closing or opening}
- B01L 3/527 . . {for a plurality of reagents}
- B01L 3/54 . . {Labware with identification means (identification of carriers, materials or components in automatic analysers [G01N 35/00732](#))}
- B01L 3/545 . . {for laboratory containers}
- B01L 3/5453 . . . {for test tubes}
- B01L 3/5457 . . . {for container closures}

- B01L 3/56 • {-Labware specially adapted for transferring fluids}
- B01L 3/561 • • {-Tubes; Conduits (in general [F16L](#))}
- B01L 3/563 • • {-Joints or fittings (in general [F16L](#)); Separable fluid transfer means to transfer fluids between at least two containers, e.g. connectors}
- B01L 3/5635 • • • {-connecting two containers face to face, e.g. comprising a filter}
- B01L 3/565 • • {-Seals (in general [F16L](#))}
- B01L 3/567 • • {-Valves, taps or stop-cocks (in combination with burettes [B01L 3/0203](#); in general [F16K](#))}
- B01L 3/569 • • {-Glassware}
- U B01L 7/00 Heating or cooling apparatus (evaporators [B01D 1/00](#); drying gases or vapours, e.g. desiccators, [B01D 53/26](#); autoclaves [B01J 3/04](#); drying ovens [F26B](#); furnaces, ovens [F27](#)); Heat insulating devices**
- B01L 7/50 • {-Cryostats}
- B01L 7/52 • {-with provision for submitting samples to a predetermined sequence of different temperatures, e.g. for treating nucleic acid samples (amplification or hybridisation processes per se [C12Q 1/68](#); controlling sequential reactions for synthesis [B01J 19/0046](#))}
- B01L 7/525 • • {-with physical movement of samples between temperature zones}
- B01L 7/5255 • • • {-by moving sample containers}
- B01L 7/54 • {-using spatial temperature gradients}
- U B01L 9/00 Supporting devices; Holding devices (tweezers, tongs [B25B](#))**
- U B01L 9/06 • Test-tube stands; Test-tube holders
- B01L 9/065 • • {-specially adapted for capillary tubes}
- B01L 9/50 • {-Clamping means, tongs (in general [F16B 2/06](#))}
- B01L 9/52 • {-Supports for flat sample carrier, e.g. used for plates, slides, chips}
- B01L 9/523 • • {-for multisample carriers, e.g. used for microtitration plates}
- B01L 9/527 • • {-for microfluidic devices, e.g. used for lab-on-a-chip}
- B01L 9/54 • {-Supports related to pipettes and burettes}
- B01L 9/543 • • {-for disposable pipette tips, e.g. racks or cassettes}
- B01L 9/547 • • {-for dispensing pins}

Project: N/A (B03B)

- B03B SEPARATING SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS (removing fluids from solids [B01D](#); magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields [B03C](#); flotation differential sedimentation [B03D](#); separating by dry methods [B07](#); screening or sifting [B07B](#); by picking [B07C](#); separating peculiar to particular materials and provided for in other single classes, see the relevant classes)**
- B03B 1/00 Conditioning for facilitating separation by altering physical properties of the matter to be treated (-pre-treatment of ores in general [C22B](#)-) { Pretreatment prior to magnetic separation [B03C 1/00](#) }**
- B03B 4/00 Separating by pneumatic tables or by pneumatic jigs (-sink-float separation using dry heavy media [B03B 5/46](#)-)**

NOTE

Group [B03B 4/005](#) takes precedence over groups [B03B 4/02](#) to [B03B 4/065](#)

- B03B 4/04
- using rotary tables or tables formed by travelling belts (-separating solids from solids using gas currents and revolving drums [B07B 4/06-](#))
- B03B 5/00** **Washing granular, powdered or lumpy materials; Wet separating (-separating by pneumatic tables or by pneumatic jigs [B03B 4/00-](#))**
- B03B 5/02
- using shaken, pulsated or stirred beds as the principal means of separation (-[B03B 5/28](#) , [B03B 5/48](#) take precedence-)
- B03B 5/04
- • on shaking tables (-on vanners [B03B 5/08-](#))
- U B03B 5/28
- by sink-float separation
- U B03B 5/30
- • using heavy liquids or suspensions
- B03B 5/32
- • • using centrifugal force (-centrifuges [B04B](#) ; cyclones [B04C-](#))
- B03B 5/36
- • • Devices therefor, other than using centrifugal force (-jigs [B03B 5/10-](#))
- B03B 5/48
- by mechanical classifiers (-sink-float separation aspects [B03B 5/28-](#))
- B03B 5/60
- by non-mechanical classifiers, e.g. slime tanks (-using shaken, pulsated or stirred beds as the principal means of separation [B03B 5/02](#) ; hydraulic classifiers [B03B 5/62](#) ; water impulse classifiers [B03B 5/68-](#))
- B03B 5/68
- by water impulse (-shaking tables [B03B 5/04](#) ; jigs [B03B 5/10](#) ; hydraulic classifiers [B03B 5/62-](#))
- B03B 11/00** **Feed or discharge devices integral with washing or wet-separating equipment (-filling or emptying devices per se [B65G 65/30-](#))**
- B03B 13/00** **Control arrangements specially adapted for wet-separating apparatus or for dressing plant, using physical effects (-detecting, measuring, or analysing devices [G01](#) ; control devices in general [G05-](#))**
- B03B 13/005
- {Methods or arrangements for controlling the physical properties of heavy media (-in relation with groups [B03B 5/30](#) to [B03B 5/46-](#)), e.g. density, concentration, viscosity}

Project: N/A (B03D)

- B03D** **FLOTATION; DIFFERENTIAL SEDIMENTATION (-sedimentation in general [B01D 21/00](#) ; in combination with other separation of solids [B03B](#); sink-float separation [B03B 5/28](#) ; detergents, soaps [C11D-](#))**
- WARNING
- The following groups are not complete: [B03D 1/023](#), see also [B03D 1/02](#) [B03D 1/025](#), see also [B03D 1/02](#) [B03D 1/026](#), see also [B03D 1/02](#) [B03D 1/028](#), see also [B03D 1/02](#) [B03D 1/082](#), see also [B03D 1/08](#) [B03D 1/085](#), see also [B03D 1/08](#) [B03D 1/087](#), see also [B03D 1/08](#) [B03D 1/1406](#), see also [B03D 1/14](#) [B03D 1/1443](#), see also [B03D 1/14](#) [B03D 1/145](#) , see also [B03D 1/14](#) [B03D 1/1456](#) , see also [B03D 1/14](#) [B03D 1/1462](#) , see also [B03D 1/14](#) [B03D 1/1468](#) , see also [B03D 1/14](#) [B03D 1/1475](#) , see also [B03D 1/14](#) [B03D 1/1487](#), see also [B03D 1/14](#) [B03D 1/1493](#), see also [B03D 1/14](#) [B03D 1/242](#), see also [B03D 1/24](#) [B03D 1/247](#), see also [B03D 1/24](#)]
- B03D 1/00** **Flotation (-conditioning for flotation, general arrangement of plan [B03B-](#))**
- NOTE
- In groups [B03D 1/001](#) to [B03D 1/018](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.
- B03D 1/001
- Flotation agents (-conditioners [B03B 1/00-](#))
- B03D 1/08
- Subsequent treatment of concentrated product (-froth dispersion [B01D 19/02-](#))

- B03D 1/10
 - • Removing adhering liquid from separated materials (~~-~~processes or devices capable of general use [B01D-](#))
- B03D 1/14
 - Flotation machines (~~-~~devices for feeding measured quantities of reagents [B01J 4/02](#) ; flotation apparatus for enzymology or microbiology [C12M 1/09-](#))
- B03D 1/1437
 - • {using electroflotation (~~-~~waste water treatment using electroflotation [C02F 1/465-](#))}
- U B03D 1/1443
 - • {Feed or discharge mechanisms for flotation tanks}
- B03D 1/145
 - • • {Feed mechanisms for reagents (~~-~~devices for feeding measured quantities of reagents [B01J 4/02-](#))}
- B03D 1/16
 - • with impellers; Subaeration machines(~~-~~mixing gases or vapours with liquids [B01F 3/04-](#))}
- B03D 1/24
 - • Pneumatic(~~-~~mixing gases or vapours with liquids [B01F 3/04-](#))}
- B03D 2201/00**

Specified effects produced by the flotation agents (~~-~~use of substances as emulsifying, wetting, dispersing or foam-producing agents [B01F 17/00-](#))
- B03D 2203/00**

Specified materials treated by the flotation agents; specified applications (~~-~~paper pulp processing [D21F 1/70](#) , de-inking of paper pulp [D21B 1/325-](#))
- B03D 2203/008
 - Water purification, e.g. for process water recycling (~~-~~waste water treatment [C02F 1/24-](#))

Project: N/A (B04B)

- U **B04B 11/00**

Feeding, charging, or discharging bowls ([B04B 1/00](#), [B04B 3/00](#), [B04B 7/04](#) take precedence)
- U B04B 11/08
 - Skimmers or scrapers for discharging; {Regulating thereof}
- B04B 11/082
 - • {-Skimmers for discharging liquid}

Project: N/A (B04C)

- B04C 3/00**

Apparatus in which the axial direction of the vortex {(flow following a screw-thread type line)} remains unchanged {Also devices in which one of the two discharge ducts returns centrally through the vortex chamber, a reverse-flow vortex being prevented by bulkheads in the central discharge duct-(combined with other devices [B04C 9/00](#))}
- U **B04C 5/00**

Apparatus in which the axial direction of the vortex is reversed {(combined with other devices [B04C 9/00](#))}
- B04C 5/14
 - Construction of the underflow ducting; ~~-~~Apex constructions; ~~-~~Discharge arrangements; {discharge through sidewall provided with a few slits or perforations-(provided with a great number of slits or perforations [B04C 5/10](#))}
- B04C 7/00**

Apparatus not provided for in group [B04C 1/00](#), [B04C 3/00](#), or [B04C 5/00](#); ~~-~~Multiple arrangements not provided for in one of the groups [B04C 1/00](#), [B04C 3/00](#), or [B04C 5/00](#); ~~-~~Combinations of apparatus covered by two or more of the groups [B04C 1/00](#), [B04C 3/00](#), or [B04C 5/00](#)

Project: N/A (B05B)**B05B**

SPRAYING APPARATUS; ATOMISING APPARATUS; NOZZLES ({ sprayers or atomisers specially adapted for therapeutic purposes [A61M 11/00](#) } ; spray-mixers with nozzles [B01F 5/20](#) ; processes for applying liquids or other fluent materials to surfaces by spraying [B05D](#); { nozzles specially adapted for injection moulding of plastics or substances in a plastic state [B29C 45/1603](#) , [B29C 45/20](#) ; nozzles specially adapted for windscreen washers [B60S 1/52](#) } ; means for pumping fluids [F04](#); valves, e.g. water-taps, [F16K](#))

NOTES

This subclass covers particularly apparatus for the release or projection of drops or droplets into the atmosphere or into a chamber to form a mist or the like. For this purpose, the materials to be projected may be suspended in a stream of gas or vapour.

Attention is drawn to the Note following the title of class [B05](#).

In this subclass, "means for controlling volume of flow" is used in the most general meaning and includes also means allowing only starting and stopping the flow

In this subclass, the meaning of the expression "apparatus carried on or by a person" includes all apparatus comprising at least one container for the material to be sprayed carried on or by a person during use

In this subclass, the word "container" is to be understood as the innermost enclosure containing the material to be sprayed

WARNING

Groups [B05B 11/30](#) to [B05B 11/3098](#) do not correspond to former or current IPC groups. The concordance CPC : IPC for these groups is as follows: - [B05B 11/30](#) - [B05B 11/3098](#) : [B05B 11/00](#)

B05B 1/00

Nozzles, spray heads or other outlets, with or without auxiliary devices such as valves, heating means (-[B05B 3/00](#) , [B05B 5/00](#) , [B05B 7/00](#) take precedence; { nozzles for baths with water or gas jets [A61H 33/00](#) , e.g. [A61H 33/6063](#) , [A61H 33/6021](#) , [A61H 33/026](#) or [A61H 33/027](#) ; Nozzles specially adapted for fire-extinguishing [A62C 31/02](#) ; Nozzles for generating high velocity abrasive fluid jets [B24C 5/04](#) } ; nozzles for jet-ink printing mechanisms [B41J 2/135](#) ; { Nozzles for filling containers [B65B 39/00](#) ; } nozzles for liquid-dispensing, e.g. in vehicle service stations [B67D 7/42](#)-)

B05B 1/02

- designed to produce a jet, spray, or other discharge of particular shape or nature, e.g. in single drops, (or having an outlet of particular shape) (-[B05B 1/26](#) , [B05B 1/28](#) , [B05B 1/34](#) take precedence-)

U B05B 1/04

- • in flat form, e.g. fan-like, sheet-like

B05B 1/042

- • • {Outlets having two planes of symmetry perpendicular to each other, one of them defining the plane of the jet (-[B05B 1/044](#) , [B05B 1/046](#) take precedence-)}

B05B 1/044

- • • {Slits, i.e. narrow openings defined by two straight and parallel lips; Elongated outlets for producing very wide discharges, e.g. fluid curtains (-[B05B 1/046](#) takes precedence-)}

U B05B 1/08

- • of pulsating nature, e.g. delivering liquid in successive separate quantities; {Fluidic oscillators}

B05B 1/083

- • • {the pulsating mechanism comprising movable parts (-liquid driven rotating elements, e.g. turbines, arranged upstream the outlet [B05B 3/04](#)-)}

B05B 1/12

- capable of producing different kinds of discharge, e.g. either jet or spray (-[B05B 1/16](#) takes precedence-)

- B05B 1/14
 - with multiple outlet openings (~~B05B 1/02~~ , ~~B05B 1/26~~ take precedence-); with strainers in or outside the outlet opening
- U B05B 1/16
 - • having selectively- effective outlets
- B05B 1/1609
 - • • {with a selecting mechanism comprising a lift valve (~~B05B 1/1681~~ takes precedence; lift valves in general ~~F16K 1/00~~-)}
- B05B 1/1627
 - • • {with a selecting mechanism comprising a gate valve, a sliding valve or a cock (~~B05B 1/1681~~ takes precedence; gate valves or sliding valves in general ~~F16K 3/00~~ ; cocks in general ~~F16K 5/00~~-)}
- B05B 1/1636
 - • • • {by relative rotative movement of the valve elements (~~B05B 1/1672~~ takes precedence-)}
- B05B 1/1663
 - • • • {by relative translatory movement of the valve elements (~~B05B 1/1672~~ takes precedence-)}
- B05B 1/18
 - • Roses; Shower heads{(with means for adding soap or the like ~~E03C 1/046~~ ; jet regulators ~~E03C 1/08~~-)}
- B05B 1/20
 - • {Arrangements of several outlets along elongated bodies, e.g.)perforated pipes or troughs, e.g. spray booms{(spray booms for agricultural uses ~~A01M 7/0071~~ ; spray bars for treating roads ~~E01C 19/176~~-)}; Outlet elements therefor
- B05B 1/202
 - • • {comprising inserted outlet elements (~~B05B 1/205~~ takes precedence-)}
- B05B 1/22
 - Spouts (~~anti-splash devices for water-taps E03C 1/08~~-)
- B05B 1/28
 - with integral means for shielding the discharged liquid or other fluent material, e.g. to limit area of spray; with integral means for catching drips or collecting surplus liquid or other fluent material (~~means for any of these purposes, per se, B05B 15/04~~-)
- U B05B 1/30
 - designed to control volume of flow, e.g. with adjustable passages
- B05B 1/3006
 - • {the controlling element being actuated by the pressure of the fluid to be sprayed (~~B05B 11/0062~~ takes precedence-)}
- B05B 1/3013
 - • {the controlling element being a lift valve (~~B05B 1/3006~~ , ~~B05B 1/3033~~ take precedence; lift valves in general ~~F16K 1/00~~-)}
- B05B 1/302
 - • • {with a ball-shaped valve member (~~ball valves in general F16K 1/14~~-)}
- B05B 1/3026
 - • {the controlling element being a gate valve, a sliding valve or a cock (~~B05B 1/3006~~ , ~~B05B 1/326~~ take precedence; gate valves or sliding valves in general ~~F16K 3/00~~ ; cocks in general ~~F16K 5/00~~-)}
- B05B 1/3033
 - • {the control being effected by relative coaxial longitudinal movement of the controlling element and the spray head (~~B05B 1/3026~~ takes precedence-)}
- U B05B 1/304
 - • • {the controlling element being a lift valve}
- B05B 1/3046
 - • • • {the valve element, e.g. a needle, co-operating with a valve seat located downstream of the valve element and its actuating means, generally in the proximity of the outlet orifice (~~B05B 1/308~~ takes precedence-)}
- B05B 1/3073
 - • • {the controlling element being a deflector acting as a valve in co-operation with the outlet orifice (~~B05B 1/308~~ takes precedence; deflectors per se ~~B05B 1/262~~-)}
- B05B 1/32
 - • in which a valve member forms part of the outlet opening{(B05B 1/3033 takes precedence-)}
- B05B 1/323
 - • • {the valve member being actuated by the pressure of the fluid to be sprayed (~~B05B 11/0062~~ takes precedence-)}
- B05B 1/34
 - designed to influence the nature of flow of the liquid or other fluent material, e.g. to produce swirl (~~B05B 1/30~~ takes precedence-)
- U B05B 1/3405
 - • {to produce swirl}
- U B05B 1/341
 - • • {before discharging the liquid or other fluent material, e.g. in a swirl chamber upstream the spray outlet}

- U B05B 1/3421 {with channels emerging substantially tangentially in the swirl chamber}
- B05B 1/3426 {the channels emerging in the swirl chamber perpendicularly to the outlet axis (-[B05B 1/3436](#) takes precedence-)}
- B05B 1/3468 {with means for controlling the flow of liquid entering or leaving the swirl chamber (-[B05B 1/3452](#) takes precedence-)}
- U B05B 3/00 Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements; {Spraying or sprinkling heads with rotating elements located upstream the outlet}**
- B05B 3/008 . {comprising a wobbling or nutating element, i.e. rotating about an axis describing a cone during spraying (-[B05B 3/0463](#) takes precedence-)}
- U B05B 3/02 . with rotating elements
- B05B 3/021 . . {with means for regulating the jet relative to the horizontal angular position of the nozzle, e.g. for spraying non circular areas by changing the elevation of the nozzle or by varying the nozzle flow-rate (-[B05B 3/0454](#) takes precedence-)}
- B05B 3/022 . . {the rotating deflecting element being a ventilator or a fan (-[B05B 3/105](#) takes precedence; agricultural atomisers or mist blowers [A01M 7/0003](#)-)}
- B05B 3/028 . . {the rotation being orbital (-[B05B 3/0445](#) and [B05B 3/066](#) take precedence-)}
- B05B 3/04 . . driven by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet (-[B05B 3/023](#) takes precedence-)}
- B05B 3/0409 . . . {with moving, e.g. rotating, outlet elements (-[B05B 3/0486](#) , [B05B 3/06](#) take precedence-)}
- B05B 3/0418 {comprising a liquid driven rotor, e.g. a turbine (-[B05B 3/0463](#) , [B05B 3/0468](#) take precedence-)}
- U B05B 3/0422 {with rotating outlet elements}
- B05B 3/0431 {the rotative movement of the outlet elements being reversible (-[B05B 3/0445](#) takes precedence-)}
- B05B 3/045 {with automatic means for regulating the jet (-[B05B 3/0445](#) takes precedence-)}
- B05B 3/0468 {the liquid actuating a motor after passing the spray outlet (-[B05B 3/0472](#) takes precedence-)}
- B05B 3/10 . . discharging over substantially the whole periphery of the rotating member, {i.e. the spraying being effected by centrifugal forces (-[B05B 3/082](#) takes precedence-)}
- B05B 3/1007 . . . {characterised by the rotating member (-[B05B 3/105](#) takes precedence-)}
- U B05B 3/14 . with oscillating elements; with intermittent operation
- B05B 3/16 . . driven or controlled by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet (-[B05B 3/0431](#) , [B05B 3/0468](#) , [B05B 3/0472](#) take precedence-)}
- B05B 3/18 . with elements moving in a straight line, e.g. along a track; Mobile sprinklers (-watering arrangements making use of movable installations [A01G 25/09](#)-)}
- U B05B 5/00 Electrostatic spraying apparatus; Spraying apparatus with means for charging the spray electrically; Apparatus for spraying liquids or other fluent materials by other electric means**
- U B05B 5/025 . Discharge apparatus, e.g. electrostatic spray guns
- B05B 5/03 . . characterised by the use of gas, {e.g. electrostatically assisted pneumatic spraying (-[B05B 5/04](#) , [B05B 5/043](#) , [B05B 5/047](#) take precedence-)}

- B05B 5/035
 - • characterised by gasless spraying, {e.g. electrostatically assisted airless spraying (-[B05B 5/04](#) , [B05B 5/043](#) , [B05B 5/047](#) take precedence-)}
- U B05B 5/08
 - Plant for applying liquids or other fluent materials to objects
- B05B 5/087
 - • {Arrangements of electrodes, e.g. of charging, shielding, collecting electrodes (-[B05B 5/12](#) , [B05B 5/14](#) take precedence; Arrangements of electrodes on the discharge apparatus [B05B 5/0533](#)-)}
- B05B 5/10
 - • Arrangements for supplying power, e.g. charging power (-[B05B 5/053](#) takes precedence-)
- B05B 7/00**

Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas (-[B05B 3/00](#) , [B05B 5/00](#) { [B05B 11/06](#) } take precedence; outlets not specially modified for two media [B05B 1/00](#)-)
- B05B 7/02
 - Spray pistols; Apparatus for discharge (-[B05B 7/14](#) , [B05B 7/16](#) , [B05B 7/24](#) take precedence-)
- B05B 7/04
 - • with arrangements for mixing liquids or other fluent materials before discharge (-mixing in general [B01F](#) , e.g. [B01F 5/00](#) ; mixing valves [F16K 11/00](#)-)
- U B05B 7/0416
 - • • {with arrangements for mixing one gas and one liquid}
- U B05B 7/0441
 - • • • {with one inner conduit of liquid surrounded by an external conduit of gas upstream the mixing chamber}
- B05B 7/045
 - • • • • {the gas and liquid flows being parallel just upstream the mixing chamber (-[B05B 7/0458](#) , [B05B 7/0466](#) take precedence-)}
- B05B 7/0475
 - • • • • {with means for deflecting the peripheral gas flow towards the central liquid flow (-[B05B 7/0458](#) takes precedence-)}
- B05B 7/06
 - • with {at least}one outlet orifice surrounding another approximately in the same plane
- U B05B 7/08
 - • with separate outlet orifices, e.g. to form parallel jets, {i.e. the axis of the jets being parallel}, to form intersecting jets, {i.e. the axis of the jets converging but not necessarily intersecting at a point}
- U B05B 7/0807
 - • • {to form intersecting jets}
- B05B 7/0853
 - • • • {with one single gas jet and several jets constituted by a liquid or a mixture containing a liquid (-[B05B 7/0815](#) takes precedence-)}
- B05B 7/0861
 - • • • {with one single jet constituted by a liquid or a mixture containing a liquid and several gas jets (-[B05B 7/0815](#) takes precedence-)}
- B05B 7/0876
 - • • {to form parallel jets constituted by a liquid or a mixture containing a liquid (-[B05B 7/0884](#) , [B05B 7/0892](#) take precedence-)}
- U B05B 7/12
 - • designed to control volume of flow, e.g. with adjustable passages
- B05B 7/129
 - • • {Hand guns comprising a gas valve located at the bottom of the handle (-[B05B 7/0087](#) takes precedence-)}
- B05B 7/14
 - designed for spraying particulate materials (-[B05B 7/16](#) takes precedence-)
- U B05B 7/1404
 - • {Arrangements for supplying particulate material}
- B05B 7/1409
 - • • {specially adapted for short fibres or chips (-[B05B 7/145](#) takes precedence-)}
- B05B 7/1431
 - • • {comprising means for supplying an additional liquid (-[B05B 7/1418](#) takes precedence-)}
- B05B 7/1436
 - • • • {to a container where the particulate material and the additional liquid are brought together (Mixing in general [B01F](#))}
- B05B 7/144
 - • • {the means for supplying particulate material comprising moving mechanical means (-[B05B 7/1422](#) , [B05B 7/1459](#) take precedence-)}
- B05B 7/1445
 - • • • {involving vibrations (-[B05B 7/145](#) takes precedence-)}

- B05B 7/1454
 - • • {comprising means for supplying collected oversprayed particulate material (-spray booth with arrangements for collecting oversprayed material [B05B 15/1225](#)-)}
- B05B 7/1459
 - • • {comprising a chamber, inlet and outlet valves upstream and downstream the chamber and means for alternately sucking particulate material into and removing particulate material from the chamber through the valves (-conveying material in bulk by using a combination of gas pressure and suction [B65G 53/28](#) ; pumps in general [F04B](#); apparatus for repeatedly measuring and separating a predetermined volume of fluent solid material from a supply or container [G01F 11/00](#)-)}
- B05B 7/16
 - incorporating means for heating {or cooling}the material to be sprayed{(-spraying by means of explosions [B05B 7/0006](#)-)}
- B05B 7/1606
 - • {the spraying of the material involving the use of an atomising fluid, e.g. air (-[B05B 7/168](#) , [B05B 7/1686](#) , [B05B 7/20](#) , [B05B 7/22](#) take precedence-)}
- B05B 7/166
 - • {the material to be sprayed being heated in a container (-[B05B 7/208](#) takes precedence-)}
- B05B 7/1673
 - • {heat being transferred to the material to be sprayed by a heat transfer conductive fluid (-[B05B 7/162](#) , [B05B 7/1653](#) take precedence-)}
- B05B 7/168
 - • {with means for heating or cooling after mixing (-[B05B 7/201](#) , [B05B 7/22](#) take precedence-)}
- B05B 7/18
 - • the material having originally the shape of a wire, rod or the like{(-[B05B 7/203](#) , [B05B 7/224](#) take precedence-)}
- B05B 7/22
 - • electrically,{magnetically or electromagnetically}, e.g. by arc{(-[B05B 7/20](#) takes precedence-)}
- B05B 7/24
 - with means, e.g. a container, for supplying liquid or other fluent material to a discharge device (-[B05B 7/14](#) , [B05B 7/16](#) , [B05B 11/00](#) take precedence-)
- B05B 7/2402
 - • {Apparatus to be carried on or by a person, e.g. by hand; Apparatus comprising containers fixed to the discharge device (-[B05B 7/0012](#) takes precedence-)}
- B05B 7/2405
 - • • {using an atomising fluid as carrying fluid for feeding, e.g. by suction or pressure, a carried liquid from the container to the nozzle ([B05B 7/2459](#) to [B05B 7/247](#) take precedence)}
- B05B 7/2424
 - • • • {the carried liquid and the main stream of atomising fluid being brought together downstream of the container before discharge (-[B05B 7/2435](#) takes precedence-)}
- B05B 7/2429
 - • • • {the carried liquid and the main stream of atomising fluid being brought together after discharge (-[B05B 7/2435](#) takes precedence-)}
- B05B 7/244
 - • • {using carrying liquid for feeding, e.g. by suction, pressure or dissolution, a carried liquid from the container to the nozzle (-[B05B 7/2459](#) to [B05B 7/247](#) take precedence-)}
- B05B 7/2443
 - • • • {the carried liquid and the main stream of carrying liquid being brought together downstream of the container before discharge (-[B05B 7/2454](#) takes precedence-)}
- B05B 7/2448
 - • • • {the carried liquid and the main stream of carrying liquid being brought together after discharge (-[B05B 7/2454](#) takes precedence-)}
- B05B 7/2483
 - • {the supplying means involving no pressure or aspiration, e.g. means involving gravity or capillarity (-[B05B 7/2459](#) , [B05B 7/247](#) take precedence-)}
- B05B 7/2489
 - • {an atomising fluid, e.g. a gas, being supplied to the discharge device (-[B05B 7/2402](#) , [B05B 7/2483](#) , [B05B 7/262](#) take precedence-)}
- B05B 7/26
 - • Apparatus in which liquids or other fluent materials from different sources are brought together before entering the discharge device{(-[B05B 7/2402](#) takes precedence-)}

- B05B 7/28
- • • in which one liquid or other fluent material is fed or drawn through an orifice into a stream of a carrying fluid{(-[B05B 7/262](#) takes precedence-)}
- B05B 9/00** **Spraying apparatus for discharge of liquids or other fluent material, without essentially mixing with gas or vapour** ([B05B 11/00](#) takes precedence-)
- B05B 9/01
- Spray pistols,{discharge devices} (-[B05B 9/03](#) takes precedence-)
- B05B 9/03
- characterised by means for supplying liquid or other fluent material{(-[B05B 9/002](#) takes precedence-)}
- B05B 9/035
- • {to several spraying apparatus}{(-[B05B 9/0423](#) takes precedence-)}
- B05B 9/04
- • with pressurised or compressible container (-aerosol containers [B65D 83/14](#)); with pump
- B05B 9/0403
- • • {with pumps for liquids or other fluent material}{(-[B05B 9/043](#) takes precedence-)}
- B05B 9/0413
- • • • {with reciprocating pumps, e.g. membrane pump, piston pump, bellow pump} (-[B05B 9/0409](#) takes precedence-)}
- B05B 9/0416
- • • • {with pumps comprising rotating pumping parts, e.g. gear pump, centrifugal pump, screw-type pump} (-[B05B 9/042](#) takes precedence-)}
- B05B 9/0426
- • • • {with a pump attached to the spray gun or discharge device (-single-units hand-held apparatus in which the flow is effected by a pump [B05B 11/30](#)-)}
- B05B 9/047
- • • supply being effected by follower in container, e.g. membrane or floating piston,{or by deformation of container}(-[B05B 9/0838](#) takes precedence-)}
- B05B 9/08
- • • Apparatus to be carried on or by a person, e.g. of knapsack type ({[B05B 9/0426](#) , [B05B 11/00](#) take precedence } ; details or components, e.g. casings, bodies of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#)-)}
- B05B 9/0805
- • • • {comprising a pressurised or compressible container for liquid or other fluent material}{(-[B05B 9/085](#) takes precedence-)}
- U B05B 9/085
- • • • {with a liquid pump}
- B05B 9/0855
- • • • • {the pump being motor-driven}{(-[B05B 9/0866](#) , [B05B 9/0872](#) take precedence-)}
- B05B 11/00** **Single-unit, i.e. unitary, hand-held apparatus** {comprising a container and a discharge nozzle attached thereto}, in which flow of liquid or other fluent material is produced by {the muscular energy of}the operator at the moment of use {or by an equivalent manipulator independent from the apparatus(-apparatus with an external source or the possibility of permanent accumulation of pressure for discharging the liquid or fluid material [B05B 7/00](#) , [B05B 9/00](#)-)}
- B05B 11/0005
- {Components or details (-of single units wherein the flow is effected by a pump [B05B 11/3042](#)-)}
- B05B 11/0008
- • {Sealing or attachment arrangements between sprayer and container} (-between pump and container [B05B 11/3043](#)-)}
- B05B 11/0016
- • {Venting means}{(-for deformable containers [B05B 11/047](#)-)}
- B05B 11/0027
- • {Means for neutralising the actuation of the sprayer (-pump locking means [B05B 11/3059](#)-); Means for preventing access to the sprayer actuation means}
- B05B 11/0029
- • • {Valves not actuated by pressure}{(-automatically opened during actuation of a spray pump [B05B 11/3053](#) ; [B05B 11/0032](#) , [B05B 11/0094](#) take precedence-)}
- B05B 11/0032
- • • {Manually actuated means located downstream the discharge nozzle for closing or covering it, e.g. shutters,(-automatically removed during actuation of a spray pump [B05B 11/3053](#)-)}

- B05B 11/0037 • • {Containers (-for several components [B05B 11/0078](#) ; Containers in general [B65D](#)-)}
- B05B 11/004 • • • {with means for compensating for the underpressure created by evacuating the container (-venting means [B05B 11/0016](#)-)}
- B05B 11/0054 • • • {Cartridges, i.e. containers specially designed for easy attachment to or easy removal from the rest of the sprayer (~~Attachment arrangements between pump and container [B05B 11/3043](#)~~ Attachment arrangements between pump and container [B05B 11/3043](#))}
- B05B 11/0062 • • {Outlet valves actuated by the pressure of the fluid to be sprayed (-fluid-actuated pump outlet valve arrangements [B05B 11/3016](#) , [B05B 11/3022](#) , [B05B 11/3097](#) , [B05B 11/3033](#) , [B05B 11/3036](#) , [B05B 11/304](#) , [B05B 11/3064](#)-)}
- B05B 11/0064 • • • {Lift valves (-[B05B 11/007](#) takes precedence-)}
- B05B 11/0078 • • {Arrangements for separately storing several components (~~Arrangements for pumping several liquids or other fluent materials from several containers [B05B 11/3081](#)~~ Arrangements for pumping several liquids or other fluent materials from several containers [B05B 11/3081](#))}
- B05B 11/0097 • • {Means for filling or refilling the sprayer (-through additional openings in the container [B05B 11/0056](#)-)}
- U B05B 11/04 • the flow being effected by deformation of container for liquid or other fluent material
- B05B 11/041 • • {designed for spraying particulate material (-[B05B 11/045](#) takes precedence-)}
- U B05B 11/042 • • {the spray being effected by a gas or vapour flow in the nozzle, spray head, outlet or dip tube}
- B05B 11/043 • • • {designed for spraying a liquid (-[B05B 11/046](#) takes precedence-)}
- B05B 11/045 • • • {designed for spraying particulate material (-[B05B 11/046](#) takes precedence-)}
- B05B 11/047 • • {characterised by the outlet or venting means (-[B05B 11/041](#) and [B05B 11/042](#) take precedence; venting means for single-units in general [B05B 11/0016](#)-)}
- B05B 11/048 • • {characterised by the container, e.g. this latter being surrounded by an enclosure, or the means for deforming it (-[B05B 11/041](#) , [B05B 11/046](#) take precedence-)}
- B05B 11/06 • the spray being effected by a gas or vapour flow {from a source where the gas or vapour is not in contact with the liquid or other fluent material to be sprayed}, e.g. from a compressible bulb,{an air pump or an enclosure surrounding the container(-[B05B 11/046](#) and [B05B 11/3087](#) take precedence-)}
- U B05B 11/30 • the flow being effected by a pump
- B05B 11/3001 • • {Piston pumps (-[B05B 11/3087](#) , [B05B 11/3088](#) , [B05B 11/309](#) take precedence-)}
- B05B 11/3002 • • • {the direction of the pressure stroke being substantially perpendicular to the major axis of the container (-[B05B 11/3009](#) , [B05B 11/3015](#) take precedence-)}
- U B05B 11/3009 • • • {actuated by a lever}
- B05B 11/3012 • • • • {the pump chamber being arranged substantially coaxially to the neck of the container (-[B05B 11/3011](#) takes precedence-)}
- B05B 11/3015 • • • {actuated without substantial movement of the nozzle in the direction of the pressure stroke (-[B05B 11/3011](#) takes precedence-)}
- B05B 11/3016 • • • {the outlet valve having a valve seat located downstream a movable valve element controlled by a pressure actuated controlling element (-[B05B 11/3022](#) , [B05B 11/3023](#) take precedence-)}

- B05B 11/3018 . . . {and the controlling element cooperating with means for opening or closing the inlet valve (~~B05B 11/3019~~ takes precedence)}
- B05B 11/3021 . . . {having an outlet valve which is a gate valve (~~B05B 11/3023~~ , ~~B05B 11/3038~~ take precedence)}
- WARNING
Not complete, see [B05B 11/3001](#) and sub-groups
- U B05B 11/3023 . . . {having an outlet valve opened by deformation or displacement of the piston relative to its actuating stem}
- B05B 11/3025 . . . {a spring urging the outlet valve in its closed position (~~B05B 11/3026~~ takes precedence)}
- B05B 11/3028 . . . {Pumps having a pumping chamber with a deformable wall (~~B05B 11/3087~~ take precedence)}
- B05B 11/3032 . . . {actuated without substantial movement of the nozzle in the direction of the pressure stroke (~~B05B 11/303~~ takes precedence)}
- U B05B 11/3042 . . . {Components or details}
- B05B 11/3043 . . . {Sealing or attachment arrangements between pump and container (~~Sealing arrangements around pump actuating stem B05B 11/305-~~)}
- B05B 11/3045 . . . {the pump being preassembled as an independent unit before being mounted on the container (~~B05B 11/3047~~ , ~~B05B 11/3049~~ take precedence)}
- B05B 11/3046 . . . {the pump chamber being arranged substantially coaxially to the neck of the container (~~B05B 11/3049~~ takes precedence)}
- B05B 11/3052 . . . {Actuation means (~~locking means therefor B05B 11/3059 ; B05B 11/309~~ takes precedence)}
- B05B 11/3053 . . . {Manually actuated means located downstream the discharge nozzle for closing or covering it, e.g. shutters, (~~automatically removed during actuation of a spray pump B05B 11/3053-~~)}
- B05B 11/3056 . . . {comprising rotatable or articulated levers (~~lever actuated piston pumps B05B 11/3009~~ , lever actuated pumps with deformable chamber ~~B05B 11/3029 ; B05B 11/3053~~ take precedence)}
- WARNING
Not complete, see [B05B 11/3052](#)
- B05B 11/3059 . . . {Means for locking a pump or its actuation means in a fixed position (~~B05B 11/3091~~ takes precedence)}
- B05B 11/3064 . . . {Pump inlet and outlet valve elements integrally formed of a deformable material (~~Pump chambers having a deformable wall integrally formed with inlet and outlet valve elements B05B 11/3033-~~)}
- B05B 11/3066 . . . {Pump inlet valves (~~B05B 11/3018~~ , ~~B05B 11/3019~~ , ~~B05B 11/3064~~ take precedence)}
- U B05B 11/3073 . . . {Springs}
- B05B 11/3077 . . . {characterized by a particular shape or material (~~B05B 11/3076~~ takes precedence)}
- B05B 11/309 . . . {the dispensing stroke being effected by the stored energy of a spring (~~B05B 11/3088~~ takes precedence)}
- B05B 11/3091 . . . {being first hold in a loaded state by locking means or the like, then released (~~B05B 11/3092~~ takes precedence)}

- B05B 12/00 Arrangements or special adaptations of delivery controlling means in spraying systems (controlling in general G05{ ; valves in spray head or nozzles B05B 1/30 and sub-groups)**
- B05B 12/002 · {Manually-actuated controlling means, e.g. push buttons, levers, triggers (~~B05B 11/00~~ takes precedence; Manually-actuated control mechanisms in general G05G 7/00 - G05G 13/00-)}
- B05B 12/004 · {comprising sensors for monitoring the delivery, e.g. by displaying the sensed value or generating an alarm (~~B05B 12/08~~ takes precedence; Registering or indicating the condition or the working of machines or other apparatus in general G07C 3/00-)}
- U B05B 12/02 · for controlling time, or sequence, of delivery
- B05B 12/06 · · for effecting pulsating flow{(Nozzles, spray head or outlet with means for generating a discharge of pulsating nature B05B 1/08-)}
- U B05B 12/08 · responsive to condition of liquid or other fluent material discharged, of ambient medium or of target{; responsive to condition of spray device or of supply means, e.g. pipes, pumps, their drive}
- B05B 12/082 · · {responsive to a condition of the discharged jet or spray, e.g. to jet shape, spray pattern or droplet size}~~1008~~
- WARNING
not complete, see B05B 12/08 , B05B 12/12
- B05B 12/085 · · {responsive to flow or pressure of liquid or other fluent material discharged (~~Control of flow in general G05D 7/00-; Control of flow in general G05D 7/00 ; Control of fluid pressure in general G05D 16/00 ; B05B 1/3006 , B05B 1/323 , B05B 7/1254 take precedence-)}~~
- B05B 12/12 · · responsive to conditions of ambient medium or target, e.g. humidity, temperature {position or movement of the target relative to the spray apparatus(~~B05B 12/082 , B05B 12/084 take precedence-)}~~
- B05B 12/122 · · · {responsive to presence or shape of target (~~B05B 12/124 takes precedence-)}~~
- B05B 12/126 · · · {responsive to target velocity, e.g. to relative velocity between spray apparatus and target (~~B05B 9/06 takes precedence-)}~~
- WARNING
not complete, see B05B 12/12
- B05B 12/14 · for supplying a selected one of a plurality of liquids or other fluent materials {or several in selected proportions}to a {spray apparatus, e.g. to a}single spray outlet
- B05B 12/1418 · · {for supplying several liquids or other fluent materials in selected proportions to a single spray outlet (~~Controlling ratio of two or more flows of fluid G05D 11/02-Controlling ratio of two or more flows of fluid G05D 11/02}}~~
- WARNING
not complete, see also B05B 12/14
- B05B 12/1427 · · · {a condition of a first liquid or other fluent material in a first supply line controlling a condition of a second one in a second supply line}{ WARNING not complete, see B05B 7/32 , B05B 12/14-}
- WARNING
not complete, see also B05B 12/14

- B05B 12/1436
- . . . {the controlling condition of the first liquid or other fluent material in the first supply line being its flow rate or its pressure}{ WARNING not complete, see [B05B 7/32](#) , [B05B 12/14](#)-}
- WARNING
not complete, see also [B05B 12/14](#)
- B05B 12/1463
- . {separate containers for different materials to be sprayed being moved from a first location, e.g. a filling station, where they are fluidically disconnected from the spraying apparatus, to a second location, generally close to the spraying apparatus, where they are fluidically connected to the latter (-[B05B 12/1454](#) takes precedence-)}
- B05B 12/1472
- . {separate supply lines supplying different materials to separate outlets of the spraying apparatus (-[B05B 12/1454](#) takes precedence-)}
- B05B 12/1481
- . {comprising pigs, i.e. movable elements sealingly received in supply pipes, for separating different fluids, e.g. liquid coating materials from solvent or air (-cleaning pipes with pigs [B08B 9/0557](#) , pigs per se [F16L 55/26](#)-)}
- B05B 12/149
- . {characterised by colour change manifolds or valves therefor (-[B05B 12/1409](#) takes precedence-)}
- B05B 13/00**
- Machines or plants for applying liquids or other fluent materials to surfaces of objects or other work by spraying, not covered by groups [B05B 1/00](#) to [B05B 11/00](#) ({ [B05B 5/08](#) takes precedence } ; means for supplying or discharging liquid or other fluent material for this purpose, see the relevant preceding groups; processes for applying liquids or other fluent materials to surfaces in general [B05D](#)-)**
- B05B 13/02
- . Means for supporting work; Arrangement or mounting of spray heads; Adaptation or arrangement of means for feeding work (-[B05B 13/06](#) takes precedence-)
- B05B 13/0207
- . {the work being an elongated body, e.g. wire or pipe (-[B05B 13/0436](#) , [B05B 13/0463](#) take precedence-)}
- B05B 13/0221
- . {characterised by the means for moving or conveying the objects or other work, e.g. conveyer belts (-[B05B 13/0207](#) takes precedence; conveyers in general [B65G](#)-)}
- B05B 13/0228
- . . . {the movement of the objects being rotative (-[B05B 13/0242](#) takes precedence-)}
- B05B 13/0235
- . . . {the movement of the objects being a combination of rotation and linear displacement (-[B05B 13/0242](#) takes precedence-)}
- B05B 13/0278
- . {Arrangement or mounting of spray heads (-[B05B 13/0207](#) takes precedence-)}
- B05B 13/04
- . the spray heads being moved during {spraying}operation
- B05B 13/0405
- . . . {with reciprocating or oscillating spray heads (-[B05B 13/0436](#) , [B05B 13/0442](#) , [B05B 13/0447](#) , [B05B 13/0468](#) take precedence-)}
- B05B 13/0426
- . . . {with spray heads moved along a closed path (-[B05B 13/0421](#) takes precedence-)}
- B05B 13/0431
- . . . {with spray heads moved by robots or articulated arms, e.g. for applying liquid or other fluent material to 3D-surfaces (-[B05B 13/0436](#) , [B05B 13/0442](#) , [B05B 13/0447](#) , [B05B 13/0463](#) take precedence-)}
- B05B 13/0436
- . . . {Installations or apparatus for applying liquid or other fluent material to elongated bodies, e.g. light poles, pipes (-[B05B 13/0442](#) , [B05B 13/0463](#) take precedence-)}
- B05B 13/0447
- . . . {Installation or apparatus for applying liquid or other fluent material to conveyed separate articles (-[B05B 13/0442](#) takes precedence-)}

- B05B 13/0457 . . . {specially designed for applying liquid or other fluent material to 3D-surfaces of the articles, e.g. by using several moving spray heads (-[B05B 13/0452](#) takes precedence-)}
- U B05B 13/0463 . . . {Installation or apparatus for applying liquid or other fluent material to moving work of indefinite length}
- WARNING
Not complete pending reclassification; see also groups [B05B 13/0421](#), [B05B 13/0426](#)]
- B05B 13/0484 . . . {with spray heads having a circular motion, e.g. being attached to a rotating supporting element (-[B05B 13/0468](#) takes precedence-)}
- WARNING
Not complete, see [B05B 13/0421](#)
- B05B 13/0494 . . . {with spray heads being moved along a closed path (-[B05B 13/0484](#) takes precedence-)}
- WARNING
Not complete, see [B05B 13/0426](#)
- B05B 13/06 . . . specially designed for treating the inside of hollow bodies (-spray heads [B05B 1/00](#) to [B05B 7/00](#) ; { devices for covering leaks in pipes or hoses, e.g. hose-menders, from inside the pipe [F16L 55/162](#) ; sprayed layers of rubber or plastics for internal protection of pipes or pipe fittings against corrosion or incrustation [F16L 58/1027](#) })
- B05B 13/0627 . . . {Arrangements of nozzles or spray heads specially adapted for treating the inside of hollow bodies (-[B05B 13/0645](#) takes precedence-)}
- B05B 13/0645 . . . {the hollow bodies being rotated during treatment operation (-[B05B 13/0618](#) takes precedence-)}
- B05B 13/0654 . . . {and a treating nozzles being translated through the hollow bodies in a direction essentially parallel to the rotational axis (-[B05B 13/0681](#) takes precedence-)}
- B05B 13/0663 . . . {and the hollow bodies being translated in a direction parallel to the rotational axis (-[B05B 13/0681](#) takes precedence-)}
- B05B 13/0681 . . . {the hollow bodies comprising a closed end to be treated (-[B05B 13/0672](#) takes precedence-)}
- B05B 15/00** **Details of spraying plant or apparatus not otherwise provided for; Accessories (-accessories applicable to other methods of applying liquids or other fluent materials to surfaces [B05C](#)-)**
- U B05B 15/02 . . . Arrangements or devices for cleaning discharge openings,{nozzles, spraying heads or spraying apparatus; Arrangements or devices for preventing discharge openings, nozzles, spraying heads or spraying apparatus from becoming dirty or clogged; Devices for detecting presence of foreign matter in discharge openings}
- B05B 15/0208 . . . {Means for cleaning or allowing removal of clogging particles (-[B05B 15/025](#) , [B05B 15/0291](#) take precedence-)}
- B05B 15/025 . . . {Cleaning means involving the use of a cleaning fluid (-[B05B 15/0275](#) takes precedence-)}
- B05B 15/0258 . . . {discharged by cleaning nozzles (-cleaning by the force of jets or sprays in general [B08B 3/02](#)-)}
- WARNING
Not complete, see [B05B 15/025](#)

- B05B 15/04 · Control of spray area, e.g. masking, side shields; Means for collection or re-use of excess material (~~B05B 1/28~~ takes precedence-)
- B05B 15/0406 · · {Means for collecting or recycling surplus material (~~B05B 15/1225~~ takes precedence-)}
- B05B 15/0443 · · {Side shields, i.e. extending in a direction substantially parallel to the spray jet (~~B05B 15/0431~~ , ~~B05B 15/0437~~ take precedence-)}
- WARNING
Not complete, see [B05B 15/04](#)
- B05B 15/045 · · {Masking elements (~~B05B 15/0487~~ takes precedence-)}
- B05B 15/0475 · · · {generating border lines between coated and uncoated surfaces where one is not enclosed in the other (~~B05B 15/0456~~ takes precedence-)}
- B05B 15/06 · Mountings, supporting or holding means, or rests for spray heads or other outlets {or for the whole spraying apparatus} when in use or out of use (~~B05B 13/005~~ , ~~B05B 15/1225~~ take precedence-)}
- B05B 15/065 · · {Mounting arrangements for fluidically connecting the spray apparatus, spray heads or other outlets to a flow conduit (~~Joints in eneral F16L 13/00 -F16L 37/00-~~)}
- B05B 15/08 · · Means for adjusting position of spray heads {with indexing means provided therefor}
- B05B 15/10 · Arrangements for moving spray heads automatically to or from the working position (~~nozzles for cleaning vehicle windscreens or optical devices moved between a rest position and a working position B60S 1/528-~~)}
- U B05B 15/12 · Spray booths
- B05B 15/1214 · · {characterised by their construction e.g. floor, walls, ceiling (~~filtering ceilings for the air inlet B05B 15/1222-~~)}
- B05B 15/1222 · · {characterised by their ventilation (~~B05B 15/1225~~ takes precedence-)}
- U B05B 15/1225 · · {Arrangements for collecting, recovering, recycling or eliminating the surplus material}
- B05B 15/1229 · · · {the surplus material being particulate material (~~B05B 15/1237~~ to ~~B05B 15/1262~~ take precedence-)}
- B05B 15/1233 · · · {Recovering or eliminating solvents (~~B05B 15/1237~~ to ~~B05B 15/1262~~ take precedence-)}
- B05B 15/1237 · · · {by cleaning the walls of the booth (~~filtering walls B05B 15/1248-~~)}
- B05B 17/00** **Apparatus for spraying or atomising liquids or other fluent materials, not covered by the preceding groups (~~dropping or releasing powdered, liquid or gaseous matter in flight B64D 1/16-~~)**
- U B05B 17/04 · operating with special methods
- B05B 17/06 · · using ultrasonic {or other kinds of} vibrations
- B05B 17/0692 · · · {generated by a fluid (~~B05B 17/0607~~ takes precedence-)}
- B05B 17/08 · Fountains (~~drinking fountains E03B 9/20~~ ; wash fountains ~~E03C 1/16-~~)

Project: N/A (B05C)

- U **B05C 1/00** **Apparatus in which liquid or other fluent material is applied to the surface of the work by contact with a member carrying the liquid or other fluent material, e.g. a porous member loaded with a liquid to be applied as a coating (B05C 5/02, B05C 7/00 take precedence)**
- U B05C 1/04 · for applying liquid or other fluent material to work of indefinite length {(B05C 1/003 takes precedence)}

- U B05C 1/08
- • using a roller {or other rotating member which contacts the work along a generating line}
- B05C 1/0839
- • • {the work being unsupported at the line of contact between the coating roller and the work}
- B05C 1/0843
- • • {the work being backed up by gas jet means for pushing the material in contact with the coating roller}
- B05C 1/0847
- • • {the circumferential speed of the coating roller and the work speed having same direction but different value}
- B05C 1/0852
- • • • {the circumferential speed of the coating roller being higher than the work speed}
- B05C 1/0856
- • • {Reverse coating rollers}
- B05C 1/086
- • • {a pool of coating material being formed between a roller, e.g. a dosing roller and an element cooperating therewith}
- B05C 1/0865
- • • • {the cooperating element being a roller, e.g. a coating roller}
- B05C 1/0869
- • • • {the work contacting the pool}
- B05C 1/0873
- • • {Controlling means responsive to conditions of the liquid or other fluent material, of the ambient medium, of the roller or of the work}
- B05C 1/0878
- • • • {responsive to the pressure applied between two rollers, e.g. between the coating roller and a backing roller or between the coating roller and a dosing roller}
- B05C 1/0882
- • • • {responsive to the distance between two rollers, e.g. between the coating roller and a backing roller}
- B05C 1/0886
- • • • {responsive to the condition of the work}
- B05C 1/0891
- • • • • {responsive to the speed of moving of the work}
- B05C 1/0895
- • • • {responsive to the thickness of the weight of material applied to the work}
- U B05C 5/00**
- Apparatus in which liquid or other fluent material is projected, poured or allowed to flow on to the surface of the work (B05C 7/00 takes precedence; essentially involving spraying or electrostatic projection B05B)**
- U B05C 5/02
- {the liquid or other fluent material being discharged through an outlet orifice by pressure, e.g.} from an outlet device in contact or almost in contact, with the work
- U B05C 5/0208
- • {for applying liquid or other fluent material to separate articles (B05C 5/0204 takes precedence)}
- B05C 5/0212
- • • {only at particular parts of the articles (at particular part of web, band, strip, belt or ribbon B05C 5/025)}
- U B05C 5/0216
- • • • {by relative movement of article and outlet according to a predetermined path}
- B05C 5/022
- • • • • {the outlet being fixed during operation }
- U B05C 5/0225
- • {characterised by flow controlling means, e.g. valves, located proximate the outlet (B05C 5/0258, B05C 5/0275 take precedence; supply valves upstream the coating head B05C 11/1036)}
- B05C 5/0229
- • • {the valve being a gate valve or a sliding valve}
- WARNING
Not complete, see [B05C 5/0225](#)
- B05C 5/0233
- • • • {rotating valve, e.g. rotating perforated cylinder}
- WARNING
Not complete, see [B05C 5/0225](#)

- B05C 5/0237
- • • {-Fluid actuated valves}
- WARNING
Not complete, see [B05C 5/0225](#)
- B05C 5/0287
- • {-with no relative movement between the outlet and a moving work during the application}
- B05C 5/0291
- • {-the material being discharged on the work through discrete orifices as discrete droplets, beads or strips that coalesce on the work or are spread on the work so as to form a continuous coating}
- B05C 5/0295
- • {-Floating coating heads or nozzles}
- U B05C 11/00**
- Component parts, details or accessories not specifically provided for in groups [B05C 1/00](#) to [B05C 9/00](#) (means for manipulating or holding work [B05C 13/00](#); enclosures for apparatus, booths [B05C 15/00](#); spray booths [B05B 15/12](#))**
- U B05C 11/02
- Apparatus for spreading or distributing liquids or other fluent materials already applied to a surface { ; Controlling means therefor}{[B05C 7/00](#) takes precedence; Hand tools for such purposes [B05C 17/10](#)}; Control of the thickness of a coating { by spreading or distributing liquids or other fluent materials already applied to the coated surface}{controlling supply of liquid or other fluent material [B05C 11/10](#)}
- U B05C 11/04
- • with blades
- B05C 11/048
- • • {-Scrapers, i.e. metering blades having their edge oriented in the upstream direction in order to provide a reverse angle of attack}
- U B05C 11/10
- Storage, supply or control of liquid or other fluent material; Recovery of excess liquid or other fluent material {([B05C 1/0813](#), [B05C 5/0225](#), [B05C 17/002](#) and [B05C 19/06](#) take precedence)}
- B05C 11/1002
- • {-Means for controlling supply, i.e. flow or pressure, of liquid or other fluent material to the applying apparatus, e.g. valves}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1005
- • • {-responsive to condition of liquid or other fluent material already applied to the surface, e.g. coating thickness, weight or pattern}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1007
- • • {-responsive to condition of liquid or other fluent material ([B05C 11/1005](#) takes precedence)}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/101
- • • • {-responsive to weight of a container for liquid or other fluent material; responsive to level of liquid or other fluent material in a container}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1013
- • • • {-responsive to flow or pressure of liquid or other fluent material ([B05C 11/101](#) takes precedence; Control of flow in general [G05D 7/00](#); Control of fluid pressure in general [G05D 16/00](#))}
- WARNING
not complete, see [B05C 11/10](#)

- B05C 11/1015
- • • {-responsive to a conditions of ambient medium or target, e.g. humidity, temperature ([B05C 11/1005](#) takes precedence); responsive to position or movement of the coating head relative to the target}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1018
- • • • {-responsive to distance of target}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1021
- • • • {-responsive to presence or shape of target ([B05C 11/1018](#) takes precedence)}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1023
- • • • {-responsive to velocity of target, e.g. to web advancement rate}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1026
- • • {-Valves (in general [F16K](#); [B05C 5/0225](#) takes precedence)}
- B05C 11/1028
- • • • {-Lift valves}
- WARNING
not complete, see [B05C 11/1026](#)
- B05C 11/1031
- • • • {-Gate valves; Sliding valves}
- WARNING
not complete, see [B05C 11/1026](#)
- B05C 11/1034
- • • {-specially designed for conducting intermittent application of small quantities, e.g. drops, of coating material ([B05C 5/0225](#), [B05C 11/1026](#) take precedence)}
- B05C 11/1036
- • {-Means for supplying a selected one of a plurality of liquids or other fluent materials, or several in selected proportions, to the applying apparatus}
- WARNING
not complete, see [B05C 11/10](#)
- B05C 11/1039
- • {-Recovery of excess liquid or other fluent material; Controlling means therefor}
- B05C 11/1044
- • {-Apparatus or installations for supplying liquid or other fluent material to several applying apparatus or several dispensing outlets, e.g. to several extrusion nozzles}
- B05C 11/1047
- • {-Apparatus or installations for supplying liquid or other fluent material comprising a buffer container or an accumulator between the supply source and the applicator}

- U B05C 17/00** Hand tools or apparatus using hand held tools, for applying liquids or other fluent materials to, for spreading applied liquids or other fluent materials on, or for partially removing applied liquids or other fluent materials from, surfaces ({ casings or accessories for storing or handling solid or pasty toilet or cosmetic substances [A45D 40/00](#) ;} brushes [A46B](#); { shoe polish applicators [A47L 23/05](#); surgical glue applicators [A61B 17/00491](#);} absorbent pads, e.g. swabs, for applying media to the human body [A61F 13/15](#); { hand-held applicators for applying or spreading media, e.g. remedies, on the human body [A61M 35/003](#); implements for writing or drawing [B43K](#); hand-held desk devices for applying liquid, e.g. adhesive, by contact to surfaces [B43M 11/06](#);} implements or apparatus for removing dry paint from surfaces [B44D 3/16](#) { ; container closures with pads or like contents-applying means [B65D 47/42](#)})
- B05C 17/002 . {-with feed system for supplying material from an external source; Supply controls therefor ([B05C 17/02](#) takes precedence)}
 - B05C 17/003 . . {-with means for filling or refilling the hand tool container}
 - B05C 17/005 . {-for discharging material from a reservoir or container located in or on the hand tool through an outlet orifice by pressure without using surface contacting members like pads or brushes}
 - B05C 17/00503 . . {-Details of the outlet element ([B05C 17/00523](#) takes precedence; nozzles for deformable tubular containers [B65D 35/38](#))}
 - B05C 17/00506 . . . {-Means for connecting the outlet element to, or for disconnecting it from, the hand tool or its container}
 - B05C 17/00509 {-of the bayonet type}
 - B05C 17/00513 {-of the thread type}
 - B05C 17/00516 . . . {-Shape or geometry of the outlet orifice or the outlet element}
 - B05C 17/0052 . . {-Accessories therefor}
 - U B05C 17/00523 . . {provided with means to heat the material}
 - U B05C 17/00526 . . . {the material being supplied to the apparatus in a solid state, e.g. rod, and melted before application ([B05C 17/0054](#) takes precedence)}
 - B05C 17/0053 {-the driving means for the material being manual, mechanical or electrical}
 - B05C 17/00536 {-the driving means comprising one or more rollers}
 - U B05C 17/00546 . . . {Details of the heating means}
 - B05C 17/0055 {-Burners, e.g. for catalytic combustion specially adapted for hand tools or apparatus using hand tools}
 - U B05C 17/00553 . . {with means allowing the stock of material to consist of at least two different components}
 - B05C 17/00556 . . . {-with means for adjusting the proportions of the components}
 - B05C 17/00559 . . . {-the different components being stored in coaxial chambers}
 - B05C 17/00563 {-the chambers being at least initially placed in series}
 - B05C 17/00566 . . . {-with a dynamic mixer in the nozzle}
 - B05C 17/00573 . . {-the reservoir or container being pneumatically or hydraulically pressurized ([B05C 17/0054](#), [B05C 17/015](#) take precedence)}
 - U B05C 17/00576 . . {characterised by the construction of a piston as pressure exerting means, or of the co-operating container}
 - B05C 17/00579 . . . {-comprising means for allowing entrapped air to escape to the atmosphere}
 - B05C 17/00583 . . {-the container for the material to be dispensed being deformable}
 - B05C 17/00586 . . {-Means, generally located near the nozzle, for piercing or perforating the front part of a cartridge}

- B05C 17/00589 . . {comprising a guiding rotating element, e.g. a wheel}
- B05C 17/00593 . . {-Hand tools of the syringe type}
- B05C 17/00596 . . {-The liquid or other fluent material being supplied from a rigid removable cartridge having no active dispensing means, i.e. the cartridge requiring cooperation with means of the handtool to expel the material}
- U B05C 17/01 . . with { manually} mechanically or electrically actuated piston or the like {(B05C 17/00533 takes precedence)}
- B05C 17/0106 . . . {-with means for longitudinally cutting container walls during relative displacement of the piston and its cooperating container}
- B05C 17/0109 . . . {-the piston being pulled during application}
- B05C 17/0113 . . . {-the piston rod being flexible or articulated (B05C 17/0109 takes precedence)}
- B05C 17/0116 . . . {-characterised by the piston driving means (B05C 17/0103, B05C 17/0109, B05C 17/0113, B05C 17/015 take precedence)}
- B05C 17/012 {-Stepwise advancing mechanism, e.g. pawl and ratchets}
- B05C 17/0123 {-Lever actuated}
- B05C 17/0126 {-comprising an element, e.g. an arc compensating element, articulated at one end on the lever and at the other end on the piston rod driving means, e.g. a pawl}
- B05C 17/013 {-comprising a freely rotating element, e.g. a roller, between the lever and a piston rod driving means, e.g. a pawl}
- B05C 17/0133 {-Nut and bolt advancing mechanism, e.g. threaded piston rods}
- B05C 17/0136 . . . {-comprising an energy storing element, e.g. a spring, for exerting, e.g. when released, pressure on the material (B05C 17/015 takes precedence)}
- B05C 17/014 . . . {-comprising means for preventing oozing (B05C 17/0146 takes precedence)}
- B05C 17/0143 . . . {-comprising means for cutting or cleaning the cartridge nozzle tip}
- B05C 17/0146 . . . {-comprising a valve in the proximity of the nozzle that is not actuated by pressure, e.g. manually actuated}
- U B05C 17/02 . . Rollers; {(for applying toilet or cosmetic substances A45D 34/04); Hand tools comprising coating rollers or coating endless belts}
- B05C 17/021 . . {-comprising means to avoid excessive crushing of the roller cover, e.g. a spacer}
- B05C 17/0215 . . {-the coating roller itself, i.e. not only its cover being deformable, e.g. to allow proper coating of non-plane surfaces (B05C 17/0227 takes precedence)}
- B05C 17/0225 . . {-comprising a lateral plate, edge guard or shield}
- B05C 17/0235 . . {-Rollers comprising an additional non-rotating applicator or comprising a coating roller replaceable by a non-rotating applicator}
- B05C 17/0237 . . {-comprising means for preventing the rotation of the roller (B05C 17/024 takes precedence)}
- B05C 17/024 . . {-the coating roller being motor driven}
- B05C 17/0242 . . {-comprising rotating guiding elements}
- B05C 17/0245 . . {-Accessories}
- B05C 17/0247 . . {-Rollers for coating under water}
- U B05C 17/03 . . with feed system for supplying material from an external source { or with a reservoir or container for liquid or other fluent material located in or on the hand tool outside the coating roller}
- U B05C 17/035 . . . direct { or indirectly} to the outer surface of the { coating} roller

- B05C 17/0352 . . . {indirectly, i.e. by using transfer means, e.g. pads, brushes, rollers or bands} ~~[1008]~~
- B05C 17/0357 . . . {directly from a container attached to the hand tool, e.g. by gravity or dipping}

Project: N/A (B05D)**B05D**

PROCESSES FOR APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL (apparatus for applying liquids or other fluent materials to surfaces [B05B](#), [B05C](#); { coating of foodstuffs [A23P 1/084](#), [A23P 1/085](#) })

NOTE

This subclass covers:

- processes for applying liquids or other fluent materials to a surface or part of a surface, in general, by any mechanical or physical method and particularly processes producing a uniform distribution of liquids or other fluent materials on a surface;
- pretreatment of surfaces to which liquids or other fluent materials are to be applied;
- after-treatment of applied coatings. Attention is drawn to the Note following the title of class [B05](#).

B05D 1/00

Processes for applying liquids or other fluent materials (~~[B05D 5/00](#)~~, [B05D 7/00](#) take precedence)

WARNING

Groups [B05D 1/60](#) to [B05D 1/62](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows - [B05D 1/60](#) to [B05D 1/62](#) : [B05D 1/00](#), [B05D 7/00](#)

- B05D 1/007 . . . {using an electrostatic field (~~[B05D 1/02](#) to [B05D 1/16](#) take precedence~~)}
- U B05D 1/02 . . . performed by spraying
- B05D 1/04 . . . involving the use of an electrostatic field ({~~[B05D 1/025](#) and [B05D 1/14](#) take precedence~~)}
- B05D 1/12 . . . Applying particulate materials (~~[B05D 1/06](#), [B05D 1/10](#) take precedence~~)
- U B05D 1/18 . . . performed by dipping
- B05D 1/185 . . . {applying monomolecular layers (~~[B05D 1/204](#) takes precedence~~)}
- B05D 1/22 . . . using fluidised-bed technique (~~fluidised-bed technique in general [B01J 8/24](#)~~)
- U B05D 1/36 . . . Successively applying liquids or other fluent materials, e.g. without intermediate treatment
- B05D 1/38 . . . with intermediate treatment (~~intermediate treatment per se [B05D 3/00](#)~~)
- B05D 1/60 . . . {Deposition of organic layers from vapour phase (~~vapour phase deposition in general [C23C 14/00](#), [C23C 16/00](#)~~)}
- B05D 1/62 . . . {Plasma-deposition of organic layers (~~plasma deposition in general [C23C 14/00](#), [C23C 16/00](#)~~)}

B05D 3/00

Pretreatment of surfaces to which liquids or other fluent materials are to be applied; After-treatment of applied coatings, e.g. intermediate treating of an applied coating preparatory to subsequent applications of liquids or other fluent materials (-successively applying liquids or other fluent materials [B05D 1/36](#) ; drying ovens [F26B](#) -)

WARNING

Groups [B05D 3/20](#) to [B05D 3/207](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows - [B05D 3/20](#) - [B05D 3/207](#) : [B05D 3/00](#)

- B05D 3/02
 - by baking{(-[B05D 3/04](#) takes precedence-)}
- U B05D 3/0218
 - • {Pretreatment, e.g. heating the substrate}
- B05D 3/0236
 - • • {with ovens (-[B05D 3/0227](#) takes precedence-)}
- U B05D 3/04
 - by exposure to gases
- B05D 3/0466
 - • {the gas being a non-reacting gas (-[B05D 3/0406](#) takes precedence-)}
- B05D 3/06
 - by exposure to radiation (-[B05D 3/02](#) takes precedence; { plasma treatment [B05D 3/141](#) })
- U B05D 3/061
 - • {using U.V.}
- U B05D 3/062
 - • • {Pretreatment}
- B05D 3/063
 - • • • {of polymeric substrates (-[B05D 3/064](#) takes precedence-)}
- B05D 3/068
 - • {using ionising radiations (*gamma, X, electrons*)}(~~gamma, X, electrons~~)
- U B05D 3/10
 - by other chemical means
- B05D 3/102
 - • {Pretreatment of metallic substrates (-[C23C](#) takes precedence-)}

U B05D 5/00

Processes for applying liquids or other fluent materials to surfaces to obtain special surface effects, finishes or structures

- B05D 5/04
 - to obtain a surface receptive to ink or other liquid (-[B05D 5/02](#) , { [B41M 5/52](#) }take precedence)
- B05D 5/06
 - to obtain multicolour or other optical effects (-[B05D 5/02](#) takes precedence-)
- U B05D 5/061
 - • {Special surface effect}
- B05D 5/063
 - • • {Reflective effect (-[B05D 5/067](#) takes precedence-)}
- U B05D 5/067
 - • {Metallic effect}
- B05D 5/068
 - • • {achieved by multilayers (-[B05D 5/066](#) takes precedence-)}
- B05D 5/08
 - to obtain an anti-friction or anti-adhesive surface (-rendering particulate materials free-flowing in general, e.g. making them hydrophobic [B01J 2/30](#)-)

B05D 7/00

Processes, other than flocking, specially adapted for applying liquids or other fluent materials to particular surfaces or for applying particular liquids or other fluent materials{(-coating of foodstuffs [A23P 1/084](#) , [A23P 1/085](#)-)}

WARNING

Groups [B05D 7/50](#) to [B05D 7/5885](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows - [B05D 7/50](#) to [B05D 7/5885](#) : [B05D 7/00](#)

- B05D 7/02
 - to macromolecular substances, e.g. rubber (-treatment or coating of shaped articles made of macromolecular substances [C08J 7/00](#)-)
- B05D 7/04
 - • to surfaces of films or sheets (-producing layered products by applying coatings of pasty or pulverulent plastics [B29C 41/00](#)-)
- B05D 7/12
 - to leather (-chemical treatment of leather [C14C](#) ; dyeing leather [D06P](#)-)

B05D 7/14	<ul style="list-style-type: none"> to metal, e.g. car bodies (-involving a chemical reaction between the metal and the coating C23-)
B05D 7/146	<ul style="list-style-type: none"> {to metallic pipes or tubes (-processes for coating the interior of pipes B05D 7/222-)}
B05D 7/20	<ul style="list-style-type: none"> to wires (-for insulating electric cables H01B 13/16-)
U B05D 7/24	<ul style="list-style-type: none"> for applying particular liquids or other fluent materials
B05D 7/26	<ul style="list-style-type: none"> {synthetic lacquers or varnishes (-B05D 7/08 , B05D 7/16 take precedence-)}
U B05D 7/50	<ul style="list-style-type: none"> {Multilayers} <p>NOTE A possible inorganic pretreatment or coating on the substrate such as chromatation, phosphatation, plating, is not counted as a layer. This group covers mostly multilayers characterised by each layer and the succession of them (laminates in general B32B)</p>
B05D 7/51	<ul style="list-style-type: none"> {One specific pretreatment, e.g. phosphatation, chromatation, in combination with one specific coating (-pretreatment of metallic substrates C23C; pretreatment before coating in general B05D 3/00-)}
U B05D 7/52	<ul style="list-style-type: none"> {Two layers}
U B05D 7/53	<ul style="list-style-type: none"> {Base coat plus clear coat type}
B05D 7/534	<ul style="list-style-type: none"> {the first layer being let to dry at least partially before applying the second layer (-B05D 7/538 takes precedence-)}
U B05D 7/56	<ul style="list-style-type: none"> {Three layers or more}
U B05D 7/57	<ul style="list-style-type: none"> {the last layer being a clear coat}
B05D 7/574	<ul style="list-style-type: none"> {at least some layers being let to dry at least partially before applying the next layer (-B05D 7/577 takes precedence-)}
U B05D 7/58	<ul style="list-style-type: none"> {No clear coat specified}
B05D 7/584	<ul style="list-style-type: none"> {at least some layers being let to dry, at least partially, before applying the next layer (-B05D 7/587 takes precedence-)}
U B05D 2202/00	Metallic substrate
B05D 2202/30	<ul style="list-style-type: none"> based on refractory metals (Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W)(Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W)
B05D 2210/00	Applying material to more than three types of substrate materials
B05D 2259/00	Applying the material to the internal surface of hollow articles other than tubes
U B05D 2320/00	Organic additives
B05D 2320/10	<ul style="list-style-type: none"> Detergents
U B05D 2350/00	Pretreatment of the substrate
U B05D 2350/60	<ul style="list-style-type: none"> Adding a layer before coating
B05D 2350/65	<ul style="list-style-type: none"> {metal layer}
U B05D 2401/00	Form of the coating product, e.g. solution, water dispersion, powders or the like
B05D 2401/10	<ul style="list-style-type: none"> Organic solvent (-B05D 2401/21 takes precedence-)
B05D 2401/60	<ul style="list-style-type: none"> non aqueous inorganic solvent (-B05D 2401/90 takes precedence-)
U B05D 2506/00	Halogenated polymers
U B05D 2506/20	<ul style="list-style-type: none"> Chlorinated polymers
B05D 2506/25	<ul style="list-style-type: none"> {PVC (-B05D 2520/10 takes precedence-)}

- U B05D 2518/00 Other type of polymers**
- U B05D 2518/10 · Silicon-containing polymers
 - B05D 2518/12 · · Ceramic precursors (*polysiloxanes, polysilazanes*)(~~polysiloxanes, polysilazanes~~)

B05D 2602/00 Organic fillers

Project: N/A (B07B)

- U B07B 1/00 Sieving, screening, sifting, or sorting solid materials using networks, gratings, grids, or the like {{ash-sifters for domestic stoves or ranges [F24B 15/007](#)}}**
- U B07B 1/12 · Apparatus having only parallel elements
 - U B07B 1/14 · · Roller screens
 - B07B 1/145 · · · {-the material to be screened moving along the axis of the parallel elements}
 - U B07B 1/15 · · · using corrugated, grooved or ribbed rollers
 - B07B 1/155 · · · · {-the rollers having a star shaped cross section}
 - U B07B 1/18 · Drum screens
 - B07B 1/185 · · {-provided with exchangeable sieve panels}
 - U B07B 1/28 · Moving screens not otherwise provided for, e.g. swinging, reciprocating, rocking, tilting or wobbling screens
 - B07B 1/288 · · {-Tumbling screens}
 - U B07B 1/46 · Constructional details of screens in general; Cleaning or heating of screens
 - U B07B 1/4609 · · {-constructional details of screening surfaces or meshes}
 - B07B 1/4618 · · · {-Manufacturing of screening surfaces}
 - B07B 1/4627 · · · {-Repairing of screening surfaces}
 - B07B 1/4636 · · · {-Regulation of screen apertures}
 - B07B 1/4645 · · · {-Screening surfaces built up of modular elements}
 - B07B 1/4654 · · · {-Corrugated Screening surfaces}
 - B07B 1/4663 · · · {-Multi-layer screening surfaces}
 - B07B 1/4672 · · · {-Woven meshes}
 - B07B 1/4681 · · · {-Meshes of intersecting, non-woven, elements}
 - B07B 1/469 · · · {-Perforated sheet-like material}
 - U B07B 1/50 · · Cleaning
 - U B07B 1/52 · · · with brushes or scrapers
 - B07B 1/522 · · · · {-with brushes}
 - B07B 1/524 · · · · · {-the brushes being rotating}
 - B07B 1/526 · · · · {-with scrapers}
 - B07B 1/528 · · · · · {-the scrapers being rotating}
 - U B07B 7/00 Selective separation of solid materials carried by, or dispersed in, gas currents (sieves of filters for separating dispersed particles from gases or vapours [B01D](#))**
 - U B07B 7/08 · using centrifugal force (centrifuges [B04B](#); cyclones [B04C](#))
 - U B07B 7/086 · · generated by the winding course of the gas stream
 - B07B 7/0865 · · · {-using the coanda effect of the moving gas stream}

- U B07B 13/00** **Grading or sorting solid materials by dry methods, not otherwise provided for; Sorting articles otherwise than by indirectly controlled devices (grading eggs [A01K 43/04](#))**
- U B07B 13/04 · according to size
- U B07B 13/07 · · Apparatus in which aggregates or articles are moved along or past openings which increase in size in the direction of movement
- B07B 13/072 · · · {-the openings being rollers with a divergent axis and the material moving substantially along the rollers axis}
- U B07B 13/10 · using momentum effects
- U B07B 13/11 · · involving travel of particles over surfaces which separate by centrifugal force or by relative friction between particles and such surfaces, e.g. helical sorters
- B07B 13/113 · · · {-shaking tables (for wet separating [B03B 5/04](#); tables with water impulse [B03B 5/70](#); pneumatic tables [B03B 4/02](#); moving screens [B07B 1/28](#))}

Project: N/A (B07C)

- U B07C 1/00** **Measures preceding sorting according to destination**
- U B07C 1/02 · Forming articles in a stream; Arranging articles in a stream, e.g. spacing, orientating {(transport of sheets [B65H](#))}
- B07C 1/025 · · {Devices for the temporary stacking of objects provided with a stacking and destacking device ([interstack device](#)); ~~(interstack device)~~}
- U B07C 5/00** **Sorting according to a characteristic or feature of the articles of material being sorted, e.g. by control effected by devices which detect or measure such characteristic or feature; Sorting by manually actuated devices, e.g. switches (sorting by hand only [B07C 7/00](#); separating solids from solids by sieving, screening, or sifting or by using gas currents or other separating by dry methods applicable to bulk material [B07B](#))**
- U B07C 5/04 · Sorting according to size {(sorting devices as a component of the automatic supply and removal of workpieces [B23Q 7/12](#))}
- U B07C 5/12 · · characterised by the application to particular articles, not otherwise provided for ({[B07C 9/00](#) takes precedence}; sorting eggs [A01K 43/00](#); {measuring and sorting devices for shoe components [A43D 119/00](#); sorting cartridges [F42B 35/02](#))}
- U B07C 5/122 · · · {for bottles, ampoules, jars and other glassware (sorting and transport of caps [B67B 3/06](#))}
- B07C 5/126 · · · · {-by means of photo-electric sensors, e.g. according to colour (sorting according to optical properties [B07C 5/342](#); material testing with the aid of optical means [G01N 21/00](#))}
- U B07C 5/36 · Sorting apparatus characterised by the means used for distribution {(sorting according to destination [B07C 3/003](#), [B07C 3/02](#))}
- B07C 5/363 · · {-by means of air}
- B07C 5/365 · · · {-using a single separation means}
- B07C 5/366 · · · · {-during free fall of the articles}
- B07C 5/367 · · · {-using a plurality of separation means}
- B07C 5/368 · · · · {-actuated independently}
- B07C 9/00** **Sorting, with or without orientating, not otherwise provided for { e.g. sorting of table equipment (washing and rinsing machines for tableware [A47L 15/00](#), [A47L 15/02](#); machines for polishing table equipment [A47L 21/02](#))}**

Project: N/A (B08B)

B08B

CLEANING IN GENERAL; PREVENTION OF FOULING IN GENERAL (brushes [A46](#); devices for domestic or like cleaning [A47L](#); { cleaning golf-clubs or golf accessories [A63B 57/0087](#); cleaning grips of bats on rackets [A63B 59/0062](#) } ; separation of particles from liquids or gases [B01D](#); separation of solids [B03](#), [B07](#); spraying or applying liquids or other fluent materials to surfaces in general [B05](#); cleaning devices for conveyers [B65G 45/10](#); concurrent cleaning, filling and closing of bottles [B67C 7/00](#); inhibiting corrosion or incrustation in general [C23](#); cleaning streets, permanent ways, beaches or land [E01H](#); parts, details or accessories of swimming or splash baths or pools, specially adapted for cleaning [E04H 4/16](#); preventing or removing electrostatic charges [H05F](#)-)

NOTE

This subclass covers only inventions relating to cleaning which are usually classified according to one (or more) of the aspects mentioned below if they are not fully classifiable in a subclass a subclass providing for any of the following aspects: the articles cleaned, e.g. bed-pans, urinal or other sanitary devices for bed-ridden persons [A61G 9/02](#), filters, semi-permeable membranes [B01D](#), castings and moulds [B22D 29/00](#), vehicles [B60S](#), coke ovens [C10B 43/00](#), building forms [E04G](#), boilers [F22](#), combustion apparatus [F23](#), furnaces [F27](#); the general nature of the cleaning, e.g. preparing for sugar manufacture [A23N](#), domestic cleaning [A47L](#), treatment of textiles [D06](#), laundry [D06F](#), air-conditioning [F24F](#); the particular operation performed, e.g. filtering [B01D](#), separating of solids [B03](#), [B07](#), sand-blasting [B24C](#); the particular apparatus or device, e.g. brushes [A46B](#), mops [A47L](#), centrifuges [B04](#), hand tools [B25](#) { devices for cleaning paint-applying hand tools after use [B44D 3/006](#) } ; the substance cleaned, e.g. metals [B21C](#), [C23](#), water [C02](#), glass [C03B](#), leather [C14B](#), textile fibres [D01](#); the substance removed (or prevented from depositing or forming) e.g. { removing paint [B44D 3/00](#), e.g. } implements or apparatus for removing dry paint from surfaces [B44D 3/16](#); chemical paint-removers [C09D 9/00](#); preventing rust [C23F](#); the substance used, e.g. macromolecular compounds or compositions [C08](#), anti-icing materials [C09K](#), detergents [C11D](#); the operation in connection with which cleaning is done, e.g. metal rolling [B21B](#), metal boring [B23B](#), soldering [B23K](#), textile fabrication [D01G](#), [HD01H](#), [D03J](#), [D04B](#); the surroundings of a surface to be cleaned or kept clean, e.g. water in a boiler [C02F](#), air in a room [F24F](#).

B08B 1/00

Cleaning by methods involving the use of tools, brushes, or analogous members (~~-[B08B 3/12](#), [B08B 6/00](#), { [B08B 7/02](#) } , [B08B 9/00](#) take precedence-~~)

B08B 1/04

• using rotary operative members (~~-[B08B 1/02](#) takes precedence-~~)

B08B 3/00

Cleaning by methods involving the use or presence of liquid or steam (~~-[B08B 9/00](#) takes precedence-~~)

U B08B 3/02

• Cleaning by the force of jets or sprays

B08B 3/022

• {Cleaning travelling work (~~-[B08B 3/042](#) takes precedence-~~)}

U B08B 3/04

• Cleaning involving contact with liquid

B08B 3/044

• {using agitated containers in which the liquid and articles or material are placed (~~-by means of ultrasonic vibrations [B08B 3/12](#); cleaning casks or barrels by agitating [B08B 9/0817](#); mixers with shaking, oscillating or vibrating mechanisms [B01F 11/00-](#)~~)}

B08B 3/045

• {using perforated containers, e.g. baskets, or racks immersed and agitated in a liquid bath (~~-using perforated drums [B08B 3/06-](#)~~)}

B08B 3/06

• using perforated drums in which the article or material is placed (~~-[B08B 3/042](#) takes precedence-~~)

- B08B 3/08
 - the liquid having chemical or dissolving effect (substances used, see the relevant classes)
- U B08B 3/10
 - with additional treatment of the liquid or of the object being cleaned, e.g. by heat, by electricity, by vibration
- B08B 3/102
 - {with means for agitating the liquid (-by agitating the container [B08B 3/042](#) , [B08B 3/044](#) , [B08B 3/045](#) , [B08B 3/06-](#))}
- B08B 3/12
 - by sonic or ultrasonic vibrations (-washing or rinsing machines for crockery or tableware using sonic or ultrasonic waves [A47L 15/13](#) ; of natural teeth, of prostheses using ultrasonic techniques similar to those used for natural teeth [A61C 17/20](#) ; application of ultrasonic vibrations to chemical, physical, or physico-chemical processes in general [B01J 19/10-](#))
- B08B 3/123
 - {Cleaning travelling work, e.g. webs, articles on a conveyer (-conveyers [B65G](#) ; handling webs [B65H-](#))}
- B08B 3/14
 - Removing waste, e.g. labels, from cleaning liquid; {Regenerating cleaning liquids} (-treatment of water in general [C02F-](#))
- B08B 5/00**

Cleaning by methods involving the use of air flow or gas flow (-B08B 6/00 takes precedence-)
- B08B 5/02
 - Cleaning by the force of jets, e.g. blowing-out cavities((-airguns or nozzles per se [B05B 1/005-](#))}
- B08B 5/04
 - Cleaning by suction, with or without auxiliary action ({ [B08B 9/035](#) takes precedence; }(-suction cleaners [A47L-](#));)(suction cleaners [A47L](#)))
- B08B 6/00**

Cleaning by electrostatic means (-domestic cleaning implements functioning electrostatically [A47L 13/40](#) ; cleaning of grooved record carriers [G11B 3/58-](#))
- U **B08B 7/00**

Cleaning by methods not provided for in a single other subclass or a single group in this subclass
- U B08B 7/0064
 - {by temperature changes}
- B08B 7/0071
 - {by heating (-[B08B 7/0035](#) takes precedence-)}
- B08B 7/02
 - by distortion, beating, or vibration of the surface to be cleaned((-[B08B 7/0007](#) takes precedence-))
- B08B 9/00**

Cleaning hollow articles by methods or apparatus specially adapted thereto (-B08B 3/12 , [B08B 6/00](#) take precedence-)
- B08B 9/02
 - Cleaning pipes or tubes or systems of pipes or tubes (-apparatus for cleaning metal pipes by chemical methods [C23G 3/04](#) ; { removing obstructions in waste pipes or sinks [E03C 1/30](#) ; cleaning sewer pipes [E03F 9/00](#); cleaning boreholes or wells [E21B 37/00](#) ; cleaning furnace tubes, flues, chimneys [F23J 3/02](#) ; cleaning heat-transfer conduits, e.g. water tubes of boilers [F28G](#) })
- B08B 9/021
 - {Cleaning pipe ends or pipe fittings, e.g. before soldering (-grinding tube ends [B24B 9/007-](#))}
- B08B 9/023
 - Cleaning the external surface (-[B08B 9/021](#) takes precedence-)
- U B08B 9/027
 - Cleaning the internal surfaces; Removal of blockages
- B08B 9/032
 - by the mechanical action of a moving fluid, e.g. by flushing (-[B08B 9/04](#) takes precedence; { by fluid jets mounted on cleaning devices [B08B 9/0433](#) })
- B08B 9/0321
 - {using pressurised, pulsating or purging fluid (-[E04F 17/126](#) takes precedence-)}
- B08B 9/0322
 - {in combination with a plug, e.g. inflatable mole, to isolate a part of the tube (-plugging pigs for stopping flow in pipes [F16L 55/1283-](#))}

- U B08B 9/04
 - • • using cleaning devices introduced into and moved along the pipes
 - WARNING
Group [B08B 9/04](#) and subgroups are not complete. See also [B08B 9/02](#) and subgroups
- U B08B 9/043
 - • • moved by externally powered mechanical linkage, e.g. pushed or drawn through the pipes
- B08B 9/0436
 - • • • {provided with mechanical cleaning tools, e.g. scrapers, with or without additional fluid jets (~~-B08B 9/045 , B08B 9/047 take precedence-~~)}
- B08B 9/045
 - • • • the cleaning devices being rotated while moved{, e.g. flexible rotating shaft or "snake"} (~~-B08B 9/047 takes precedence-~~)
- B08B 9/047
 - • • • the cleaning devices having {internal}motors [e.g. turbines] for powering cleaning tools
- B08B 9/049
 - • • • having self-contained propelling means for moving the cleaning devices along the pipes {i.e. self-propelled}
- B08B 9/0492
 - • • • {Heavy-type cleaning devices, e.g. crawlers with plural cleaning members (~~-B08B 9/051 takes precedence-~~)}
- B08B 9/051
 - • • • the cleaning devices having {internal}motors [e.g. turbines] for powering cleaning tools
- U B08B 9/053
 - • • moved along the pipes by a fluid, e.g. by fluid pressure or by suction
- B08B 9/055
 - • • • the cleaning devices conforming to, or being conformable to, substantially the same cross-section of the pipes,{e.g. pigs or moles (~~-pigs or moles per se F16L 55/26 ; their launching and detection F16L 55/46 ; separating pigs in pipelines F17D 3/00-~~)}
- U B08B 9/08
 - Cleaning containers, e.g. tanks
- B08B 9/0804
 - {Cleaning containers having tubular shape, e.g. casks, barrels, drums (~~-B08B 9/20 take precedence-~~)}
- B08B 9/0821
 - {Handling or manipulating containers, e.g. moving or rotating containers in cleaning devices, conveying to or from cleaning devices (~~-B08B 9/20 takes precedence-~~)}
- B08B 9/0839
 - {Cleaning milk churns (~~-B08B 9/0804 , B08B 9/20 take precedence-~~)}
- B08B 9/0852
 - {Drainage racks (~~-see also A47J 47/20-~~)}
- B08B 9/0861
 - {Cleaning crates, boxes or the like (~~-B08B 9/083 takes precedence-~~)}
- B08B 9/0865
 - {by burning-out (~~-B08B 9/40 takes precedence-~~)}
- B08B 9/087
 - by methods involving the use of tools, e.g. brushes, scrapers ({ [B08B 9/0808](#) } , [B08B 9/20](#) take precedence-)
- B08B 9/093
 - by the force of jets or sprays ({ [B08B 9/0813](#) } , [B08B 9/20](#) take precedence-)
- B08B 9/20
 - by using apparatus into or on to which containers e.g. bottles, jars, cans are brought{(~~-washing or rinsing crockery or tableware A47L 15/00-~~)}
- B08B 9/38
 - • the apparatus cleaning by using scrapers, chains, grains of shot, sand or other abrasive means (~~-abrasive blasting in general B24C-~~)
- B08B 11/00**
 - Cleaning flexible or delicate articles by methods or apparatus specially adapted thereto (~~-B08B 3/12 , B08B 6/00 take precedence-~~)**
- B08B 11/02
 - Devices for holding articles during cleaning{(~~-B08B 9/42 takes precedence-~~)}
- B08B 11/04
 - specially adapted for plate glass, e.g. prior to manufacture of windshields (~~-cleaning the gap between permanently secured panes E06B 3/677-~~)

- B08B 15/00** Preventing escape of dirt or fumes from the area where they are produced; Collecting or removing dirt or fumes from that area (-parts, details or accessories of cooking-vessels for withdrawing or condensing cooking vapours from such vessels [A47J 36/38](#) ; refuse disposal [B65F](#) ; devices for conducting smoke or fumes, e.g. flues, [F23J 11/00](#) ; removing cooking fumes from domestic stoves or ranges [F24C 15/20](#) ; air conditioning, ventilation [F24F](#)-)
- B08B 15/002 · {using a central suction system, e.g. for collecting exhaust gases in workshops (-removing dust from textile machines [D01H 11/00](#) ; ventilation of mines, galleries or tunnels, e.g. traffic tunnels, [E21F 1/00](#)-)}
- B08B 15/007 · {Fume suction nozzles arranged on a closed or semi-closed surface, e.g. on a circular, ring-shaped or rectangular surface adjacent the area where fumes are produced (-[B08B 15/04](#) takes precedence-)}
- B08B 15/02 · using chambers or hoods covering the area{(-[B08B 15/002](#) takes precedence-)}
- B08B 15/04 · from a small area, e.g. a tool{(-removing chips [B23Q 11/0042](#)-)}
- B08B 17/00** **Methods preventing fouling**{(-preventing accumulation of deposits in pneumatic conveyers [B65G 53/521](#)-)}

Project: N/A (B09B)

- U B09B 1/00** **Dumping solid waste**
- B09B 1/006 · {-Shafts or wells in waste dumps}
- B09B 1/008 · {-Subterranean disposal e.g. in boreholes or subsurface fractures}
- U B09B 3/00** **Destroying solid waste or transforming solid waste {or contaminated solids} into something useful or harmless**
- B09B 3/0008 · {-comprising an adsorption step (separating processes involving the treatment of liquids with solid sorbents [B01D 15/00](#); separation of gases or vapors by adsorption [B01D 53/02](#))}
- B09B 3/0016 · {-comprising an extraction step (separation by solvent extraction [B01D 11/00](#))}
- B09B 3/0083 · {-by means of a thermal treatment, e.g. evaporation (treatment of waste by pyrolysis or by combustion [F23G 5/00](#))}
- B09B 3/0091 · · {-Steam treatment}

Project: N/A (B09C)

- B09C** **RECLAMATION OF CONTAMINATED SOIL** (-gatherers for removing stone or the like from the soil [A01B 43/00](#) ; sterilising soil by steam [A01G 11/00](#) ; processes for making harmful chemical substances harmless or less harmful by effecting chemical change in the substance [A62D 3/00](#) ; separation in general [B01D](#); cleaning beaches [E01H 12/00](#) ; removing undesirable matter, e.g. rubbish, from the land [E01H 15/00](#)-)

NOTE

In this subclass, the following term is used with the meaning indicated:

-"reclamation" means the partial or total elimination
or the fixing of contaminants in soil.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B09C 1/04](#) covered by [B09C 1/02](#)]

U B09C 1/00

B09C 1/06

B09C 1/08

Reclamation of contaminated soil

- thermally ~~(-incinerators for contaminated soil [F23G 7/14-](#))~~
- chemically ~~(-chemical means for combating harmful chemical agents [A62D 3/00-](#))~~

Project: N/A (B21B)**B21B**

ROLLING OF METAL ~~(-auxiliary operations used in connection with metal-working operations covered in [B21](#) , see [B21C](#) ; bending by rolling [B21D](#) ; manufacture of particular objects, e.g. screws, wheels, rings, barrels, balls, by rolling [B21H](#) ; pressure welding by means of a rolling mill [B23K 20/04-](#))~~

NOTE

In this subclass, the following terms or expressions are used with the meanings indicated:- "rolling" means rolling operations in which plastic deformations occur;- "continuous process" means a process employing a mill train designed to have the workpiece enter one pair of rolls before leaving the preceding pair.

B21B 1/00

Metal-rolling methods or mills for making semi-finished products of solid or profiled cross-section (~~- [B21B 17/00](#) to [B21B 23/00](#) take precedence;~~ with respect to composition of material to be rolled [B21B 3/00](#) ; extending closed shapes of metal bands by simultaneous rolling at two or more zones [B21B 5/00](#) ; metal-rolling stands as units [B21B 13/00](#) ; continuous casting into moulds having walls formed by moving rolls [B22D 11/06-](#)); **Sequence of operations in milling trains; Layout of rolling-mill plant, e.g. grouping of stands; Succession of passes or of sectional pass alternations**

B21B 1/02

- for rolling heavy work, e.g. ingots, slabs, {blooms}billets, in which the cross-sectional form is unimportant {Rolling combined with forging or pressing}

B21B 1/024

- • {Forging or pressing ~~(-forging or pressing devices as units [B21B 15/0035-](#))~~}

B21B 1/08

- for rolling {structural sections, i.e.}work of special cross-section, e.g. angle steel ~~(-rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects [B21H 8/00-](#))~~

B21B 1/10

- • in a single two-high or universal rolling mill {stand(~~-[B21B 1/085](#) to [B21B 1/098](#) take precedence-~~)}

B21B 1/12

- • in a continuous process,{i.e. without reversing stands(~~-[B21B 1/085](#) to [B21B 1/098](#) take precedence-~~)}

B21B 1/14

- • in a non-continuous process,{i.e. at least one reversing stand(~~-[B21B 1/085](#) to [B21B 1/098](#) take precedence-~~ [B21B 1/085](#) to [B21B 1/098](#) take precedence)}

B21B 1/16

- for rolling {wire rods, bars, merchant bars, rounds}wire or material of like small cross-section

B21B 1/163

- • {Rolling or cold-forming of concrete reinforcement bars or wire ~~(-reinforcement bars per se [E04C 5/03-](#)); Rolls therefor}~~

B21B 1/20

- • in a non-continuous process,*(e.g. skew rolling, i.e. planetary cross rolling)*~~(e.g. skew-rolling, i.e. planetary cross-rolling)~~

B21B 1/22

- for rolling {plates, strips,}bands or sheets of indefinite length (~~-[B21B 1/42](#) takes precedence-~~)

B21B 1/24

- • in a continuous {or semi-continuous}process{(~~-[B21B 1/224](#) takes precedence-~~)}

B21B 1/30

- • in a non-continuous process{(~~-[B21B 1/224](#) takes precedence-~~)}

B21B 1/32

- • • in reversing {single stand}mills, e.g. with intermediate storage reels for accumulating work

- B21B 1/38 · for rolling sheets of limited length, e.g. folded sheets, superimposed sheets, {pack rolling} (-[B21B 1/40](#) takes precedence; folding sheets before, or separating layers after, rolling [B21B 47/00](#)-)
- B21B 1/42 · for step-by-step or planetary rolling (-making tubes by pilgrim-step rolling [B21B 21/00](#)-)
- B21B 1/46 · for rolling metal immediately subsequent to continuous casting (-metal-rolling stands [B21B 13/22](#) ; continuous casting [B22D 11/00](#) , e.g. into moulds with rolls [B22D 11/06](#)-)
- B21B 3/00** **Rolling materials of special alloys so far as the composition of the alloy requires or permits special rolling methods or sequences {Rolling of aluminium, copper, zinc or other non-ferrous metals}(-altering special metallurgical properties of alloys, other than structure consolidation or mechanical properties resulting therefrom [C21D](#) , [C22F](#)-)**
- B21B 5/00** **Extending closed shapes of metal bands by rolling (-manufacture of circular shapes, e.g. wheel rims, [B21H 1/06](#)-)**
- B21B 13/00** **Metal-rolling stands, i.e. an assembly composed of a stand frame, rolls, and accessories (-[B21B 17/00](#) to [B21B 23/00](#) take precedence; details, component parts, accessories, auxiliary means, procedures in connection with metal rolling, see the relevant groups-)**
- B21B 13/14 · having counter-pressure devices acting on rolls to inhibit deflection of same under load; {Back-up rolls} (-counter-pressure devices as such [B21B 29/00](#)-)
- B21B 13/18 · for step-by-step or planetary rolling; {pendulum mills} (-methods [B21B 1/42](#) ; making tubes by pilgrim-step rolling [B21B 21/00](#)-)
- B21B 13/22 · for rolling metal immediately subsequent to continuous casting,{i.e. in-line rolling of steel} (-methods therefor [B21B 1/46](#) ; continuous casting [B22D 11/00](#) , e.g. into moulds with rolls [B22D 11/06](#)-)
- U B21B 15/00** **Arrangements for performing additional metal-working operations specially combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills**
- B21B 15/02 · in which work is subjected to permanent internal twisting, e.g. for producing reinforcement bars for concrete
- B21B 17/00 - B21B 99/00** **Rolling methods or mills specially designed for making or processing tubes (-control of tube rolling [B21B 37/78](#)-)**
- B21B 17/02 · with mandrel,{i.e. the mandrel rod contacts the rolled tube over the rod length} (-[B21B 17/08](#) takes precedence-)
- B21B 19/00** **Tube-rolling by rollers arranged outside the work and having their axes not perpendicular to the axis of the work (-straightening by rollers [B21D](#)-)**
- B21B 19/02 · the axes of the rollers being arranged essentially diagonally to the axis of the work, e.g. "cross" tube-rolling {Diescher mills, Stiefel disc piercers, Stiefel rotary piercers}
- B21B 19/06 · · Rolling hollow basic material,{e.g. Assel mills} (-[B21B 19/04](#) takes precedence; separating work from mandrel [B21C 45/00](#)-)
- U B21B 21/00** **Pilgrim-step tube-rolling,{i.e. pilger mills}**
- B21B 21/04 · Pilgrim-step feeding mechanisms (-[B21B 21/06](#) takes precedence-)
- B21B 23/00** **Tube-rolling not restricted to methods provided for in only one of groups [B21B 17/00](#) , [B21B 19/00](#) , [B21B 21/00](#) , e.g. combined processes {planetary tube rolling, auxiliary arrangements, e.g. lubricating, special tube blanks, continuous casting combined with tube rolling}(-[B21B 25/00](#) takes precedence-)**

- B21B 25/00** **Mandrels for metal tube rolling mills, e.g. mandrels of the types used in the methods covered by group [B21B 17/00](#); Accessories or auxiliary means therefor; {Construction of, or alloys for, mandrels or plugs}**
- B21B 25/02 · Guides, supports, or abutments for mandrels, e.g. carriages {or steadiers}; Adjusting devices for mandrels
- B21B 25/06 · Interchanging mandrels, {fixing plugs on mandrel rods or cooling during interchanging mandrels (-separating tubes from mandrels [B21C 45/00](#))}
- B21B 27/00** **Rolls, {roll alloys or roll fabrication} (-shape of working surfaces required by special processes [B21B 1/00](#)-); Lubricating, cooling or heating rolls while in use**
- B21B 27/02 · Shape or construction of rolls {(-for rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects [B21H 8/02](#)-) {(-[B21B 27/005](#) takes precedence-)}
- B21B 27/03 · · Sleeved rolls {(-[B21B 27/028](#) takes precedence-)}
- U B21B 27/05 · · · with deflectable sleeves
- B21B 27/055 · · · {with sleeves radially deflectable on a stationary beam by means of hydraulic supports {(-in general [F16C 13/00](#) ; for paper-making machines [D21G 1/00](#) ; regulating devices therefor [B21B 37/36](#)-)}
- B21B 28/00** **Maintaining rolls or rolling equipment in effective condition {(-lubricating, cooling or heating rolls while in use [B21B 27/06](#)-)}**
- U B21B 28/02 · Maintaining rolls in effective condition, e.g. reconditioning
- B21B 28/04 · · while in use, e.g. polishing {or grinding while the rolls are in their stands}
- B21B 29/00** **Counter-pressure devices acting on rolls to inhibit deflection of same under load, e.g. backing rolls; {Roll bending devices, e.g. hydraulic actuators acting on roll shaft ends (-control devices responsive to roll bending [B21B 37/38](#)-)}**
- U **B21B 31/00** **Rolling stand structures; Mounting, adjusting, or interchanging rolls, roll mountings, or stand frames**
- B21B 31/02 · Rolling stand frames {or housings}; Roll mountings; {Roll chocks}
- B21B 31/04 · · with tie rods {in frameless stands}, e.g. prestressed tie rods
- B21B 31/06 · · Fastening stands or frames to foundation, e.g. to the sole plate (-in general [F16M](#)-)
- B21B 31/07 · Adaptation of roll {neck}bearings (-bearings in general [F16C](#)-)
- B21B 31/078 · · {Sealing devices {(-Sealings in general [F16J 15/00](#)-)}
- B21B 31/16 · Adjusting {or positioning}rolls {(-control devices [B21B 37/00](#)-)}
- B21B 33/00** **Safety devices not otherwise provided for {(-safety devices in general [F16P](#)-); Breaker blocks; Devices for freeing jammed rolls {for handling cobbles; Overload safety devices}**
- U **B21B 35/00** **Drives for metal-rolling mills, {e.g. hydraulic drives}**
- B21B 35/02 · for continuously-operating mills {(-[B21B 35/10](#) , [B21B 35/12](#) take precedence-)}
- B21B 35/06 · for non-continuously-operating mills or for single stands {(-[B21B 35/10](#) , [B21B 35/12](#) take precedence-)}
- B21B 35/14 · Couplings, driving spindles, or spindle carriers specially adapted for, or specially arranged in, metal-rolling mills (-couplings or shafts in general [F16](#)-)
- B21B 35/141 · · {Rigid spindle couplings, e.g. coupling boxes placed on roll necks {(-rigid couplings in general [F16D 1/00](#)-)}

- B21B 35/142
- {Yielding spindle couplings; Universal joints for spindles (-yielding couplings in general [F16D 3/00-](#))}
- B21B 35/143
- • {having slidably-interengaging teeth, e.g. gear-type couplings (-universal joints with the coupling parts having slidably-interengaging teeth, in general, [F16D 3/18-](#))}
- B21B 35/145
- • • {Hooke`s joints or the like with each coupling part pivoted with respect to an intermediate member (~~Hooke`s joints in general F16D 3/26~~ *Hooke`s joints in general F16D 3/26*)}
- B21B 35/146
- • • • {Tongue and slipper joints (-tongue and slipper joints in general [F16D 3/265-](#))}
- B21B 37/00**
- Control devices or methods specially adapted for metal-rolling mills or the work produced thereby (-methods or devices for measuring specially adapted for metal-rolling mills [B21B 38/00-](#))**
- B21B 37/007
- {Control for preventing or reducing vibration, chatter or chatter marks (-[B21B 37/66](#) takes precedence-)}
- B21B 37/16
- Control of thickness, width, diameter or other transverse dimensions (-[B21B 37/58](#) takes precedence-)
- U B21B 37/28
- Control of flatness or profile during rolling of strip, sheets or plates
- B21B 37/38
- • using roll bending (-[B21B 37/42](#) takes precedence-)
- B21B 37/40
- • using axial shifting of the rolls (-[B21B 37/42](#) takes precedence-)
- B21B 37/46
- Roll speed or drive motor control (-[B21B 37/52](#) , [B21B 37/60](#) take precedence-)
- B21B 37/58
- Roll-force control; Roll-gap control{(-[B21B 38/105](#) takes precedence-)}
- B21B 37/70
- Length control (-[B21B 37/56](#) takes precedence-)
- B21B 37/74
- Temperature control, e.g. by cooling or heating the rolls or the product (-[B21B 37/32](#) , [B21B 37/44](#) take precedence-)
- B21B 38/00**
- Methods or devices for measuring,{detecting or monitoring}specially adapted for metal-rolling mills, e.g. position detection, inspection of the product{(-~~Control devices or methods B21B 37/00~~ *Control devices or methods B21B 37/00*)}**
- B21B 39/00**
- Arrangements for moving, supporting, or positioning work, or controlling its movement, combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills (-guiding, conveying, or accumulating easily-flexible work in loops or curves [B21B 41/00](#) ; specially associated with cooling-beds [B21B 43/00](#) ; conveying or transporting in general [B65G-](#))**
- B21B 39/008
- {Rollers for roller conveyers (-roller-ways in general [B65G 13/00](#) , [B21B 39/00-](#))}
- U B21B 39/02
- Feeding or supporting work; Braking or tensioning arrangements,{e.g. threading arrangements}
- B21B 39/04
- • Lifting or lowering work for conveying purposes, e.g. tilting tables arranged immediately in front of or behind the pass (-turn-over or like manipulating means as such [B21B 39/20-](#))
- B21B 39/14
- Guiding, positioning or aligning work (-[B21B 43/12](#) takes precedence; guides in which work is subjected to permanent internal twisting [B21B 15/02-](#))
- U B21B 39/16
- • immediately before entering or after leaving the pass
- B21B 39/165
- • • {Guides or guide rollers for rods, bars, rounds, tubes (-[B21B 39/28](#) takes precedence-); Aligning guides}
- B21B 39/20
- Revolving, turning-over, or like manipulation of work,{e.g. revolving in trio stands} (-guides in which work is subjected to permanent internal twisting [B21B 15/02-](#))
- B21B 39/22
- • by tipping, e.g. by lifting one side by levers or wedges (-[B21B 39/26](#) , [B21B 39/28](#) take precedence-)

- B21B 39/34
- Arrangements or constructional combinations specifically designed to perform functions covered by more than one of groups [B21B 39/02](#) , [B21B 39/14](#) , [B21B 39/20](#)
- U B21B 41/00 Guiding, conveying, or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves; Loop lifters**
- B21B 41/02
- Returning work to repeat the pass or passes {within the same stand}
- U B21B 41/08
- without overall change in the general direction of movement of the work
- B21B 41/10
- • Loop deflectors {([B21B 39/084](#) takes precedence)}
- B21B 43/00 Cooling beds, whether stationary or moving; Means specially associated with cooling beds, e.g. for braking work or for transferring it to or from the bed (-conveying means in general [B65G](#)-)**
- B21B 43/02
- Cooling beds comprising rakes {racks, walking beams} or bars {([B21B 43/10](#) takes precedence)}
- B21B 43/06
- Cooling beds comprising carriages {([B21B 43/08](#) takes precedence)}
- B21B 43/08
- Cooling beds comprising revolving drums or recycling chains {or discs}
- B21B 45/00 Devices for surface {or other} treatment of work, specially combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills (-[B21B 15/00](#) , { [B21B 1/227](#) and [B21B 27/005](#) } take precedence; technical features of scaling-off devices [B21C 43/00](#)-)**
- B21B 45/02
- for lubricating, cooling, or cleaning {(in particular in combination with forging or pressing devices [B21B 15/005](#) , control of flatness or profile using lubricating or cooling [B21B 37/44](#)-)}
- U B21B 45/0203
- • {Cooling}
- U B21B 45/0209
- • • {Cooling devices, e.g. using gaseous coolants}
- U B21B 45/0215
- • • • {using liquid coolants, e.g. for sections, for tubes}
- B21B 45/0218
- • • • • {for strips, sheets, or plates {([B21B 45/023](#) , [B21B 45/0233](#) take precedence)}
- B21B 45/0224
- • • • • {for wire, rods, rounds, bars {([B21B 45/023](#) , [B21B 45/0233](#) take precedence)}
- B21B 45/04
- for de-scaling, {e.g. by brushing (-descaling of rod or wire [B21C 43/04](#)-)}
- B21B 45/06
- • of strip material {([B21B 45/08](#) takes precedence)}
- B21B 47/00 Auxiliary arrangements, devices or methods in connection with rolling of multi-layer sheets of metal (-soaking pits [C21D 9/70](#)-)**

Project: N/A (B21C)

- U B21C 1/00 Manufacture of metal sheets, metal wire, metal rods, metal tubes by drawing**
- U B21C 1/16
- Metal drawing by machines or apparatus in which the drawing action is effected by other means than drums, e.g. by a longitudinally-moved carriage pulling or pushing the work or stock for making metal sheets, bars, or tubes
- U B21C 1/27
- • Carriages; Drives
- U B21C 1/30
- • • Drives, e.g. carriage-traversing mechanisms; Driving elements, e.g. drawing chains; Controlling the drive {(endlessly revolving chain systems for metal coiling: [B21C 47/3458](#))}
- B21C 1/305
- • • • {Linear motor pulling devices}
- U B21C 5/00 Pointing; Push-pointing**
- B21C 5/003
- {-of hollow material, e.g. tube}
- B21C 5/006
- {-of solid material, e.g. wire or profiles}

- U B21C 23/00 Extruding metal; Impact extrusion**
- B21C 23/001 · {-to improve the material properties, e.g. lateral extrusion}
 - U B21C 23/02 · Making uncoated products
 - U B21C 23/04 · · by direct extrusion
 - U B21C 23/14 · · · Making other products
 - B21C 23/142 · · · · {-Making profiles}
 - B21C 23/145 · · · · · {-Interlocking profiles}
 - U B21C 23/21 · Presses specially adapted for extruding metal (extrusion presses in general [B30B 11/22](#))
 - B21C 23/212 · · {-Details ([B21C 23/217](#), [B21C 23/218](#) take precedence)}
 - B21C 23/214 · · · {-Devices for changing die or container}
 - B21C 23/215 · · · {-Devices for positioning or centering press components, e.g. die or container}
- U B21C 29/00 Cooling or heating work or parts of the extrusion press; { Gas treatment of work}**
- B21C 29/003 · {-Cooling or heating of work}
 - B21C 29/006 · {-Gas treatment of work, e.g. to prevent oxidation or to create surface effects}
 - B21C 29/02 · {Cooling or heating} of containers for metal to be extruded
 - B21C 29/04 · {Cooling or heating} of press heads, dies or mandrels
- U B21C 33/00 Feeding extrusion presses with metal to be extruded; { Loading the dummy block}**
- B21C 33/002 · {-Encapsulated billet (manufacturing wires or fine wires [B21C 37/045](#), [B21C 37/047](#))}
 - B21C 33/004 · {-Composite billet}
 - B21C 33/006 · {-Consecutive billets, e.g. billet profiles allowing air expulsion or bonding of billets}
 - B21C 33/008 · {-Scalping billets, e.g. for removing oxide layers prior or during extrusion}
- U B21C 35/00 Removing work or waste from extruding presses; Drawing-off extruded work (in connection with the extruding of bent tubes or rods [B21C 23/12](#)); Cleaning dies, ducts, containers, or mandrels**
- U B21C 35/02 · Removing or drawing-off work {(linear motor pulling devices [B21C 1/305](#))}
 - B21C 35/023 · · {-Work treatment directly following extrusion, e.g. further deformation or surface treatment ([B21C 35/03](#) takes precedence; gas treatment [B21C 29/006](#))}
 - B21C 35/026 · · · {-Removing sections from the extruded work, e.g. removing a strip to create an open profile}
- U B21C 37/00 Manufacture of metal sheets, bars, wire, tubes or like semi-manufactured products, not otherwise provided for (by rolling [B21B](#); by working or processing semi-finished sheet metal, profiles, tubes, or wire [B21D](#) or [B21F](#); by casting [B22](#); by material-removing machine tools [B23](#); by welding, e.g. cladding or plating [B23K](#); by grinding or polishing [B24](#); by electroforming [C25D 1/00](#); by drawing or extruding, see the relevant groups); Manufacture of tubes of special shape**
- U B21C 37/06 · of tubes or metal hoses; Combined procedures for making tubes, e.g. for making multi-wall tubes (bending sheets for making tubes [B21D 5/00](#); seaming by folding [B21D 39/02](#))
 - B21C 37/065 · · {-starting from a specific blank, e.g. tailored blank}

- U B21C 37/08
 - • Making tubes with welded or soldered seams (involving only a soldering or welding operation [B23K](#){with helically arranged seams [B21C 37/122](#)}
- B21C 37/0826
 - • • {-Preparing the edges of the metal sheet with the aim of having some effect on the weld}
- U B21C 37/12
 - • Making tubes or metal hoses with helically arranged seams
- U B21C 37/124
 - • • {the tubes having a special shape, e.g. with corrugated wall, flexible tubes}
- B21C 37/125
 - • • • {-curved section, e.g. elbow}
- U B21C 37/15
 - • Making tubes of special shape; Making tube fittings {[B21C 37/0803](#), [B21C 37/104](#), [B21C 37/124](#), take precedence}
- B21C 37/155
 - • • {-Making} tubes with non circular section ([B21C 37/151](#), [B21C 37/154](#) take precedence)
- B21C 37/156
 - • • {-Making tubes with wall irregularities ([B21C 37/20](#), [B21C 37/22](#) take precedence)}
- B21C 37/157
 - • • • {-Perforations}
- B21C 37/158
 - • • • {-Protrusions, e.g. dimples}
- U B21C 37/28
 - • • Making tube fittings for connecting pipes, e.g. U-pieces
- U B21C 37/29
 - • • • Making branched pieces, e.g. T-pieces
- B21C 37/298
 - • • • • {-Forming collars by flow-drilling (flow drilling [B21J 5/066](#))}
- U B21C 47/00**
 - Winding-up, coiling or winding-off metal wire, metal band or other flexible metal material characterised by features relevant to metal processing only (coiling wire into particular form [B21F 3/00](#); hot coilers in connection with heat-treatment apparatus [C21D 9/68](#))**
- U B21C 47/24
 - Transferring coils to or from winding apparatus or to or from operative position therein; Preventing uncoiling during transfer
- B21C 47/242
 - • {-Devices for swinging the coil from horizontal to vertical, or vice versa}
- U B21C 47/26
 - Special arrangements with regard to simultaneous or subsequent treatment of the material
- B21C 47/267
 - • {-Scrap treatment}
- U B21C 47/34
 - Feeding or guiding devices not specially adapted to a particular type of apparatus
- B21C 47/3408
 - • {-for monitoring the lateral position of the material}
- B21C 47/3416
 - • • {-with lateral edge contact}
- B21C 47/3425
 - • • {-without lateral edge contact}
- B21C 47/3433
 - • {-for guiding the leading end of the material, e.g. from or to a coiler}
- B21C 47/3441
 - • • {-Diverting the leading end, e.g. from main flow to a coiling device}
- B21C 47/345
 - • {-for monitoring the tension or advance of the material}
- B21C 47/3458
 - • • {-Endlessly revolving chain systems (metal drawing [B21C 1/30](#))}
- B21C 47/3466
 - • {-by using specific means}
- B21C 47/3475
 - • • {-Fluid pressure or vacuum}
- B21C 47/3483
 - • • {-Magnetic field}
- B21C 47/3491
 - • • {-Brushes}

Project: N/A (B21D)

B21D	WORKING OR PROCESSING OF SHEET METAL OR METAL TUBES, RODS OR PROFILES WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING (operations of the kind involved in the manufacture of such products B21B , B21C ; working or processing of wire B21F ; cutting or severing devices or machines in general B26 ; presses in general B30B)
	NOTES This subclass <u>covers</u> cutting or perforating of sheet metal or other stock material This subclass <u>does not cover</u> the working of metal foils in a manner analogous to the working of paper, which is covered by classes B26 , B31
B21D 1/00	Straightening, restoring form or removing local distortions of sheet metal or specific articles made therefrom (- B21D 3/00 takes precedence-); Stretching sheet metal combined with rolling (-working sheet metal of limited length by stretching B21D 25/00 ; by localised hammering B21D 31/06 -)
B21D 1/02	• by rollers (- B21D 1/06 takes precedence-)
U B21D 1/06	• Removing local distortions
B21D 1/08	• of hollow bodies made from sheet metal (-of substantially open bodies B21D 1/10 ; { flattening hollow objects for transport and reforming B21D 51/14 })
B21D 1/12	• Straightening vehicle body parts or bodies (- B21D 1/14 takes precedence-)
B21D 3/00	Straightening or restoring form of metal rods, metal tubes, metal profiles, or specific articles made therefrom, whether or not in combination with sheet metal parts (straightening of well casings in situ E21B ; { straightening rails or rail joints E01B 31/08 })
B21D 3/12	• by stretching with or without twisting (-by twisting only B21D 11/14 -)
B21D 5/00	Bending sheet metal along straight lines, e.g. to form simple curves (- B21D 11/06 to B21D 11/18 take precedence; corrugating sheet metal B21D 13/00 ; as edge treatment B21D 19/00 -)
U B21D 5/06	• by drawing procedure making use of dies or forming-rollers, e.g. making profiles
B21D 5/08	• making use of forming-rollers (- B21D 5/12 takes precedence-)
B21D 5/14	• by passing between rollers (- B21D 5/06 takes precedence-)
B21D 7/00	Bending rods, profiles, or tubes (- B21D 11/02 to B21D 11/18 take precedence; using mandrels or the like B21D 9/00 -)
B21D 7/04	• over a movably-arranged forming member (- B21D 7/02 takes precedence-)
B21D 9/00	Bending tubes using mandrels or the like (- B21D 11/02 to B21D 11/18 take precedence-)
B21D 9/15	• using filling material of indefinite shape, e.g. sand, plastic material (-filling of tubes with such material B21D 9/16 -)
B21D 11/00	Bending not restricted to forms of material mentioned in only one of groups B21D 5/00 , B21D 7/00 , B21D 9/00 ; -Bending not provided for in groups B21D 5/00 to B21D 9/00 (-corrugating or bending into wave form B21D 13/00 , B21D 15/00 ; flanging B21D 19/00 -); Twisting
B21D 11/02	• Bending by stretching or pulling over a die (-working sheet metal of limited length by stretching B21D 25/00 -)
B21D 11/06	• Bending into helical or spiral form; Forming a succession of return bends, e.g. serpentine form (-making helically seamed tubing B21C 37/12 -)

- B21D 11/08 · Bending by altering the thickness of part of the cross-section of the work (~~B21D 11/06~~ takes precedence-)
- B21D 11/10 · Bending specially adapted to produce specific articles, e.g. leaf springs(~~-making or bending leaf springs B21D 53/886-~~)
- B21D 13/00 Corrugating sheet metal, rods or profiles; Bending sheet metal, rods or profiles into wave form** (~~-tubes B21D 15/00-~~)
- B21D 15/00 Corrugating tubes** (~~-wrinkle-bending using mandrels or the like B21D 9/14-~~)
- U B21D 15/04 · transversely, e.g. helically
- B21D 15/06 · · annularly(~~-with thinning B21C 37/205-~~)
- U B21D 17/00 Forming single grooves in sheet metal or tubular or hollow articles**
- B21D 17/02 · by pressing (~~-grooving or notching of bolts, studs, or the like B21K 1/54-~~)
- B21D 19/00 Flanging or other edge treatment, e.g. of tubes** (~~-connecting by making use of folds B21D 39/00 ; flaring-out tube ends B21D 41/02-~~)
- B21D 19/02 · by continuously-acting tools moving along the edge (~~-edge-curling B21D 19/12-~~)
- B21D 21/00 Combined processes according to methods covered by groups B21D 1/00 to B21D 19/00**
- B21D 22/00 Shaping without cutting, by stamping, spinning, or deep-drawing** (~~-otherwise than using rigid devices or tools or yieldable or resilient pads B21D 26/00-~~)
- U B21D 22/02 · Stamping using rigid devices or tools
- B21D 22/022 · · {by heating the blank or stamping associated with heat treatment (~~C21D~~ takes precedence)}
- B21D 22/04 · · for dimpling (~~-combined with perforating B21D 28/24-~~)
- B21D 22/20 · Deep-drawing (~~-special deep-drawing arrangements in, or in connection with, presses B21D 24/00-~~)
- B21D 22/208 · · {by heating the blank or deep-drawing associated with heat treatment (~~C21D~~ takes precedence)}
- B21D 22/22 · · with devices for holding the edge of the blanks (~~-B21D 22/24 to B21D 22/30~~ take precedence; shaping over a die without external former ~~B21D 11/02-~~)
- B21D 26/00 Shaping without cutting otherwise than using rigid devices or tools or yieldable or resilient pads, i.e. applying fluid pressure or magnetic forces** (~~-stamping using resilient pads B21D 22/10-~~)
- U B21D 26/02 · by applying fluid pressure
- U B21D 26/021 · · Deforming sheet bodies
- B21D 26/031 · · · Mould construction (~~-B21D 26/025 - B21D 26/029~~ take precedence-)
- B21D 26/033 · · Deforming tubular bodies (~~-corrugating tubes by applying fluid pressure B21D 15/03 , B21D 15/10-~~)
- B21D 26/047 · · · Mould construction (~~-B21D 26/037 - B21D 26/045~~ take precedence-)
- U B21D 28/00 Shaping by press-cutting; Perforating**
- B21D 28/002 · {Drive of the tools (~~-B21D 28/007 and B21D 28/20~~ take precedence-)}
- B21D 28/02 · Punching blanks or articles with or without obtaining scrap (~~-cutting nails or pins from strips or sheet material B21G 3/26-~~); Notching
- B21D 28/14 · · Dies (~~-ejecting or stripping-off devices arranged in punching machines or tools B21D 45/00-~~)
- B21D 28/20 · · Applications of drives {for reducing noise or wear}

- B21D 31/00** Other methods for working sheet metal, metal tubes, metal profiles (~~deforming one surface of tubes helically by rolling [B21H 3/00](#) ; upsetting [B21J 5/08](#) ; working metal by removing material therefrom [B23](#) ; embossing [B44B](#)-)~~
- B21D 31/005 · {Incremental shaping or bending, e.g. stepwise moving a shaping tool along the surface of the workpiece (~~-[B21D 22/14](#) takes precedence-~~)}
- B21D 31/02 · Stabbing or piercing, e.g. for making sieves (~~-dimpling [B21D 22/04](#) ; perforating by punching [B21D 28/24](#)-)~~
- B21D 31/04 · Expanding other than provided for in groups [B21D 1/00](#) to [B21D 28/00](#) , e.g. for making expanded metal (~~-[B21D 47/00](#) takes precedence; enlarging tube ends [B21D 41/02](#)-)~~
- B21D 31/06 · Deforming sheet metal, tubes or profiles by sequential impacts, e.g. hammering, beating, peen forming (~~-forging hammers [B21J 7/00](#)-)~~
- B21D 33/00** Special measures in connection with working metal foils, e.g. gold foils (~~cutting or perforating of metal foil analogous to paper [B26](#)-)~~
- B21D 35/00** Combined processes according to ~~or processes combined with~~ methods covered by groups [B21D 1/00](#) to [B21D 31/00](#) (~~-[B21D 21/00](#) takes precedence-~~)
- B21D 35/002 · {Processes combined with methods covered by groups [B21D 1/00](#) to [B21D 31/00](#)}
- B21D 35/003 · · {Simultaneous forming, e.g. making more than one part per stroke (~~-[B21D 26/06](#) takes precedence-~~)}
- B21D 35/005 · · {characterized by the material of the blank or the workpiece (~~-[B21D 26/053](#) takes precedence-~~)}
- B21D 35/007 · · · {Layered blanks (~~-[B21D 22/203](#) takes precedence; joining superposed plates [B21D 39/031](#) , [B21D 39/034](#) , [B21D 39/035](#)-)~~
- B21D 37/00** Tools as parts of machines covered by this subclass (forms or constructions of tools uniquely adapted for particular operations, see the relevant groups for the operations)
- B21D 37/02 · Die constructions enabling assembly of the die parts in different ways (~~-[B21D 37/06](#) takes precedence-~~)
- U B21D 37/04 · Movable or exchangeable mountings for tools
- B21D 37/06 · · Pivotaly-arranged tools, e.g. disengageable (~~-die sets with dies pivoted to one another [B21D 37/12](#)-)~~
- B21D 37/18 · Lubricating, {e.g. lubricating tool and workpiece simultaneously} (~~-lubricating workpieces for deep-drawing [B21D 22/201](#)-)~~
- B21D 39/00** Application of procedures in order to connect objects or parts, e.g. coating with sheet metal otherwise than by plating ({ joining mitred profiles [B21D 53/745](#) ; } riveting [B21J](#); uniting components by forging or pressing to form integral members [B21K 25/00](#) ; welding [B23K](#); press-fitting, force-fitting, or shrinking in general [B23P 11/00](#) , [B21D 19/00](#) ; by adhesives [F16B 11/00](#) ; {Connections as such [F16L](#) , [F16B](#)}); Tube expanders
- B21D 39/04 · of tubes with tubes; of tubes with rods (~~-crimped pipe joints as such [F16L 13/14](#)-)~~
- B21D 39/042 · · {using explosives (~~-by explosive welding [B23K 20/08](#)-)~~
- B21D 41/00** Application of procedures in order to alter the diameter of tube ends (~~-[B21D 39/00](#) takes precedence; { plastic tubes [B29C 57/08](#) }~~)

- B21D 43/00** **Feeding, positioning or storing devices combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal, metal tubes or metal profiles; Associations therewith of cutting devices** ~~(-cutting devices associated with the tool, see the relevant group for the tool-)~~
- B21D 43/003 • {Positioning devices ~~(-B21D 28/04 and B21D 28/265 take precedence; stops B21D 43/26 ; centering moving strips B21D 43/023-)~~}
- U B21D 43/02 • Advancing work in relation to the stroke of the die or tool
- B21D 43/026 • • {-Combination of two or more feeding devices provided for in [B21D 43/04](#) to [B21D 43/18](#)-}
- U B21D 43/04 • • by means in mechanical engagement with the work
- B21D 43/05 • • • specially adapted for multi-stage presses~~(-B21D 43/145 takes precedence-)~~}
- B21D 43/08 • • • by rollers~~(-B21D 43/145 takes precedence-)~~}
- B21D 43/10 • • • by grippers~~(-B21D 43/055 , B21D 43/057 , B21D 43/145 take precedence-)~~}
- B21D 43/12 • • • by chains or belts~~(-B21D 43/145 takes precedence-)~~}
- B21D 43/20 • Storage arrangements; Piling or unpling ~~(-in general B65G , { B65H })~~
- U B21D 43/28 • Associations of cutting devices therewith
- B21D 43/285 • • {Devices for handling elongated articles, e.g. bars, tubes or profiles ~~(-B21D 43/282 , B21D 43/287 take precedence-)~~}
- B21D 43/287 • • {Devices for handling sheet or strip material ~~(-B21D 43/282 takes precedence-)~~}
- B21D 47/00 - B21D 55/00** **Processing sheet metal or metal tubes, or processing metal profiles according to any of groups B21D 1/00 - B21D 45/00 , in the manufacture of finished or semi-finished articles**
- B21D 49/00** **Sheathing or stiffening objects** ~~(-by winding wire or tape thereon [B65H 54/00](#) , [B65H 81/00](#) ; specially adapted for manufacturing conductors or cables [H01B 13/26](#)-)~~
- B21D 51/00** **Making hollow objects** ~~(-from thick-walled or non uniform tubes [B21K 21/00](#)-)~~
- B21D 51/02 • characterised by the structure of the objects~~(-B21D 51/26 takes precedence-)~~
- NOTE
Making hollow objects characterised both by their structure and by their use is classified only in group [B21D 51/16](#)
- B21D 51/14 • • Flattening hollow objects for transport or storage; Re-forming same ~~(-making tubes from doubled flat material [B21C 37/14](#)-)~~
- B21D 51/16 • characterised by the use of the objects ~~(-making heat exchangers [B21D 53/02](#)-)~~
- B21D 51/26 • • cans or tins; Closing same in a permanent manner ~~(-making outlet arrangements [B21D 51/38](#) ; welding or soldering [B23K](#)-)~~
- B21D 51/2607 • • • {Locally embossing the walls of formed can bodies ~~(-B44B 5/00 , B44C 1/24 , B44C 3/085 take precedence; bulging [B21D 51/2646](#)-)~~}
- U B21D 51/38 • • Making inlet or outlet arrangements of cans, tins, baths, bottles, or other vessels; Making can ends; Making closures
- B21D 51/44 • • • Making closures, e.g. caps ~~(-folded of thin metal foils in the way of making paper caps [B31D 5/00](#) ; making closures in conjunction with applying same [B67B](#)-)~~
- B21D 51/46 • • • • Placing sealings or sealing material~~(-moulding plastic sealing material into closure members [B29C 70/80](#)-)~~}

B21D 53/00	Making other particular articles (making wire fabrics B21F; making chains or chain parts B21L)
B21D 53/02	· heat exchangers {or parts thereof}, e.g. radiators, condensers {fins, headers} (-making finned or ribbed tubes by fixing strip material or the like to tubes B21C 37/22 -)
B21D 53/08	· · of both metal tubes and sheet metal (-connecting tubes in openings B21D 39/06 -)
U B21D 53/26	· wheels or the like
B21D 53/264	· · {wheels out of a single piece (- B21D 53/261 takes precedence-)}
B21D 53/265	· · {parts of wheels (- B21D 53/28 , B21D 53/30 take precedence-)}
U B21D 53/38	· locksmith`s goods, e.g. handles
B21D 53/42	· · keys{-making keys by combined operations B23P 15/005 -}
U B21D 53/60	· cutlery wares; garden tools or the like
B21D 53/64	· · knives; scissors; cutting blades (- B21D 53/72 takes precedence; handle portions B21D 53/70 -)
B21D 53/66	· · spades; shovels (-handle portions B21D 53/70 -)
B21D 53/68	· · rakes, garden forks, or the like (-handle portions B21D 53/70 -)
B21D 53/70	· · handle portions (- B21D 53/72 takes precedence-)
B21D 53/92	· other parts for aircraft
B21D 55/00	Safety devices protecting the machine or the operator, specially adapted for apparatus or machines dealt with in this subclass (-for presses in general B30B ; safety devices in general F16P-)

Project: N/A (B21F)

U B21F 1/00	Bending wire other than coiling; Straightening wire
B21F 1/004	· {-by means of press-type tooling}
B21F 1/006	· {-in 3D with means to rotate the tools about the wire axis}
B21F 1/008	· {-in 3D with means to rotate the wire about its axis}
U B21F 1/02	· Straightening
B21F 1/023	· · {-in a device rotating about the wire axis}
U B21F 5/00	Upsetting wire { or pressing operations affecting the wire cross-section}(in the manufacture of nails or pins B21G 3/12)
B21F 5/005	· {-Upsetting wire}
U B21F 9/00	Straining wire (straining pre-stressing wires for concrete E04G 21/12; connections or attachments adapted for straining F16G 11/00; {bundling machines or tools B65B 13/00})
B21F 9/002	· {-to maintain tension in the wire, e.g. to pull the wire taut}
B21F 9/005	· {-to affect the material properties of the wire}
B21F 9/007	· {-to induce a plastic deformation of the wire}
U B21F 23/00	Feeding wire in wire-working machines or apparatus (applicable also to feeding rods or strips B21D 43/00)
U B21F 23/005	· {Feeding discrete lengths of wire or rod}
B21F 23/007	· · {-using pick-up means, e.g. for isolating a predefined number of wires from a bundle}
U B21F 35/00	Making springs from wire (by coiling wire B21F 3/00; making resilient rings B21F 37/02)

- B21F 35/003 · {-Multi-filament springs, e.g. made of stranded, braided, cable or multi-filament material}
- B21F 35/006 · {-Double twist coil springs}

U B21F 45/00 Wire-working in the manufacture of other particular articles (of pins, needles, nails, hairpins [B21G](#); of chains [B21L](#); { for semiconductor devices [H01L 24/42](#)})

- B21F 45/006 · {-of concrete reinforcement fibres}
- B21F 45/008 · {-of medical instruments, e.g. stents, corneal rings (medical science [A61](#))}

Project: N/A (B21H)

U B21H 5/00 Making gear wheels, {racks, spline shafts or worms}

- B21H 5/02 · with cylindrical outline, {e.g. by means of die rolls-(worms [B21H 5/005](#))}
- B21H 5/025 · · {-Internally geared wheels}

U B21H 7/00 Making articles not provided for in the preceding groups, e.g. agricultural tools, dinner forks, knives, spoons (nails, pins [B21G 3/30](#))

- B21H 7/002 · {-Fasteners, rivets}
- U B21H 7/18 · grooved pins; Rolling grooves, e.g. oil grooves, in articles {([B21H 5/00](#) takes precedence)}
- U B21H 7/182 · · {-Rolling annular grooves}
- B21H 7/185 · · · {-Filet rolling, e.g. of crankshafts}

U B21H 8/00 Rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects {e.g. checkered sheets}

- B21H 8/005 · {-Embossing sheets or rolls}

Project: N/A (B21J)

B21J 1/00 Preparing metal stock { or similar ancillary operations prior, during or post forging, e.g. heating or cooling-(pretreatment for rolling [B21B 1/02](#), [B21B 15/0035](#))}

- B21J 1/003 · {-Selecting material}
- B21J 1/006 · · {-Amorphous metal}
- U B21J 1/02 · Preliminary treatment of metal stock without particular shaping, e.g. salvaging segregated zones, forging or pressing in the rough (modifying the physical properties by deformation [C21D 7/00](#), [C22F 1/00](#))
- B21J 1/025 · · {-affecting grain orientation}

U B21J 5/00 Methods for forging, hammering, or pressing (for working sheet-metal or metal tubes, rods, or profiles [B21D](#); for working wire [B21F](#)); Special equipment or accessories therefor

- B21J 5/002 · {-Hybrid process, e.g. forging following casting}
- B21J 5/004 · {-Thixotropic process, i.e. forging at semi-solid state}
- B21J 5/006 · {-using ultrasonic waves}
- B21J 5/008 · {-Incremental forging}
- U B21J 5/02 · Die forging; Trimming by making use of special dies; { Punching during forging}
- B21J 5/022 · · {-Open die forging}
- B21J 5/025 · · · {-Closed die forging}
- B21J 5/027 · · · {-Trimming}
- U B21J 5/06 · for performing particular operations

- B21J 5/063
 - · {-Friction heat forging (friction heat riveting [B21J 15/027](#))}
- B21J 5/066
 - · · {-Flow drilling}
- U B21J 9/00 Forging presses**
- U B21J 9/02
 - Special design or construction
- B21J 9/027
 - · {-with punches moving along auxiliary lateral directions ([B21J 13/025](#) takes precedence)}
- U B21J 13/00 Details of machines for forging, pressing, or hammering**
- U B21J 13/02
 - Dies or mountings therefor
- B21J 13/025
 - · {-Dies with parts moving along auxiliary lateral directions}
- U B21J 15/00 Riveting**
- U B21J 15/02
 - Riveting procedures
- B21J 15/027
 - · {-Setting rivets by friction heating}
- U B21J 15/04
 - · Riveting hollow rivets mechanically
- B21J 15/041
 - · · {-by pushing a drive-pin}
- B21J 15/043
 - · · {-by pulling a mandrel}
- B21J 15/045
 - · · · {-and swaging locking means, i.e. locking the broken off mandrel head to the hollow rivet}
- B21J 15/048
 - · · {-Setting self-drilling hollow rivets}
- B21J 15/06
 - · {-Riveting hollow rivets by means of hydraulic, liquid, or gas pressure (portable riveters [B21J 15/105](#))}
- U B21J 15/10
 - Riveting machines (electric heating elements [H05B](#))
- B21J 15/105
 - · {-Portable riveters (pliers for riveting [B21J 15/386](#))}
- U B21J 15/14
 - · specially adapted for riveting specific articles, e.g. brake lining machines
- B21J 15/142
 - · · {-Aerospace structures}
- B21J 15/145
 - · · {-Turbines}
- B21J 15/147
 - · · {-Composite articles}
- U B21J 15/28
 - · Control devices specially adapted to riveting machines not restricted to one of the preceding sub-groups
- B21J 15/285
 - · · {-for controlling the rivet upset cycle}
- U B21J 15/30
 - · Particular elements, e.g. supports; Suspension equipment specially adapted for portable riveters
- U B21J 15/32
 - · · Devices for inserting or holding rivets in position with or without feeding arrangements
- B21J 15/323
 - · · · {-using a carrier strip}
- B21J 15/326
 - · · · {-Broken-off mandrel collection}
- U B21J 15/38
 - Accessories for use in connection with riveting, e.g. pliers for upsetting; Hand tools for riveting
- B21J 15/383
 - · {-Hand tools for riveting}
- B21J 15/386
 - · {-Pliers for riveting}

Project: N/A (B21K)

- U B21K 1/00 Making machine elements**
- U B21K 1/06
 - axles or shafts
- B21K 1/063
 - · {-hollow (hollow racks [B21K 1/768](#))}
- B21K 1/066
 - · {-splined}

- U B21K 1/18 · pistons or plungers
- B21K 1/185 · · {-with cooling channels}
- U B21K 1/20 · valve parts
- B21K 1/205 · · {-rocker arms}
- U B21K 1/28 · wheels; discs
- U B21K 1/30 · · with gear-teeth
- B21K 1/305 · · · {-helical}
- U B21K 1/76 · elements not mentioned in one of the preceding groups
- U B21K 1/762 · · {Coupling members for conveying mechanical motion, e.g. universal joints}
- B21K 1/763 · · · {-Inner elements of coupling members}
- B21K 1/765 · · · {-Outer elements of coupling members}
- U B21K 1/767 · · {Toothed racks}
- B21K 1/768 · · · {-hollow}
- U B21K 25/00 Uniting components to form integral members, e.g. turbine wheels and shafts, caulks with inserts, with or without shaping of the components (uniting by interference- or press-fitting [B23P 11/02](#), [B21K 19/02](#))**
- B21K 25/005 · {-by friction heat forging ([B21J 15/027](#) takes precedence; friction heat forging per se [B21J 5/063](#))}

Project: N/A (B21L)

- U B21L 15/00 Finishing or dressing chains or chain links, e.g. removing burr material, calibrating ([B21L 9/06](#) takes precedence)**
- B21L 15/005 · {-Pre-stretching chains}

Project: N/A (B22C)

- U B22C 7/00 Patterns; Manufacture thereof so far as not provided for in other classes**
- U B22C 7/06 · Core boxes
- B22C 7/065 · · {-Venting means}

Project: N/A (B22D)

- U B22D 11/00 Continuous casting of metals, i.e. casting in indefinite lengths (metal drawing, metal extruding [B21C](#))**
- U B22D 11/06 · into moulds with travelling walls, e.g. with rolls, plates, belts, caterpillars
- U B22D 11/0637 · · {Accessories therefor}
- B22D 11/064 · · · {-for supplying molten metal (supplying molten metal to open-ended moulds [B22D 11/10](#))}
- U B22D 37/00 Controlling or regulating the pouring of molten metal from a casting melt-holding vessel ([B22D 39/00](#), [B22D 41/00](#) take precedence; specially adapted to particular processes or machines, see the relevant groups of this subclass){ [B22D 11/18](#) takes precedence}**
- B22D 37/005 · {-Shielding the molten metal stream ([B22D 11/106](#), [B22D 41/50](#) take precedence)}

Project: N/A (B22F)

- U B22F 1/00** **Special treatment of metallic powder, e.g. to facilitate working, to improve properties {(treatment of powder by mechanical means, e.g. by grinding, milling, rolling [B22F 9/04](#))}; Metallic powders per se, e.g. mixtures of particles of different composition ([C04](#), [C08](#) take precedence; { amorphous powder [B22F 9/002](#)})**
- U B22F 1/0003 · {Metallic powders per se; Mixtures of metallic powders; Metallic powders mixed with a lubricating or binding agent (making ferrous alloys using a mixture of prealloyed powders [C22C 33/0207](#))}
- U B22F 1/0007 · · {Metallic powder characterised by its shape or structure, e.g. fibre structure }
- U B22F 1/0011 · · · {Metallic powder characterised by size or surface area only}
- U B22F 1/0018 · · · · {Nanometer sized particles}
- B22F 1/0022 · · · · · {-Dispensions or suspensions thereof}
- B22F 1/0025 · · · · · {-Nanofibres or nanotubes}
- B22F 1/004 · · · {-Fibre structure ([B22F 1/0025](#) takes precedence)}
- B22F 1/0055 · · · {-Flake form powders}
- U B22F 1/0059 · · {Metallic powders mixed with a lubricating or binding agent or organic material}
- B22F 1/0062 · · · {-Powders coated with organic material}
- B22F 1/007 · · · {-Non-organic or metal salt binders or lubricants}
- B22F 1/0074 · · · {-Organic materials comprising a solvent e.g. for slip casting}
- B22F 1/0077 · · · {-Mixtures obtained by warm mixing}
- B22F 1/0081 · {-Special treatment of metallic powder, e.g. to facilitate working, to improve properties (coating with organic material [B22F 1/0062](#))}
- U B22F 3/00** **Manufacture of workpieces or articles from metallic powder characterised by the manner of compacting or sintering; Apparatus specially adapted therefor; {Presses and furnaces}**
- U B22F 3/02 · Compacting only
- B22F 3/04 · · by applying fluid pressure { e.g. by cold isostatic pressing [[CIP](#)]-}
- U B22F 3/10 · Sintering only
- B22F 3/105 · · by using electric current {other than for infra-red radiant energy}, laser radiation or plasma ([B22F 3/11](#) takes precedence); {by ultrasonic bonding-([B22F 3/115](#) takes precedence)}
- B22F 3/1055 · · · {-Selective sintering, i.e. stereolithography (selective sintering of powdered plastics [B29C 67/0077](#))}
- U B22F 3/12 · Both compacting and sintering (by forging [B22F 3/17](#))
- U B22F 3/14 · · simultaneously
- U B22F 3/15 · · · Hot isostatic pressing
- B22F 3/156 · · · · {-by a pressure medium in liquid or powder form}
- U B22F 3/16 · · in successive or repeated steps
- B22F 3/162 · · · {-Machining, working after consolidation}
- B22F 3/164 · · · {-Partial deformation or calibration}
- B22F 3/168 · · · · {-Local deformation}
- U B22F 3/22 · for producing castings from a slip
- B22F 3/225 · · {-by injection molding}
- B22F 3/227 · · {-by organic binder assisted extrusion}

- U B22F 5/00** **Manufacture of workpieces or articles from metallic powder characterised by the special shape of the product**
- B22F 5/008 · {-of engine cylinder parts or of piston parts other than piston rings (of piston rings [B22F 5/02](#))}
- B22F 5/009 · {-of turbine components other than turbine blades (of turbine blades [B22F 5/04](#))}
- U B22F 5/08 · of toothed articles, e.g. gear wheels; of cam discs
- B22F 5/085 · · {-with helical contours}
- U B22F 5/10 · of articles with cavities or holes, not otherwise provided for in the preceding subgroups
- B22F 5/106 · · {-Tube or ring forms}
- B22F 7/00** **Manufacture of composite layers, workpieces, or articles, comprising metallic powder, by sintering the powder, with or without compacting { wherein at least one part is obtained by sintering or compression-(application of coating layers by use of metal powders, see [C23C](#))}**
- U B22F 9/00** **Making metallic powder or suspensions thereof**
- U B22F 9/02 · using physical processes
- U B22F 9/06 · · starting from liquid material
- U B22F 9/08 · · · by casting, e.g. through sieves or in water, by atomising or spraying (using electric discharge [B22F 9/14](#))
- B22F 9/082 · · · · {-atomising using a fluid (using centrifugal force [B22F 9/10](#))}

Project: N/A (B23B)

- U B23B 29/00** **Holders for non-rotary cutting tools ([B23B 27/12](#) takes precedence); Boring bars or boring heads; Accessories for tool holders**
- U B23B 29/03 · Boring heads
- U B23B 29/034 · · with tools moving radially, e.g. for making chamfers or undercuttings
- U B23B 29/03403 · · · {radially adjustable before starting manufacturing}
- B23B 29/03407 · · · · {-by means of screws and nuts}
- B23B 29/0341 · · · · · {-Cartridges}
- B23B 29/03414 · · · · · {-adjustment of the tool placed in the hole being possible}
- B23B 29/03417 · · · · {-by means of inclined planes}
- B23B 29/03421 · · · · {-by pivoting the tool carriers or by elastic deformation}
- B23B 29/03425 · · · · {-by means of gears and racks}
- B23B 29/03428 · · · · {-by means of an eccentric}
- U B23B 29/03432 · · · {radially adjustable during manufacturing}
- B23B 29/03435 · · · · {-by means of screws and nuts}
- B23B 29/03439 · · · · · {-Boring and facing heads}
- B23B 29/03442 · · · · · {-Grooving tool}
- B23B 29/03446 · · · · {-by means of inclined planes}
- B23B 29/0345 · · · · · {-Boring and facing heads}
- B23B 29/03453 · · · · · {-Grooving tool}
- B23B 29/03457 · · · · {-by pivoting the tool carriers or by elastic deformation}
- B23B 29/0346 · · · · · {-Boring and facing heads}
- B23B 29/03464 · · · · · {-Grooving tool}

- B23B 29/03467 {-by means of gears and racks}
- B23B 29/03471 {-Boring and facing heads}
- B23B 29/03475 {-Grooving tool}
- B23B 29/03478 {-by means of an eccentric}
- B23B 29/03482 {-Boring and facing heads}
- B23B 29/03485 {-Grooving tool}
- B23B 29/03489 {-Adjustment means not specified or not covered by the groups [B23B 29/03435](#) to [B23B 29/03478](#)}
- B23B 29/03492 {-Boring and facing heads}
- B23B 29/03496 {-Grooving tool}
- U B23B 31/00 Chucks** **{{(allowing axial oscillation of percussion tool bits [B25D 17/08](#)); Expansion mandrels; Adaptations thereof for remote control (faceplates [B23Q 1/50](#); devices for securing work or tools to spindles in general [B23Q 3/12](#); rotary devices holding by magnetic and/or electrical force acting directly on work [B23Q 3/152](#))}}**
- U B23B 31/02 . Chucks
- U B23B 31/10 . . characterised by the retaining or gripping devices or their immediate operating means
- NOTE
Group [B23B 31/12](#) takes precedence over groups { [B23B 31/101](#), [B23B 31/102](#),} [B23B 31/103](#) to [B23B 31/117](#)
- U B23B 31/11 . . . Retention by threaded connection
- U B23B 31/1107 {for conical parts}
- B23B 31/1115 {-using conical threads}
- B23B 31/1122 {-using cylindrical threads}
- U B23B 31/117 . . . Retention by friction only, e.g. using springs, resilient sleeves, tapers
- B23B 31/1179 {-using heating and cooling}
- U B23B 31/12 . . . Chucks with simultaneously-acting jaws, whether or not also individually adjustable
- U B23B 31/20 Longitudinally-split sleeves, e.g. collet chucks
- B23B 31/208 {-with a tool positioning stop (axial positioning of the tool being adjustable [B23B 31/028](#))}
- U B23B 33/00 Drivers; Driving centres, Nose clutches, e.g. lathe dogs**
- B23B 33/005 . {-Drivers with driving pins or the like}
- U B23B 51/00 Tools for drilling machines** **{{(for drilling wood [B27G 15/00](#); for drilling stone or stone-like materials, e.g. brick, concrete, glass [B28D 1/00](#); drill bits for earth or rock drilling [E21B 10/00](#))}}**
- U B23B 51/04 . Drills for trepanning
- U B23B 51/0486 . . {with lubricating or cooling equipment ([B23B 51/042](#) takes precedence)}
- B23B 51/0493 . . . {-with exchangeable cutting inserts, e.g. able to be clamped}
- U B23B 2222/00 Materials of tools or workpieces composed of metals, alloys or metal matrices**
- B23B 2222/84 . Steel (-high speed steel [B23B 2222/32](#), stainless steel [B23B 2222/80](#))
- Project: N/A (B23C)**
- U B23C 5/00 Milling-cutters (for cutting gear-teeth [B23F 21/12](#))**

- U B23C 5/02 · characterised by the shape of the cutter
- U B23C 5/10 · · Shank-type cutters, i.e. with an integral shaft
- U B23C 5/1009 · · · {Ball nose end mills}
- B23C 5/1027 · · · · {-with one or more removable cutting inserts}
- B23C 5/1036 · · · · · {-having a single cutting insert, the cutting edges of which subtend 180 degrees}
- B23C 5/1045 · · · · · {-having a cutting insert, the cutting edge of which subtends substantially 90 degrees}
- U B23C 5/16 · characterised by physical features other than shape
- U B23C 5/20 · · with removable cutter bits or teeth {or cutting inserts}
- U B23C 5/22 · · · Securing arrangements for bits or teeth {or cutting inserts}
- B23C 5/2204 · · · · {-with cutting inserts clamped against the walls of the recess in the shank by a clamping member acting upon the wall of a hole in the insert}
- B23C 5/223 · · · · · {-for plate-like cutting inserts fitted on a shank, fixed in the cutter body}
- B23C 5/2239 · · · · {-with cutting inserts clamped by a clamping member acting almost perpendicular on the cutting face}
- B23C 5/2256 · · · · · {-for plate-like cutting inserts fitted on a shank, fixed in the cutter body}
- U B23C 5/2265 · · · · {by means of a wedge}
- B23C 5/2286 · · · · · {-for plate-like cutting inserts fitted on a shank, fixed in the cutter body}
- U B23C 5/24 · · · · adjustable
- B23C 5/2403 · · · · · {-with cutting inserts clamped against the walls of the recess in the shank by a clamping member acting upon the wall of a hole in the insert}
- B23C 5/2413 · · · · · · {-for plate-like cutting inserts fitted on a shank, fixed in the cutter body}
- B23C 5/242 · · · · · {-with cutting inserts clamped by a clamping member acting almost perpendicularly on the cutting face}
- B23C 5/2431 · · · · · · {-for plate-like cutting inserts fitted on a shank, fixed in the cutter body}
- U B23C 5/2437 · · · · · {clamping by means of a wedge}
- B23C 5/2448 · · · · · · {-for plate-like cutting inserts fitted on a shank, fixed in the cutter body}
- B23C 5/2475 · · · · · {-the adjusting means being distance elements, e.g. shims or washers}
- U B23C 5/26 · Securing milling cutters to the driving spindle
- B23C 5/265 · · {-by fluid pressure means}

Project: N/A (B23D)

- U B23D 29/00 **Hand-held metal-shearing or metal-cutting devices (with nibbling action [B23D 27/02](#); hand-operated devices for metal-cutting otherwise than by shearing [B26B](#))**
- U B23D 29/02 · Hand-operated metal-shearing devices
- B23D 29/023 · · {-for cutting wires}
- U B23D 59/00 **Accessories specially designed for sawing machines or sawing devices (lubricating or cooling machine tools in general [B23Q 11/12](#))**
- U B23D 59/001 · {Measuring or control devices, e.g. for automatic control of work feed pressure on band saw blade (measuring in general [G01](#); controlling in general [G05](#))}
- U B23D 59/002 · · {for the position of the saw blade ([B27B 5/36](#) and [B27B 9/02](#) take precedence)}

B23D 59/003 . . . {-Indicating the cutting plane on the workpiece, e.g. by projecting a laser beam}

U B23D 61/00 Tools for sawing machines or sawing devices (tools for trepanning [B23B 51/04](#)); Clamping devices for these tools

B23D 61/006 . {-Oscillating saw blades}

Project: N/A (B23F)

U B23F 17/00 Special methods or machines for making gear teeth, not covered by the preceding groups

B23F 17/003 . {-for dry cutting}

U B23F 21/00 Tools specially adapted for use in machines for manufacturing gear teeth

B23F 21/005 . {-with plural tools on a common axis}

Project: N/A (B23G)

U B23G 1/00 Thread cutting; Automatic machines specially designed therefor

U B23G 1/44 . Equipment or accessories specially designed for machines or devices for thread cutting

U B23G 1/46 . . for holding the threading tools {[B23B 31/083](#) takes precedence}

B23G 1/465 . . . {-comprising arrangements for reversing the rotation of the tool}

Project: N/A (B23K)

B23K SOLDERING OR UNSOLDERING; WELDING; CLADDING OR PLATING BY SOLDERING OR WELDING; CUTTING BY APPLYING HEAT LOCALLY, e.g. FLAME CUTTING; WORKING BY LASER BEAM (-making metal-coated products by extruding metal [B21C 23/22](#) ; building up linings or coverings by casting [B22D 19/08](#) ; casting by dipping [B22D 23/04](#) ; manufacture of composite layers by sintering metal powder [B22F 7/00](#) ; arrangements on machine tools for copying or controlling [B23Q](#); covering metals or covering materials with metals, not otherwise provided for [C23C](#); burners [F23D](#)-)

NOTE

This subclass covers also electric circuits specially adapted for the purposes covered by the title of the subclass.

In this subclass, the following term is used with the meaning indicated:
"soldering" means uniting metals using solder and applying heat without melting either of the parts to be united

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

B23K 35/04	-	B23K 35/20	covered by	
B23K 35/0205	-	B23K 35/0294	B23K 35/363	"
B23K 35/3601	-	B23K 35/3618		

B23K 1/00 - B23K 3/00 Soldering, e.g. brazing, or unsoldering (essentially requiring the use of welding machines or welding equipment, see the relevant groups for the welding machines or welding equipment)

B23K 1/00 Soldering, e.g. brazing, or unsoldering (-[B23K 3/00](#) takes precedence; characterised only by the use of special materials or media [B23K 35/00](#) ; dip or wave soldering in the manufacture of printed circuits [H05K 3/34](#)-)

B23K 1/008 . Soldering within a furnace (-[B23K 1/012](#) takes precedence-)

- B23K 1/14 · specially adapted for soldering seams (-making tubes involving operations other than soldering [B21C-](#))
- B23K 1/20 · Preliminary treatment of work or areas to be soldered, e.g. in respect of a galvanic coating (-preparation of surfaces in particular ways, see the relevant classes for the treatments or the materials treated, e.g. [C04B](#) , [C23C-](#))
- B23K 3/00** **Tools, devices, or special appurtenances for soldering, e.g. brazing, or unsoldering, not specially adapted for particular methods (-materials used for soldering [B23K 35/00-](#))**
- U B23K 3/02 · Soldering irons; Bits
- B23K 3/028 · · {Devices for cleaning soldering iron tips (-[B23K 3/027](#) takes precedence-)}
- U B23K 3/03 · · electrically heated
- B23K 3/0315 · · · {Quick-heating soldering irons having the tip-material forming part of the electric circuit (-[B23K 3/0323](#) takes precedence-)}
- B23K 3/0376 · · · {comprising carbon heating elements or electrodes (-[B23K 3/0384](#) and [B23K 3/0392](#) take precedence-)}
- B23K 3/04 · Heating appliances (-soldering lamps or blowpipes [F23D](#) ; electric heating in general [H05B-](#))
- U B23K 3/06 · Solder feeding devices; Solder melting pans
- U B23K 3/0607 · · {Solder feeding devices}
- B23K 3/0638 · · · {for viscous material feeding, e.g. solder paste feeding (-[B23K 3/0623](#) takes precedence-)}
- B23K 3/08 · Auxiliary devices therefor (-cleaning pipes or tubes or systems of pipes or tubes, e.g. before soldering, [B08B 9/02-](#))
- U B23K 5/00** **Gas flame welding**
- B23K 5/003 · {the welding zone being shielded against the influence of the surrounding atmosphere (-selection of media [B23K 35/38-](#))}
- B23K 5/02 · Seam welding (-making tubes involving operations other than welding [B21C-](#))
- U B23K 5/12 · taking account of the properties of the material to be welded
- B23K 5/14 · · of non-ferrous metals (-[B23K 5/16](#) takes precedence-)
- U B23K 5/22 · Auxiliary equipment, e.g. backings, guides
- B23K 5/24 · · Arrangements for supporting torches (-not restricted to flame welding [B23K 37/02-](#))
- B23K 7/00** **Cutting, scarfing, or desurfacing by applying flames{(-thermal deburring [B23D 79/005-](#))}**
- B23K 7/10 · Auxiliary devices, e.g. for guiding or supporting the torch (-guiding means applicable to other metal-working machines [B23Q-](#))
- B23K 9/00** **Arc welding or cutting (-electro-slag welding [B23K 25/00](#) ; welding transformers [H01F](#) ; welding generators [H02K-](#))**
- U B23K 9/0026 · {specially adapted for particular articles or work}
- B23K 9/0043 · · {Locally welding a thin plate to a thick piece (-spot arc welding [B23K 9/007-](#))}
- U B23K 9/02 · Seam welding; Backing means; Inserts
- B23K 9/038 · · using moulding means (-not restricted to arc welding [B23K 37/06-](#))
- U B23K 9/06 · Arrangements or circuits for starting the arc, e.g. by generating ignition voltage, or for stabilising the arc
- U B23K 9/067 · · Starting the arc
- U B23K 9/0672 · · · {without direct contact between electrodes}

- B23K 9/0673 . . . {Ionisation of the arc gap by means of a tension with a step front (*pulses or high frequency tensions*)} (~~pulses or high frequency tensions~~)
- B23K 9/08 . Arrangements or circuits for magnetic control of the arc { stabilising of the arc position by magnetic means [B23K 9/0737](#) }
- U B23K 9/10 . Other electric circuits therefor; Protective circuits; Remote controls
- U B23K 9/1006 . . {Power supply}
- B23K 9/1043 . . . {characterised by the electric circuit (~~B23K 9/1012 takes precedence~~)}
- B23K 9/105 {by using discharge tubes or mechanical contactors (~~B23K 9/1068 takes precedence~~)}
- B23K 9/1056 {by using digital means (~~B23K 9/1068 takes precedence~~)}
- U B23K 9/12 . Automatic feeding or moving of electrodes or work for spot or seam welding or cutting
- U B23K 9/124 . . {Circuits or methods for feeding welding wire}
- B23K 9/125 . . . {Feeding of electrodes (~~for stabilising arc [B23K 9/073](#)~~)}
- B23K 9/126 . . {Controlling the spatial relationship between the work and the gas torch (~~between wire tip and piece [B23K 9/073](#)~~)}
- B23K 9/127 . . Means for tracking lines during arc welding or cutting (~~copying in general [B23Q 35/00](#)~~)
- B23K 9/16 . making use of shielding gas { selection of media [B23K 35/38](#) }
- U B23K 9/20 . Stud welding
- B23K 9/207 . . {Features related to studs (~~welding studs per se [B23K 35/0288](#)~~)}
- B23K 9/24 . Features related to electrodes (~~form or composition of electrodes [B23K 35/00](#)~~)
- B23K 9/28 . . Supporting devices for electrodes (~~not restricted to arc welding or cutting [B23K 37/02](#)~~)
- B23K 9/287 . . . {Supporting devices for electrode holders (~~not restricted to arc welding [B23K 37/02](#)~~)}
- B23K 9/30 . . . Vibrating holders for electrodes (~~B23K 9/022 takes precedence~~)
- B23K 9/32 . Accessories (~~earthing connections [H01R](#)~~)
- B23K 9/321 . . {Protecting means (~~protecting means in general [F16P 1/06](#)~~)}
- B23K 9/322 . . . {Head protecting means (~~masks, shields or hoods for weldersp [A61F 9/06](#)~~)}
- B23K 9/323 . . {Combined coupling means, e.g. gas, electricity, water or the like (~~electrical only [H01R](#)~~)}
- B23K 9/327 . . {Means for transporting supplies (~~carriages in general [B23K 37/02](#)~~)}
- U B23K 10/00 Welding or cutting by means of a plasma**
- B23K 10/003 . {Scarfig, desurfacing or deburring (~~by applying flames [B23K 7/06](#)~~)}
- B23K 10/006 . {Control circuits therefor (~~circuits for plasma torches [H05H 1/36](#)~~)}
- U B23K 11/00 Resistance welding; Severing by resistance heating**
- B23K 11/0006 . {the welding zone being shielded against the influence of the surrounding atmosphere (~~selection of media [B23K 35/38](#)~~)}
- U B23K 11/002 . {specially adapted for particular articles or work}
- U B23K 11/004 . . {Welding of a small piece to a great or broad piece}
- U B23K 11/0046 . . . {the extremity of a small piece being welded to a base, e.g. cooling studs or fins to tubes or plates}
- B23K 11/0053 {Stud welding, i.e. resistive (~~with an arc [B23K 9/20](#)~~)}
- U B23K 11/008 . . {Manufacturing of metallic grids or mats by spot welding}

- B23K 11/0086
 - • • {Grids or mats used in concrete structures (~~B23K 11/11~~ takes precedence-)}
- B23K 11/0093
 - • {Welding of honeycomb sandwich structures (~~brazing of honeycomb sandwich structure B23K 1/0014-~~)}
- U B23K 11/16
 - taking account of the properties of the material to be welded
- B23K 11/18
 - • of non-ferrous metals (~~B23K 11/20~~ takes precedence-)
- U B23K 11/24
 - Electric supply or control circuits therefor
- B23K 11/241
 - • {Electric supplies (~~B23K 11/248~~ takes precedence-)}
- B23K 11/245
 - • • {using a stepping counter in synchronism with the welding pulses (~~electromagnetic counters G06M-~~)}
- U B23K 11/25
 - • Monitoring devices
- U B23K 11/252
 - • • {using digital means}
- B23K 11/255
 - • • • {the measured parameter being a force (~~B23K 11/253~~ takes precedence-)}
- B23K 11/30
 - Features relating to electrodes (~~form or composition of electrodes B23K 35/00-~~)
- B23K 11/3054
 - • {Cooled electrodes (~~B23K 11/3018~~ , ~~B23K 11/3045~~ take precedence-)}
- B23K 11/31
 - • Electrode holders {and actuating devices therefor}(~~not restricted to resistance welding or severing by resistance heating B23K 37/02-~~)
- B23K 11/36
 - Auxiliary equipment (~~B23K 11/31~~ takes precedence-)
- U B23K 13/00** **Welding by high-frequency current heating**
- B23K 13/04
 - by conduction heating(~~B23K 13/02~~ takes precedence-)}
- B23K 13/06
 - characterised by the shielding of the welding zone against influence of the surrounding atmosphere (~~selection of media B23K 35/38-~~)
- B23K 13/08
 - Electric supply or control circuits therefor
- B23K 15/00** **Electron-beam welding or cutting (~~electron- or ion- beam tubes H01J 37/00-~~)**
- B23K 15/06
 - within a vacuum chamber (~~B23K 15/04~~ takes precedence-)
- U B23K 20/00** **Non-electric welding by applying impact or other pressure, with or without the application of heat, e.g. cladding or plating**
- B23K 20/002
 - {specially adapted for particular articles or work (~~B23K 20/129~~ takes precedence-)}
- B23K 20/02
 - by means of a press; {Diffusion bonding(~~B23K 20/001~~ , ~~B23K 20/04~~ take precedence-)}
- U B23K 20/12
 - the heat being generated by friction; Friction welding
- U B23K 20/122
 - • {using a non-consumable tool, e.g. friction stir welding}
- B23K 20/127
 - • • {friction stir welding involving a mechanical connection (~~forged connections B21K 25/005~~ ; riveted connections ~~B21J 15/027-~~)}
- B23K 20/14
 - Preventing or minimising gas access, or using protective gases or vacuum during welding (~~formed by material interposed between workpieces B23K 20/18-~~)
- B23K 25/00** **Slag welding, i.e. using a heated layer or mass of powder, slag, or the like in contact with the material to be joined (~~B23K 23/00~~ takes precedence; submerged-arc welding ~~B23K 9/18-~~)**

- B23K 26/00** Working by laser beam, e.g. welding, cutting, boring (-lasers per se [H01S 3/00](#) ; { laser assisted deposition [C23C](#); laser inspection or alignment [G01B](#); laser sintering of metallic powder [B22F 3/105](#) , of plastics [B29C 67/00](#) , of glass [C03B 19/06](#) , of ceramics [C04B 35/64](#) ; applying identification marks by laser [B41M 5/24](#))}
- B23K 26/0006 · {taking account of the properties of the material involved (-[B23K 26/20](#) , [B23K 26/36](#) take precedence-)}
- B23K 26/0021 · · {Non-metallic material (-laser surface treatment of glass not in the form of fibres or filaments [C03C 23/0025](#) , of glass in the form of fibres or filaments [C03C 25/6233](#)-)}
- U B23K 26/0024 · · · {Organic material}
- B23K 26/0027 · · · · {Material from living organisms, e.g. skin (-surgical instruments, devices or methods for applying laser energy to the body [A61B 18/20](#) ; dental laser [A61C 1/0046](#) ; eye surgery using laser [A61F 9/008](#)-)}
- B23K 26/0066 · {for surface treatment (-for changing the physical structure of ferrous metals or alloys [C21D](#), of non-ferrous metals or alloys [C22E](#); for alloying [C23C](#); annealing crystalline material [C30B 33/02](#) ; laser treatment of semiconductors [H01L](#)-)}
- B23K 26/0069 · · {Laser shock processing (-modifying the physical properties of ferrous metals by laser shock processing [C21D 10/005](#)-)}
- B23K 26/0081 · · {by melting (-laser re-melting of metals by wave energy [C22B 9/22](#) ; laser melting of glass [C03C](#); laser melting for crystal growth [C30B](#)-)}
- B23K 26/009 · {using a non-absorbing, e.g. transparent, reflective or refractive, layer on the workpiece (-using a mask on the workpiece [B23K 26/0661](#)-)}
- B23K 26/0093 · {combined with mechanical machining or metal-working covered by other subclasses than [B23K](#)(-combined with an electric arc [B23K 26/1429](#) ; combined welding or cutting procedures or apparatus [B23K 28/02](#)-) ; Heating a metal workpiece by laser during machining [B23P 25/006](#) }
- B23K 26/0096 · {Portable laser equipment, e.g. hand-held laser apparatus (-Surgical laser instruments [A61B 18/20](#) , Dental Lasers [A61C 1/0046](#) , Hand-held laser dental apparatus for curing resins [A61C 19/004](#)-)}
- U B23K 26/02 · Positioning or observing the workpiece, e.g. with respect to the point of impact; Aligning, aiming or focusing the laser beam
- B23K 26/026 · · {Aligning the laser beam (-[B23K 26/023](#) takes precedence; automatically aligning the laser beam [B23K 26/041](#)-)}
- B23K 26/03 · · Observing,{e.g. monitoring,}the workpiece{(-protective devices for the eye, carried on the body or in the hand [A61F 9/02](#) , [A61F 9/04](#)-)}
- B23K 26/06 · · Shaping the laser beam, e.g. by masks or multi-focusing (optical elements, systems, or apparatus, in general [G02B](#){ beam shaping for applications of laser not covered in this group [H01S 3/005](#) })
- U B23K 26/0604 · · · {by a combination of beams}
- B23K 26/0608 · · · · {in the same heat affected zone [HAZ]}(-[B23K 26/0613](#) , [B23K 26/0621](#) take precedence-)}
- B23K 26/0613 · · · · {having a common axis (-[B23K 26/0621](#) takes precedence-)}
- B23K 26/0626 · · · {Energy control of the laser beam (-temporal shaping of laser beam [H01S 3/0057](#)-)}
- U B23K 26/0639 · · · {by means of optical elements}
- B23K 26/0656 · · · · {comprising a mask (for lithography [G03F](#))}
- U B23K 26/08 · Devices involving relative movement between laser beam and workpiece
- U B23K 26/0807 · · {Devices involving movement of the laser beam relative to the laser head, i.e. scanning devices}

- B23K 26/0815
 - . . . {using multifaceted mirrors, e.g. polygonal mirror (-scanning devices using multifaceted mirrors, in general [G02B 26/12-](#))}
- U B23K 26/10
 - . . using a fixed support,{i.e. involving moving the laser beam}
- B23K 26/103
 - . . . {the laser beam rotating around the fixed workpiece (-[B23K 26/28](#) takes precedence-)}
- U B23K 26/12
 - . in a special atmosphere, e.g. in an enclosure
- B23K 26/126
 - . . {in an atmosphere of gases chemically reacting with the workpiece (-chemical etching of glass [C03C 15/00](#) , [C03C 25/68](#) ; chemical etching of metallic material [C23F 1/00](#) ; etching of crystallised non-metallic material with defined structure in gas atmosphere [C30B 33/12-](#))}
- B23K 26/14
 - . using a flow, e.g. a jet of gas, in conjunction with the laser beam; {Nozzles therefor} (-[B23K 26/12](#) takes precedence-)
- U B23K 26/1458
 - . . {Nozzles; Features related to nozzles}
- B23K 26/1488
 - . . . {Means for protecting nozzles, e.g. the tip surface (-by breakaway lines [B23K 26/1482-](#))}
- B23K 26/16
 - . Removing of by-products, e.g. particles or vapours produced during treatment of a workpiece (-by a flow of gas [B23K 26/14-](#))
- B23K 26/18
 - . using absorbing layers on the material being worked, e.g. for marking or protecting purposes{-observing devices provided with laser radiation protection devices [B23K 26/03](#) ; using masks on the workpiece for shaping the laser beam [B23K 26/0661](#) ; interposing material for facilitating bonding [B23K 26/203](#) ; laser anti-reflection devices, e.g. optical isolators [H01S 3/0064-](#)}
- B23K 26/20
 - . Bonding, e.g. welding (-soldering by means of radiant energy [B23K 1/005](#) ; joining of preformed plastics parts by heating using laser beam [B29C 65/16-](#))
- B23K 26/203
 - . . {with interposition of material for facilitating bonding (-with interposition of adhesive being heated by laser [C09J 5/06](#) ; with interposition of solder [B23K 1/0056-](#))}
- U B23K 26/32
 - . . taking account of the properties of the material involved
- B23K 26/324
 - . . . {Non-metallic material (-joining glass to glass by fusing with laser [C03B 23/20](#) , by processes other than by fusing using laser [C03C 27/06](#) ; joining ceramics [C04B 37/00-](#))}
- B23K 26/3246
 - {Organic material (-devices or method using laser on the body [A61B 18/20](#) ; dental laser [A61C 1/0046](#) ; eye laser surgery [A61F 9/008](#) ; Treatment of micro-organisms with electric or wave energy [C12N 13/00-](#))}
- B23K 26/36
 - . Removing material{-laser wire stripping [H02G 1/128](#) ; cleaning by laser treatment [B08B 7/0042-](#)}
- B23K 26/362
 - . . {Mechanical trimming (-trimming of electric components [B23K 26/0003-](#)); Deburring; Scarfing or desurfacing}
- B23K 26/365
 - . . {Laser etching, i.e. the material is removed superficially or partially through the workpiece by the laser beam (-laser etching for decorative purposes [B44C 1/22](#) , laser etching for manufacturing printed circuit boards [H05K 3/00-](#))}
- U B23K 26/38
 - . . by boring or cutting
- B23K 26/381
 - . . . {Boring (-Via connections through an SC device substrate [H01L 21/486-](#))}
- B23K 26/385
 - {of blind holes (-Laser ablation of PCB substrate blind holes having a metal layer at the bottom [H05K 3/0035-](#))}
- B23K 26/388
 - {of fluid openings, e.g. nozzles, jets (-Laser machining of inkjet nozzles [B41J 2/1634-](#))}
- U B23K 26/40
 - . . taking account of the properties of the material involved
- U B23K 26/4025
 - . . . {Non-metal material}
- U B23K 26/403
 - {Organic material}

- B23K 26/4035
 - • • • {Material from living organisms, e.g. skin (-devices or method using laser on the body [A61B 18/20](#) ; dental laser [A61C 1/0046](#) ; eye laser surgery [A61F 9/008](#) ; Treatment of micro-organisms with electric or wave energy [C12N 13/00](#) ; Introduction of foreign genetic material into plant cells by physical or non-biological means [C12N 15/8206](#)-)}
- B23K 26/404
 - • • • {Leather (-clicking, perforating, or cutting leather [C14B 5/00](#)-)}
- B23K 26/4045
 - • • • {Wood or similar (-working or preserving wood or similar material [B27B - B27M](#))}
- U B23K 26/405
 - • • • {Fibrous material}
- B23K 26/406
 - • • • {Paper (-metallic paper [B23K 26/4005](#)-)}
- U B23K 26/407
 - • • • {Inorganic material}
- B23K 26/4075
 - • • • {Brittle material, e.g. semi-conductor wafers (-severing glass using laser [C03B 33/0222](#) , [C03B 33/091](#)-)}
- B23K 26/42
 - Preliminary treatment; Auxiliary operations or equipment (-[B23K 26/16](#) takes precedence-)
- U B23K 26/422
 - {Auxiliary equipment}
- B23K 26/423
 - • {Cooling arrangements (-by using a flow [B23K 26/14](#)-)}
- B23K 26/426
 - • {Beam measuring device (-beam monitoring per se [G01J 1/4257](#)-)}
- B23K 26/427
 - • {Protective screens (-goggles or eye-masks for welders carried on the body or in the hand [A61F 9/02](#) , [A61F 9/06](#)-)}
- U B23K 28/00**

Welding or cutting not covered by any of the preceding groups, e.g. electrolytic welding
- B23K 28/006
 - {Welding metals by means of an electrolyte (-working metal, e.g. cutting, by means of an electrolyte [B23H](#)-)}
- B23K 28/02
 - Combined welding or cutting procedures or apparatus
- B23K 31/00**

Processes relevant to this subclass, specially adapted for particular articles or purposes, but not covered by only one of the preceding main groups (-making tubes or profiled bars involving operations other than soldering or welding [B21C 37/04](#) , [B21C 37/08](#)-)
- B23K 31/02
 - relating to soldering or welding (-dip or wave soldering in the manufacture of printed circuits [H05K 3/34](#)-)
- B23K 33/00**

Specially-profiled edge portions of workpieces for making soldering or welding connections; Filling the seams formed thereby((-[B23K 11/14](#) takes precedence-))
- U B23K 35/00**

Rods, electrodes, materials, or media, for use in soldering, welding, or cutting
- U B23K 35/02
 - characterised by mechanical features, e.g. shape
- B23K 35/0211
 - • {for use in cutting (-[B23K 35/0205](#) takes precedence-)}
- B23K 35/0222
 - • {for use in soldering, brazing (-[B23K 35/0205](#) takes precedence-)}
- B23K 35/0227
 - • • {Rods, wires (-[B23K 35/0244](#) takes precedence-)}
- B23K 35/0233
 - • • {Sheets, foils (-[B23K 35/0244](#) takes precedence-)}
- B23K 35/0255
 - • {for use in welding (-[B23K 35/0205](#) takes precedence-)}
- U B23K 35/22
 - characterised by the composition or nature of the material
- B23K 35/24
 - • Selection of soldering or welding materials proper (-[B23K 35/34](#) takes precedence-)

- B23K 35/36
- Selection of non-metallic compositions, e.g. coatings, fluxes ([B23K 35/34](#) takes precedence-); Selection of soldering or welding materials, conjoint with selection of non-metallic compositions, both selections being of interest (-selection of soldering or welding materials proper [B23K 35/24](#)-)
- B23K 35/362
- • Selection of compositions of fluxes ([B23K 35/365](#), [B23K 35/368](#) take precedence-)
- B23K 35/40
- Making wire or rods for soldering or welding (-processes involving a single technical art, see the relevant subclasses, e.g. [B05D](#), [B21C](#)-)
- B23K 35/406
- {Filled tubular wire or rods ([B23K 35/402](#) takes precedence-)}
- B23K 37/00**
- Auxiliary devices or processes, not specially adapted to a procedure covered by only one of the preceding main groups (-eye-shields for welders worn on the operator's body or carried in the hand [A61F 9/00](#) { i.e. [A61F 9/02](#) }; applicable to metal-working machines other than soldering, welding, or flame-cutting machines [B23Q](#);{ laser protective screens [B23K 26/427](#) ; } protective shields for other welding methods [F16P 1/06](#)-)**
- U B23K 37/02
- Carriages for supporting the welding or cutting element
- B23K 37/0276
- • {for working on or in tubes ([B23K 37/0211](#) takes precedence-)}
- U B23K 37/04
- for holding or positioning work
- U B23K 37/0426
- • {Fixtures for other work}
- B23K 37/0452
- • • {Orientable fixtures ([B23K 37/0461](#) takes precedence-)}
- B23K 37/047
- • moving work to adjust its position between soldering, welding or cutting steps ([B23K 37/053](#) takes precedence-)

Project: N/A (B23P)

- U B23P 6/00**
- Restoring or reconditioning objects (straightening or restoring form of sheet metal, metal rods, metal tubes, metal profiles, or specific articles made therefrom [B21D 1/00](#), [B21D 3/00](#); repairing defective or damaged objects by casting techniques [B22D 19/10](#); procedures or apparatus covered by a single other subclass, see the relevant subclass)**
- B23P 6/002
- {-Repairing turbine components, e.g. moving or stationary blades, rotors, ([B23P 6/045](#) takes precedence)}
- B23P 6/005
- • {-using only replacement pieces of a particular form}
- B23P 6/007
- • {-using only additive methods, e.g. build-up welding}
- U B23P 6/04
- Repairing fractures or cracked metal parts or products, e.g. castings
- B23P 6/045
- • {-of turbine components, e.g. moving or stationary blades, rotors, etc.}
- U B23P 9/00**
- Treating or finishing surfaces mechanically, with or without calibrating, primarily to resist wear or impact, e.g. smoothing or roughening turbine blades or bearings (treatment covered by a single other subclass, see the relevant subclass, e.g. [B24C](#), [C21D 7/00](#), [C22F 1/00](#)); Features of such surfaces not otherwise provided for, their treatment being unspecified**
- U B23P 9/02
- Treating or finishing by applying pressure, e.g. knurling ([B23P 9/04](#) takes precedence)
- B23P 9/025
- • {-to inner walls of holes by using axially moving tools}
- U B23P 11/00**
- Connecting metal parts or objects by metal-working techniques, not covered wholly by either [B21J](#) or [B23K](#) (connecting sheet metal or metal tubes, rods, or profiles [B21D 39/00](#); {objects produced by methods not important per se, see the relevant subclasses dealing with the objects, e.g. [B21F 15/00](#); [B21L 19/00](#)}; hand tools for connecting wire or strip [B25B 25/00](#); connecting metal parts by adhesives [F16B 11/00](#))**

- U B23P 11/02
 - by first expanding and then shrinking or vice versa, e.g. by using pressure fluids; by making force fits
- U B23P 11/025
 - • {by using heat or cold}
- B23P 11/027
 - • • {-for mounting tools in tool holders}
- U B23P 15/00**

Making specific metal objects by operations not covered by a single other subclass or a group in this subclass
- B23P 15/008
 - {-Rocket engine parts, e.g. nozzles, combustion chambers}
- U B23P 15/24
 - dies ([B21C 3/18](#), [B21C 25/10](#), [B21D 37/20](#) take precedence)
- B23P 15/243
 - • {-Honeycomb dies}
- B23P 15/246
 - • {-Laminated dies}
- B23P 15/26
 - heat exchangers {or the like- (making heat exchangers by methods covered by other subclasses [B21D 53/02](#))}
- U B23P 15/28
 - cutting tools (sawing tools [B23D 63/00](#), [B23D 65/00](#); files or rasps [B23D 73/00](#))
- U B23P 15/40
 - • shearing tools
- B23P 15/403
 - • • {-razor blades}
- B23P 15/406
 - • • {-rotary or plane die cutters}
- U B23P 19/00**

Machines for simply fitting together or separating metal parts, or metal and non-metal parts, whether or not involving some deformation (connecting metal parts or objects by metal-working procedures [B23P 11/00](#), [B21J](#), [B23K](#)); Tools or devices therefor so far as not provided for in other classes (hand tools in general [B25](#))
- U B23P 19/02
 - for connecting objects by press fit or for detaching same
- B23P 19/021
 - • {-Railroad wheels on axles}
- B23P 19/025
 - • {-For detaching only}
- U B23P 19/04
 - for assembling or disassembling parts
- U B23P 19/042
 - • {specially adapted for combustion engines (shape of casings adapted to facilitate fitting or dismantling of engine parts for combustion engines [F02F 7/0046](#))}
- B23P 19/043
 - • • {-for inserting piston-connecting rods assemblies in cylinders}
- B23P 19/045
 - • • {-for assembling valve cotters and retainers of engine valves}
- U B23P 19/06
 - • Screw or nut setting or loosening machines
- U B23P 19/062
 - • • {Pierce nut setting machines}
- B23P 19/063
 - • • • {-Deforming the nut only}
- B23P 19/064
 - • • • {-Deforming the support material only, e.g. the sheet or plate}
- U B23P 19/067
 - • • {Bolt tensioners (for hand tools [B25B 29/02](#))}
- B23P 19/068
 - • • • {-by using heating means}
- U B23P 19/08
 - • Machines for placing washers, circlips, or the like on bolts or other members
- U B23P 19/084
 - • • {for placing resilient or flexible rings, e.g. O-rings, circlips}
- B23P 19/086
 - • • • {-Non-metallic protective bellows}
- B23P 19/088
 - • • • {-Piston rings in piston grooves}
- U B23P 19/10
 - Aligning parts to be fitted together
- B23P 19/102
 - • {-using remote centre compliance devices}
- B23P 19/105
 - • • {-using sensing means}
- B23P 19/107
 - • {-using oscillating, rotating or vibrating movements}

- U B23P 21/00** **Machines for assembling a multiplicity of different parts to compose units, with or without preceding or subsequent working of such parts, e.g. with programme control**
- B23P 21/008 · {-the assembling machines or tools moving synchronously with the units while these are being assembled}
- U B23P 25/00** **Auxiliary treatment of workpieces, before or during machining operations, to facilitate the action of the tool or the attainment of a desired final condition of the work, e.g. relief of internal stress**
- U B23P 25/003 · {immediately preceding a cutting tool}
- B23P 25/006 · · {-Heating the workpiece by laser during machining}

Project: N/A (B23Q)

- U B23Q 1/00** **Members which are comprised in the general build-up of a form of machine, particularly relatively large fixed members (B23Q 37/00 takes precedence)**
- B23Q 1/0009 · {-Energy-transferring means or control lines for movable machine parts; Control panels or boxes; Control parts (control handles for driving or feeding mechanisms [B23Q 5/54](#))}
- B23Q 1/0045 · · {-Control panels or boxes}
- U B23Q 1/0063 · {-Connecting non-slidable parts of machine tools to each other}
- B23Q 1/0072 · · {-using a clamping opening for receiving an insertion bolt or nipple}
- B23Q 1/0081 · · {-using an expanding clamping member insertable in a receiving hole}
- B23Q 1/009 · · · {-the receiving hole being cylindrical or conical}
- U B23Q 1/01 · Frames, beds, pillars or like members; Arrangement of ways
- B23Q 1/015 · · {-Frames, beds, pillars}
- U B23Q 1/03 · Stationary work or tool supports ([B23Q 1/70](#) takes precedence; auxiliary tables [B23Q 1/74](#); tailstocks [B23B 23/00](#))
- B23Q 1/032 · · {-characterised by properties of the support surface}
- B23Q 1/035 · · {-with an array of longitudinally movable rods defining a reconfigurable support surface}
- B23Q 1/037 · · {-comprising series of support elements whose relative distance is adjustable}
- U B23Q 1/25 · Movable or adjustable work or tool supports
- U B23Q 1/26 · · characterised by constructional features relating to the co-operation of relatively movable members; Means for preventing relative movement of such members {(bearings for linearly moving parts [F16C 29/00](#))}
- B23Q 1/262 · · · {-with means to adjust the distance between the relatively slidable members (if the adjusting means depends on the position of the slidable members [B23Q 1/30](#))}
- U B23Q 1/44 · · using particular mechanisms ([B23Q 1/26](#) takes precedence)
- B23Q 1/445 · · · {-using a first carriage for a smaller workspace mounted on a second carriage for a larger workspace, both carriages moving on the same axes}
- U B23Q 1/48 · · · with sliding pairs and rotating pairs ([B23Q 1/46](#) takes precedence)
- B23Q 1/4804 · · · · {-a single rotating pair followed perpendicularly by a single sliding pair}
- B23Q 1/4809 · · · · · {-followed perpendicularly by a single rotating pair}
- B23Q 1/4814 · · · · · {-followed parallelly by a single rotating pair}
- B23Q 1/4819 · · · · · {-followed perpendicularly by a single sliding pair}
- B23Q 1/4823 · · · · · {-followed parallelly by a single sliding pair}
- B23Q 1/4828 · · · · · {-a single rotating pair followed parallelly by a single sliding pair}
- B23Q 1/4833 · · · · · {-followed perpendicularly by a single rotating pair}

- B23Q 1/4838 {-followed parallelly by a single rotating pair}
- B23Q 1/4842 {-followed perpendicularly by a single sliding pair}
- B23Q 1/4847 {-followed parallelly by a single sliding pair}
- B23Q 1/4852 {-a single sliding pair followed perpendicularly by a single rotating pair}
- B23Q 1/4857 {-followed perpendicularly by a single rotating pair}
- B23Q 1/4861 {-followed parallelly by a single rotating pair}
- B23Q 1/4866 {-followed perpendicularly by a single sliding pair}
- B23Q 1/4871 {-followed parallelly by a single sliding pair}
- B23Q 1/4876 {-a single sliding pair followed parallelly by a single rotating pair}
- B23Q 1/488 {-followed perpendicularly by a single rotating pair}
- B23Q 1/4885 {-followed parallelly by a single rotating pair}
- B23Q 1/489 {-followed perpendicularly by a single sliding pair}
- B23Q 1/4895 {-followed parallelly by a single sliding pair}
- U B23Q 1/50 . . . with rotating pairs only, {the rotating pairs being the first two elements of the mechanism}
- U B23Q 1/54 two rotating pairs only
- B23Q 1/5406 {-a single rotating pair followed perpendicularly by a single rotating pair ([B23Q 1/545](#) takes precedence)}
- B23Q 1/5412 {-followed perpendicularly by a single rotating pair}
- B23Q 1/5418 {-followed parallelly by a single rotating pair}
- B23Q 1/5425 {-followed perpendicularly by a single sliding pair}
- B23Q 1/5431 {-followed parallelly by a single sliding pair}
- B23Q 1/5468 {-a single rotating pair followed parallelly by a single rotating pair}
- B23Q 1/5475 {-followed perpendicularly by a single rotating pair}
- B23Q 1/5481 {-followed parallelly by a single rotating pair}
- B23Q 1/5487 {-followed perpendicularly by a single sliding pair}
- B23Q 1/5493 {-followed parallelly by a single sliding pair}
- U B23Q 1/56 . . . with sliding pairs only, {the sliding pairs being the first two elements of the mechanism}
- U B23Q 1/60 two sliding pairs only, {the sliding pairs being the first two elements of the mechanism}
- B23Q 1/601 {-a single sliding pair followed parallelly by a single sliding pair}
- B23Q 1/603 {-followed perpendicularly by a single rotating pair}
- B23Q 1/605 {-followed parallelly by a single rotating pair}
- B23Q 1/606 {-followed perpendicularly by a single sliding pair}
- B23Q 1/608 {-followed parallelly by a single sliding pair}
- U B23Q 1/62 with perpendicular axes, e.g. cross-slides
- B23Q 1/621 {-a single sliding pair followed perpendicularly by a single sliding pair}
- B23Q 1/623 {-followed perpendicularly by a single rotating pair}
- B23Q 1/625 {-followed parallelly by a single rotating pair}
- B23Q 1/626 {-followed perpendicularly by a single sliding pair}
- B23Q 1/628 {-followed parallelly by a single sliding pair}

- U B23Q 3/00** Devices holding, supporting, or positioning work or tools, of a kind normally removable from the machine (work-tables or other parts, e.g. faceplates, normally not incorporating means for securing work [B23Q 1/00](#); automatic position control [B23Q 15/00](#); rotary tool heads for turning-machines [B23B 3/24](#), [B23B 3/26](#); non-driven tool holders [B23B 29/00](#); general features of turrets [B23B 29/24](#); tools or bench devices for fastening, connecting, disengaging or holding [B25B](#))
- U B23Q 3/02 · for mounting on a work-table, tool-slide, or analogous part ([B23Q 3/15](#) takes precedence)
- U B23Q 3/06 · · Work-clamping means
- B23Q 3/061 · · · {-adapted for holding a plurality of workpieces}
- B23Q 3/062 · · · {-adapted for holding workpieces having a special form or being made from a special material}
- WARNING**
Subgroups [B23Q 3/063](#) - [B23Q 3/065](#) are not complete, due to a reorganisation in progress; see also [B23Q 3/062](#)
- B23Q 3/063 · · · · {-for holding turbine blades}
- B23Q 3/064 · · · · {-for holding elongated workpieces, e.g. pipes, bars or profiles}
- B23Q 3/065 · · · · {-for holding workpieces being specially deformable, e.g. made from thin-walled or elastic material}
- B23Q 3/069 · · · {-for pressing workpieces against a work-table}
- U B23Q 3/08 · · · other than mechanically-actuated {([B23Q 3/061](#), [B23Q 3/066](#), and [B23Q 3/067](#) take precedence)}
- B23Q 3/084 · · · · {-using adhesive means}
- B23Q 3/086 · · · · {-using a solidifying liquid, e.g. with freezing, setting or hardening means}
- B23Q 3/088 · · · · {-using vacuum means}
- U B23Q 3/155 · Arrangements for automatic insertion or removal of tools, {e.g. combined with manual handling ([B23Q 7/046](#) takes precedence)}
- B23Q 3/15506 · · {the tool being inserted in a tool holder directly from a storage device (*without transfer device*);(*without transfer device*)}
- U B23Q 5/00** **Driving or feeding mechanisms; Control arrangements therefor (automatic control [B23Q 15/00](#); copying [B23Q 33/00](#), [B23Q 35/00](#); specially adapted for boring or drilling machines [B23B 39/10](#), [B23B47/02](#); {numerical programme-control of machine tools [G05B 19/18](#)})**
- U B23Q 5/22 · Feeding members carrying tools or work
- B23Q 5/225 · · {-not mechanically connected to the main drive, e.g. with separate motors (connected to main drive through servomotors [B23Q 5/36](#))}
- U B23Q 11/00** **Accessories fitted to machine tools for keeping tools or parts of the machine in good working condition or for cooling work {(accessories specially designed for sawing machines or sawing devices [B23D 59/00](#)); Safety devices specially combined with or arranged in, or specially adapted for use in connection with, machine tools (in respect of boring or drilling machines [B23B 47/32](#) takes precedence; safety devices in general [F16P](#))**
- B23Q 11/0003 · {-Arrangements for preventing undesired thermal effects on tools or parts of the machine ([B23Q 11/10](#), [B23Q 11/12](#) and [B23Q 11/14](#) take precedence)}
- B23Q 11/0007 · · {-by compensating occurring thermal dilations ([B23Q 15/18](#) takes precedence)}

- B23Q 11/001
- {-Arrangements compensating weight or flexion on parts of the machine (adjustment of the fluid layer in fluid bearings or cushions depending upon the position of a weight [B23Q 1/385](#))}
- B23Q 11/0014
- • {-using static reinforcing elements, e.g. pre-stressed ties}
- B23Q 11/0017
- • {-compensating the weight of vertically moving elements, e.g. by balancing liftable machine parts ([B23B 47/26](#) takes precedence)}
- WARNING**
Subgroups [B23Q 11/0017](#) and [B23Q 11/0021](#) are not complete, due to a reorganisation in progress; see also [B23Q 11/001](#)
- B23Q 11/0021
- • • {-the elements being rotating or pivoting}
- B23Q 11/0025
- • • {-using resilient means, e.g. springs, hydraulic dampers}
- B23Q 11/0028
- • {-by actively reacting to a change of the configuration of the machine ([B23Q 15/00](#) takes precedence)}
- B23Q 11/0032
- {-Arrangements for preventing or isolating vibrations in parts of the machine ([B23B 29/022](#), [B23D 47/005](#) take precedence; means for damping or suppressing vibrations, in general [F16F](#))}
- B23Q 11/0035
- • {-by adding or adjusting a mass, e.g. counterweights}
- B23Q 11/0039
- • {-by changing the natural frequency of the system or by continuously changing the frequency of the force which causes the vibration}
- B23Q 11/0042
- {-Devices for removing chips ([B23Q 11/02](#), [B23Q 11/0875](#) take precedence)}
- B23Q 11/0067
- • {-chip containers located under a machine or under a chip conveyor}
- B23Q 11/0071
- • {-dust collectors for hand tools}
- B23Q 11/0075
- • {-for removing chips or coolant from the workpiece after machining}
- B23Q 11/0078
- {-Safety devices protecting the operator, e.g. against accident or noise (protecting the machine tool [B23Q 5/58](#); protecting people, in general [F16P 1/00](#), [F16P 3/00](#))}
- WARNING**
Subgroups [B23Q 11/0082](#) - [B23Q 11/0089](#) are not complete, due to a reorganisation in progress; see also [B23Q 11/0078](#)
- B23Q 11/0082
- • {-by determining whether the operator is in a dangerous position ([B23Q 17/2438](#) takes precedence)}
- B23Q 11/0085
- • {-by determining whether the machine tool is in a dangerous configuration}
- B23Q 11/0089
- • {-actuating operator protecting means, e.g. closing a cover element, producing an alarm signal}
- B23Q 11/0092
- • {-actuating braking or stopping means}
- B23Q 11/0096
- • {-protecting against noise}
- U B23Q 11/08
- Protective coverings for parts of machine tools; Splash guards
- B23Q 11/085
- • {-Flexible coverings, e.g. coiled-up belts}
- B23Q 11/0858
- • {-using a liquid bath or a liquid curtain}
- B23Q 11/0866
- • {-using covering means adaptable to the workpieces, e.g. curtains or bristles}
- B23Q 11/0875
- • {-Wipers for clearing foreign matter from slideways or slidable coverings}
- B23Q 11/0883
- • {-for spindles, e.g. for their bearings or casings}
- B23Q 11/0891
- • {-arranged between the working area and the operator}
- WARNING**
Subgroup [B23Q 11/0891](#) is not complete, due to a reorganisation in progress; see also [B23Q 11/08](#)

- U B23Q 11/10
- Arrangements for cooling or lubricating tools or work (incorporated in tools, see the relevant subclass for the tool, { e.g. [B23B 27/10](#), [B23B 51/06](#), [B23C 5/28](#), [B23D 77/006](#); for circular saw blades [B23D 59/02](#), for cooling grinding surfaces [B24B 55/02](#)})
- B23Q 11/1007
- • {-by submerging the tools or work partially or entirely in a liquid}
- U B23Q 11/1015
- • {-by supplying a cutting liquid through the spindle}
- WARNING
Subgroups [B23Q 11/1015](#) - [B23Q 11/103](#) are not complete, due to a reorganisation in progress; see also [B23Q 11/10](#)
- B23Q 11/1023
- • • {-Tool holders, or tools in general specially adapted for receiving the cutting liquid from the spindle}
- B23Q 11/103
- • • {-Rotary joints specially adapted for feeding the cutting liquid to the spindle}
- B23Q 11/1038
- • {-using cutting liquids with special characteristics, e.g. flow rate, quality}
- WARNING
Subgroups [B23Q 11/1038](#) - [B23Q 11/1061](#) are not complete, due to a reorganisation in progress; see also [B23Q 11/10](#)
- B23Q 11/1046
- • • {-using a minimal quantity of lubricant (spraying apparatus using a carrying fluid [B05B 7/00](#))}
- B23Q 11/1053
- • • {-using the cutting liquid at specially selected temperatures (controlling the temperature of the cutting liquid for maintaining machine parts at a constant temperature [B23Q 11/146](#))}
- B23Q 11/1061
- • • {-using cutting liquids with specially selected composition or state of aggregation}
- B23Q 11/1069
- • {-Filtration systems specially adapted for cutting liquids (filtration in general [B01D 24/00](#) - [B01D 41/00](#))}
- B23Q 11/1076
- • {-with a cutting liquid nozzle specially adaptable to different kinds of machining operations}
- WARNING
Subgroup [B23Q 11/1076](#) is not complete, due to a reorganisation in progress; see also [B23Q 11/10](#)
- B23Q 11/1084
- • {-specially adapted for being fitted to different kinds of machines}
- B23Q 11/1092
- • {-specially adapted for portable power-driven tools}
- U B23Q 11/12
- Arrangements for cooling or lubricating parts of the machine ([B23Q 11/14](#) takes precedence; { movable work or tool supports using fluid bearings or fluid cushion supports [B23Q 1/38](#); cooling or lubricating means used in the working area [B23Q 11/10](#)})
- B23Q 11/121
- • {-with lubricating effect for reducing friction ([F16C 33/66](#) and [F16H 57/04](#) take precedence)}
- WARNING
Subgroups [B23Q 11/121](#) - [B23Q 11/125](#) are not complete, due to a reorganisation in progress; see also [B23Q 11/12](#)
- B23Q 11/122
- • • {-Lubricant supply devices ([F16N 7/00](#) takes precedence)}
- B23Q 11/123
- • • {-for lubricating spindle bearings ([F16C 33/66](#) takes precedence)}
- B23Q 11/124
- • • {-for lubricating linear guiding systems ([F16C 29/005](#) takes precedence)}
- B23Q 11/125
- • • {-for lubricating ball screw systems}

- B23Q 11/126
- • {-for cooling only}
- WARNING
Subgroups [B23Q 11/121](#) - [B23Q 11/128](#) are not complete, due to a reorganisation in progress; see also [B23Q 11/12](#)
- B23Q 11/127
- • • {-for cooling motors or spindles}
- B23Q 11/128
- • • {-for cooling frame parts}
- U B23Q 11/14
- Methods or arrangements for maintaining a constant temperature in parts of machine tools
- WARNING
Subgroups [B23Q 11/141](#) - [B23Q 11/148](#) are not complete, due to a reorganisation in progress; see also [B23Q 11/14](#)
- B23Q 11/141
- • {-using a closed fluid circuit for cooling or heating}
- B23Q 11/143
- • {-comprising heating means}
- B23Q 11/145
- • {-using a jet of gas or cutting liquid}
- B23Q 11/146
- • {-by controlling the temperature of a cutting liquid}
- B23Q 11/148
- • {-by controlling the air temperature}
- U **B23Q 16/00** **Equipment for precise positioning of tool or work into particular locations not otherwise provided for (automatic control or regulation of position of tool or work [B23Q 15/22](#); arrangements for indicating or measuring existing or desired position of tool or work [B23Q 17/22](#))**
- U B23Q 16/02
- Indexing equipment (specially adapted for gear-cutting machines [B23F 23/08](#))
- B23Q 16/021
- • {-in which only the positioning elements are of importance ([B23Q 16/04](#), [B23Q 16/08](#) take precedence)}
- U B23Q 16/08
- • having means for clamping the relatively movable parts together in the indexed position
- U B23Q 16/10
- • • Rotary indexing
- B23Q 16/105
- • • • {-clamping with a disc brake}
- B23Q 16/107
- • • • {-clamping with a drum brake}
- U **B23Q 17/00** **Arrangements for { observing,} indicating or measuring on machine tools (for automatic control or regulation of feed movement, cutting velocity or position of tool or work [B23Q 15/00](#))**
- B23Q 17/002
- {-for indicating or measuring the holding action of work or tool holders ([B23Q 3/16](#) takes precedence)}
- B23Q 17/003
- • {-by measuring a position}
- B23Q 17/005
- • {-by measuring a force, a pressure or a deformation}
- B23Q 17/007
- {-for managing machine functions not concerning the tool}
- WARNING
Subgroups [B23Q 17/007](#) and [B23Q 17/008](#) are not complete, due to a reorganisation in progress; see also [B23Q 17/00](#)
- B23Q 17/008
- • {-Life management for parts of the machine (tool life management [B23Q 17/0995](#))}
- U B23Q 17/09
- for indicating or measuring cutting pressure or { for determining} cutting-tool condition, e.g. cutting ability, load on tool (arrangements preventing overload of tools [B23Q 11/04](#); devices for indicating failure of drills during boring [B23B 49/00](#))

- B23Q 17/0904
- • {-before or after machining}
- WARNING
Subgroups [B23Q 17/0904](#) - [B23Q 17/0923](#) are not complete, due to a reorganisation in progress; see also [B23Q 17/09](#)
- B23Q 17/0914
- • • {-Arrangements for measuring or adjusting cutting-tool geometry machine tools}
- B23Q 17/0919
- • • {-Arrangements for measuring or adjusting cutting-tool geometry in presetting devices}
- B23Q 17/0923
- • • • {-Tool length}
- B23Q 17/0928
- • • • {-Cutting angles of lathe tools}
- B23Q 17/0933
- • • • {-Cutting angles of milling cutters}
- B23Q 17/0938
- • • • {-Cutting angles of drills}
- B23Q 17/0942
- • • • {-Cutting angles of saws}
- B23Q 17/0947
- • • • {-Monitoring devices for measuring cutting angles}
- B23Q 17/0952
- • {-during machining}
- WARNING
Subgroups [B23Q 17/0952](#) - [B23Q 17/099](#) are not complete, due to a reorganisation in progress; see also [B23Q 17/09](#)
- B23Q 17/0957
- • • {-Detection of tool breakage (detecting failure of drills [B23B 49/001](#))}
- B23Q 17/0961
- • • {-by measuring power, current or torque of a motor}
- B23Q 17/0966
- • • {-by measuring a force on parts of the machine other than a motor}
- B23Q 17/0971
- • • {-by measuring mechanical vibrations of parts of the machine (arrangements for measuring vibrations [B23Q 17/12](#))}
- B23Q 17/0976
- • • • {-Detection or control of chatter ([B23Q 15/12](#) takes precedence)}
- B23Q 17/098
- • • {-by measuring noise}
- B23Q 17/0985
- • • {-by measuring temperature}
- B23Q 17/099
- • • {-by measuring features of the machined workpiece (arrangements for measuring workpiece characteristics [B23Q 17/20](#))}
- B23Q 17/0995
- • {-Tool life management}
- WARNING
This subgroup is not complete, due to a reorganisation in progress; see also [B23Q 17/09](#)
- U B23Q 17/22
- for indicating or measuring existing or desired position of tool or work [{\(B23Q 16/005 takes precedence\)}](#)
- B23Q 17/2208
- • {-Detection or prevention of collisions}
- B23Q 17/2216
- • {-for adjusting the tool into its holder ([B23Q 17/0923](#) - [B23Q 17/0942](#) takes precedence)}
- U B23Q 17/2233
- • {-for adjusting the tool relative to the workpiece}
- B23Q 17/2241
- • • {-Detection of contact between tool and workpiece}
- U B23Q 17/24
- using optics { or electromagnetic waves}
- B23Q 17/2404
- • {-Arrangements for improving direct observation of the working space, e.g. using mirrors or lamps (structural combinations of lighting devices with other articles, not otherwise provided for, [F21V 33/00](#))}

- B23Q 17/2409
- • {-Arrangements for indirect observation of the working space using image recording means, e.g. a camera}
- WARNING
This subgroup is not complete, due to a reorganisation in progress; see also [B23Q 17/24](#)
- B23Q 17/2414
- • {-for indicating desired positions guiding the positioning of tools or workpieces ([B25H 1/0092](#) takes precedence)}
- WARNING
Subgroups [B23Q 17/2414](#) - [B23Q 17/2423](#) are not complete, due to a reorganisation in progress; see also [B23Q 17/24](#)
- B23Q 17/2419
- • • {-by projecting a single light beam}
- B23Q 17/2423
- • • {-by projecting crossing light beams}
- B23Q 17/2428
- • {-for measuring existing positions of tools or workpieces}
- WARNING
This subgroup is not complete, due to a reorganisation in progress; see also [B23Q 17/24](#)
- B23Q 17/2433
- • {-Detection of presence or absence}
- WARNING
Subgroups [B23Q 17/2438](#) - [B23Q 17/2447](#) are not complete, due to a reorganisation in progress; see also [B23Q 17/24](#)
- B23Q 17/2442
- • • {-of a tool}
- B23Q 17/2447
- • • {-of a workpiece}
- B23Q 17/2452
- • {-for measuring features or for detecting a condition of machine parts, tools or workpieces ([B23Q 17/2428](#), [B23Q 17/2433](#) take precedence)}
- WARNING
Subgroups [B23Q 17/2452](#) - [B23Q 17/2476](#) are not complete, due to a reorganisation in progress; see also [B23Q 17/24](#)
- B23Q 17/2457
- • • {-of tools}
- B23Q 17/2461
- • • • {-Length}
- B23Q 17/2466
- • • • {-Diameter}
- B23Q 17/2471
- • • {-of workpieces}
- B23Q 17/2476
- • • {-of clamping devices, e.g. work or tool holders}
- B23Q 17/248
- • {-using special electromagnetic means or methods}
- WARNING
Subgroups [B23Q 17/248](#) - [B23Q 17/2495](#) are not complete, due to a reorganisation in progress; see also [B23Q 17/24](#)
- B23Q 17/2485
- • • {-using interruptions of light beams}
- B23Q 17/249
- • • {-using image analysis, e.g. for radar, infrared or array camera images}
- B23Q 17/2495
- • • {-using interferometers}
- U B23Q 37/00**
- Metal-working machines, or constructional combinations thereof, built-up from units designed so that at least some of the units can form parts of different machines or combinations; Units therefor in so far as the feature of interchangeability is important (features relating to particular metal-working operations, see the relevant subclass, e.g. [B23P 23/00](#))**
- B23Q 37/005
- {-Modular base frames}

- B23Q 37/007 · {-Modular machining stations designed to be linked to each other}
- U B23Q 39/00** **Metal-working machines incorporating a plurality of sub-assemblies, each capable of performing a metal-working operation ([B23Q 33/00](#), [B23P 23/00](#) take precedence; if the operations are similar and the kind of operation is essential, see the relevant subclass for the operation)**
- U B23Q 39/02 · the sub-assemblies being capable of being brought to act at a single operating station
- B23Q 39/021 · · {-with a plurality of toolheads per workholder, whereby the toolhead is a main spindle, a multispindle, a revolver or the like}
- B23Q 39/022 · · · {-with same working direction of toolheads on same workholder}
- B23Q 39/023 · · · · {-simultaneous working of toolheads}
- B23Q 39/024 · · · · {-consecutive working of toolheads}
- B23Q 39/025 · · · {-with different working directions of toolheads on same workholder}
- B23Q 39/026 · · · · {-simultaneous working of toolheads}
- B23Q 39/027 · · · · {-consecutive working of toolheads}
- B23Q 39/028 · · {-with a plurality of workholder per toolhead in operating position (with only one workholder in operating position [B23Q 1/66](#))}
- B23Q 39/029 · · · {-with a twin table for alternatively working on one of the tables}

Project: N/A (B24B)

- U B24B 1/00** **Processes of grinding or polishing; Use of auxiliary equipment in connection with such processes (processes characterised by the use of special machines or devices, see the relevant places for those machines or devices)**
- B24B 1/002 · {-using electric current ([B24B 37/046](#) and [B23H 5/08](#) take precedence)}
- B24B 1/005 · {-using a magnetic polishing agent}
- B24B 1/007 · {-abrasive treatment to obtain an aged or worn-out appearance}
- U B24B 3/00** **Sharpening cutting edges, e.g. of tools; Accessories therefor, e.g. for holding the tools (non-abrasive sharpening devices for scythes, sickles, or the like [A01D 3/00](#); sharpening devices designed as components of machines with cutters, see the relevant places for the machines, e.g. [A01D 75/08](#), {[B23F 23/1225](#)}, [B26D 7/12](#); sharpening of saw teeth [B23D 63/12](#); sharpening of files or rasps [B23D 73/00](#); grinding of die-stocks or chasers [B23G 1/36](#))**
- B24B 3/006 · {-for edges of skis, snowboards or the like}
- U B24B 3/24 · of drills (by fluting the shank [B24B 19/04](#))
- U B24B 3/26 · · of the point of twist drills
- B24B 3/265 · · · {-using devices specially adapted for domestic use}
- U B24B 3/36 · of cutting blades ([B24B 3/58](#) takes precedence)
- B24B 3/366 · · {-of meat mincing or meat grinding machines}
- U B24B 3/60 · of tools not covered by the preceding subgroups
- B24B 3/602 · · {-of thread cutting tools}
- B24B 3/605 · · {-of surgical or dental instruments}
- B24B 3/607 · · {-of files}
- U B24B 7/00** **Machines or devices designed for grinding plane surfaces on work, including polishing plane glass surfaces; Accessories therefor ([B24B 21/00](#) takes precedence; honing of plane surfaces on work [B24B 33/055](#))**

- U B24B 7/10
 - Single-purpose machines or devices (grinding tools or machines specially designed for use on assembled railway track [E01B 31/17](#))
- U B24B 7/18
 - · for grinding floorings, walls, ceilings or the like (machines or devices for cleaning floorings [A47L 11/00](#), [A47L 13/00](#))
- B24B 7/182
 - · · {for walls and ceilings}
- B24B 7/184
 - · · · {pole sanders}
- B24B 7/186
 - · · {with disc-type tools}
- B24B 7/188
 - · · {with cylinder- or belt-type tools}
- U B24B 9/00**

Machines or devices designed for grinding edges or bevels on work or for removing burrs; Accessories therefor ([B24B 21/00](#) takes precedence ; for sharpening cutting edges on tools [B24B 3/00](#); removing burrs by loose abrasive material [B24B 31/00](#))
- U B24B 9/02
 - characterised by a special design with respect to properties of materials specific to articles to be ground
- U B24B 9/06
 - · of non-metallic inorganic material, e.g. stone, ceramics, porcelain
- U B24B 9/16
 - · · of diamonds; of jewels or the like; Diamond grinders` dops; Dop holders or tongs (for grinding sharp pointed diamonds or sapphires [B24B 19/16](#))
- B24B 9/168
 - · · · {grinding peripheral, e.g. conical or cylindrical, surfaces }
- U B24B 13/00**

Machines or devices designed for grinding or polishing optical surfaces on lenses or surfaces of similar shape on other work; Accessories therefor (edging optical work, e.g. lenses, prisms [B24B 9/14](#))
- B24B 13/0006
 - {for intraocular lenses}
- U B24B 13/005
 - Blocking means, chucks or the like; Alignment devices
- B24B 13/0057
 - · {Deblocking of lenses}
- U B24B 13/01
 - Specific tools, e.g. bowl-like; Production, dressing or fastening of these tools
- B24B 13/012
 - · {conformable in shape to the optical surface, e.g. by fluid pressure acting on an elastic membrane}
- U B24B 17/00**

Special adaptations of machines or devices for grinding controlled by patterns, drawings, magnetic tapes or the like (machines or devices so-controlled for grinding the edges of lenses [B24B 9/14](#); for grinding or polishing optical lens surfaces [B24B 13/06](#); for grinding non-circular cross-sections [B24B 19/08](#); for grinding trochoidal surfaces [B24B 19/09](#); for grinding cams [B24B 19/12](#); for grinding turbine blades or the like [B24B 19/14](#); such control means per se [B23Q 33/00](#), [B23Q 35/00](#), [G05](#)); Accessories therefor
- U B24B 17/02
 - involving mechanical transmission means only
- B24B 17/025
 - · {for grinding rotating workpieces (*three dimensional*)}{~~three dimensional~~}
- U B24B 19/00**

Single-purpose machines or devices for particular grinding operations not covered by any other main group (tapering, chamfering, or relief cutting of taps or reamers [B24B 3/20](#), [B24B 3/22](#), grinding screw threads [B23G](#))
- U B24B 19/02
 - for grinding grooves, e.g. on shafts, in casings, in tubes, homokinetic joint elements
- B24B 19/022
 - · {for helicoidal grooves ([B24B 19/04](#) takes precedence)}
- B24B 19/26
 - for grinding workpieces with arcuate surfaces, e.g. parts of car bodies, bumpers or magnetic recording heads (grinding of spherical surfaces in general [B24B 11/00](#), of optical surfaces on lenses or surfaces of similar shape on other work [B24B 13/00](#)-)

- U B24B 21/00** **Machines or devices using grinding or polishing belts (for sharpening cutting edges of tools [B24B 3/00](#); portable belt-grinding machines [B24B 23/06](#)); Accessories therefor**
- U B24B 21/16 · for grinding other surfaces of particular shape (single purpose machines for grinding cams or camshafts [B24B 19/12](#))
- B24B 21/165 · · {-for vanes or blades of turbines, propellers, impellers, compressors and the like}
- U B24B 23/00** **Portable grinding machines, e.g. hand-guided; Accessories therefor ([B24B 7/18](#) takes precedence; for grinding seat surfaces [B24B 15/00](#); having a flexible shaft [B24B 27/027](#); grinders for cutting-off [B24B 27/08](#); dust extraction equipment [B24B 55/10](#); details or components, e.g. casings, bodies of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))**
- U B24B 23/04 · with oscillating grinding tools; Accessories therefor
- B24B 23/046 · · {-Clamping or tensioning means for abrasive sheets}
- U B24B 27/00** **Other grinding machines or devices**
- B24B 27/0092 · {-Grinding attachments for lathes or the like}
- U B24B 29/00** **Machines or devices for polishing surfaces on work by means of tools made of soft or flexible material with or without the application of solid or liquid polishing agents (polishing tools in general [B24D 13/00](#))**
- B24B 29/005 · {-using brushes}
- U B24B 31/00** **Machines or devices designed for polishing or abrading surfaces on work by means of tumbling apparatus or other apparatus in which the work and/or the abrasive material is loose; Accessories therefor (abrasive blasting machines [B24C 3/26](#))**
- B24B 31/12 · Accessories; -Protective equipment or safety devices; -Installations for exhaustion of dust or for sound absorption specially adapted for machines covered by group [B24B 31/00](#)(in general [B24B 55/00](#))-)
- B24B 37/00** **Lapping machines or devices; -Accessories ([B24B 3/00](#) takes precedence)**
- B24B 37/005 · Control means for lapping machines or devices
- B24B 37/0053 · · {-detecting loss or breakage of a workpiece during lapping}
- B24B 37/0056 · · {-taking regard of the pH-value of lapping agents}
- B24B 37/013 · · Devices or means for detecting lapping completion
- B24B 37/015 · · Temperature control
- U B24B 37/02 · designed for working surfaces of revolution
- B24B 37/022 · · {-characterised by the movement of the work between two lapping plates}
- B24B 37/025 · · designed for working spherical surfaces
- U B24B 37/04 · designed for working plane surfaces
- B24B 37/042 · · {-operating processes therefor}
- B24B 37/044 · · · {-characterised by the composition of the lapping agent}
- B24B 37/046 · · {-using electric current}
- B24B 37/048 · · {-of sliders and magnetic heads of hard disc drives or the like}
- B24B 37/07 · · characterised by the movement of the work or lapping tool
- B24B 37/08 · · · for double side lapping
- B24B 37/10 · · · for single side lapping
- B24B 37/102 · · · · {-the workpieces or work carriers being able to rotate freely due to a frictional contact with the lapping tool}

- B24B 37/105
 - • • • {the workpieces or work carriers being actively moved by a drive, e.g. in a combined rotary and translatory movement}
- B24B 37/107
 - • • • • {in a rotary movement only, about an axis being stationary during lapping}
- B24B 37/11
 - Lapping tools
- B24B 37/12
 - • Lapping plates for working plane surfaces
- B24B 37/14
 - • • characterised by the composition or properties of the plate materials
- B24B 37/16
 - • • characterised by the shape of the lapping plate surface, e.g. grooved
- B24B 37/20
 - • Lapping pads for working plane surfaces
- B24B 37/205
 - • • {provided with a window for inspecting the surface of the work being lapped}
- B24B 37/22
 - • • characterised by a multi-layered structure
- B24B 37/24
 - • • characterised by the composition or properties of the pad materials
- B24B 37/245
 - • • • • {Pads with fixed abrasives}
- B24B 37/26
 - • • characterised by the shape of the lapping pad surface, e.g. grooved
- B24B 37/27
 - Work carriers
- B24B 37/28
 - • for double side lapping of plane surfaces
- B24B 37/30
 - • for single side lapping of plane surfaces
- B24B 37/32
 - • • Retaining rings
- B24B 37/34
 - Accessories
- B24B 37/345
 - • {Feeding, loading or unloading work specially adapted to lapping}
- U B24B 39/00**

Burnishing machines or devices, i.e. requiring pressure members for compacting the surface zone (modifying the physical properties or structure of metal by burnishing [C21D 7/08](#), [C22F 1/00](#)); Accessories therefor
- U B24B 39/06
 - designed for working plane surfaces
- B24B 39/065
 - • {Graining of metal plates, e.g. printing or lithographic plates}
- U B24B 41/00**

Component parts such as frames, beds, carriages, headstocks
- B24B 41/005
 - {Feeding or manipulating devices specially adapted to grinding machines (feeding, loading or unloading work specially adapted to lapping machines [B24B 37/345](#))}
- U B24B 41/06
 - Work supports, e.g. adjustable steadies ([B24B 37/27](#) takes precedence)
- U B24B 41/061
 - • {axially supporting turning workpieces, e.g. magnetically, pneumatically}
- U B24B 41/062
 - • • {between centres; Dogs}
- B24B 41/063
 - • • • • {Lubrication of centres}
- B24B 41/066
 - • {adapted for supporting work in the form of tools, e.g. drills}
- U B24B 49/00**

Measuring or gauging equipment for controlling the feed movement of the grinding tool or work; Arrangements of indicating or measuring equipment, e.g. for indicating the start of the grinding operation ([B24B 33/06](#), [B24B 37/005](#) take precedence; if applicable to other machine tools, [B23Q 15/00](#) - [B23Q 17/00](#) take precedence)
- B24B 49/003
 - {involving acoustic means}
- B24B 49/006
 - {taking regard of the speed}
- U B24B 49/10
 - involving electrical means ([B24B 49/02](#), [B24B 49/08](#) take precedence)
- B24B 49/105
 - • {using eddy currents}

- U B24B 53/00** **Devices or means for dressing or conditioning abrasive surfaces (compensation for grinding wheel abrasion resulting from dressing [B24B 47/25](#))**
- B24B 53/017 · Devices or means for dressing, cleaning or otherwise conditioning lapping tools
 - B24B 53/02 · of plane surfaces on abrasive tools ([B24B 53/017](#) takes precedence)
 - B24B 53/04 · of cylindrical or conical surfaces on abrasive tools or wheels ([B24B 53/017](#) takes precedence)
- B24B 55/00** **Safety devices for grinding or polishing machines; Accessories fitted to grinding or polishing machines for keeping tools or parts of the machine in good working condition (~~of general applicability for machine tools [B23Q 11/00](#); in general [F16P](#)~~)**
- U B24B 55/04 · Protective covers for the grinding wheel
 - U B24B 55/05 · · specially designed for portable grinding machines
 - B24B 55/052 · · · {-with rotating tools}
 - B24B 55/055 · · · {-with oscillating tools}
 - B24B 55/057 · · · {-with belt-like tools}
 - U B24B 55/06 · Dust extraction equipment on grinding or polishing machines ([B24B 31/12](#) takes precedence)
 - U B24B 55/10 · · specially designed for portable grinding machines, e.g. hand-guided
 - B24B 55/102 · · · {-with rotating tools}
 - B24B 55/105 · · · {-with oscillating tools}
 - B24B 55/107 · · · {-with belt-like tools}

Project: N/A (B24C)

- U B24C 1/00** **Methods for use of abrasive blasting for producing particular effects; Use of auxiliary equipment in connection with such methods**
- B24C 1/003 · {-using material which dissolves or changes phase after the treatment e.g. ice, CO₂}
 - B24C 1/006 · {-using material without particles or pellets for deburring, removal of extended surface areas or jet milling of local recessions, e.g. grooves}
 - U B24C 1/04 · for treating only selected parts of a surface, e.g. for carving stone or glass
 - B24C 1/045 · · {-for cutting (energy dissipating devices therefor [B26F 3/008](#))}
 - U B24C 1/08 · for polishing surfaces, e.g. {smoothing a surface} by making use of liquid-borne abrasives
 - B24C 1/083 · · {-Deburring}
 - B24C 1/086 · · {-Descaling; Removing coating films}
- U B24C 3/00** **Abrasive blasting machines or devices; Plants**
- U B24C 3/08 · essentially adapted for abrasive blasting of travelling stock or travelling workpieces
 - B24C 3/081 · · {-for travelling bundles of wires}
 - B24C 3/085 · · {-the travelling workpieces being moved into different working positions during travelling}
 - B24C 3/086 · · · {-whereby the workpieces are turned through a rotational arc of about 180 degrees}
 - U B24C 3/32 · designed for abrasive blasting of particular work, e.g. the internal surfaces of cylinder blocks ([B24C 3/08](#), [B24C 3/18](#) take precedence)
 - U B24C 3/325 · · {-for internal surfaces, e.g. of tubes}

- B24C 3/327
 - • • {by an axially-moving flow of abrasive particles without passing a blast gun, impeller or the like along the internal surface (polishing or abrading surfaces using plastically deformable grinding compound, moved relatively to the workpiece under the influence of pressure [B24B 31/116](#))}

U B24C 5/00**Devices or accessories for generating abrasive blasts**

- B24C 5/005
 - {-Vibratory devices, e.g. for generating abrasive blasts by ultrasonic vibrations (sonic cleaning in general [B08B 3/12](#))}
- U B24C 5/06
 - Impeller wheels; Rotor blades therefor
- B24C 5/062
 - • {-Rotor blades or vanes; Locking means therefor}
- B24C 5/064
 - • {-One-piece wheels; Integral impeller units, e.g. made by casting}

U B24C 7/00**Equipment for feeding abrasive material; Controlling the flowability, constitution, or other physical characteristics of abrasive blasts**

- U B24C 7/0007
 - {the abrasive material being fed in a liquid carrier}
- B24C 7/0015
 - • {-with control of feed parameters, e.g. feed rate of abrasive material or carrier}
- B24C 7/0023
 - • • {-of feed pressure}
- U B24C 7/0046
 - {the abrasive material being fed in a gaseous carrier}
- B24C 7/0053
 - • {-with control of feed parameters, e.g. feed rate of abrasive material or carrier}
- B24C 7/0061
 - • • {-of feed pressure}
- B24C 7/0069
 - • {-with means for preventing clogging of the equipment or for preventing abrasive entering the airway}
- B24C 7/0084
 - {-the abrasive material being fed in a mixture of liquid and gas ([B24C 7/0038](#), [B24C 7/0076](#) take precedence; blasting medium with additives [B24C 11/005](#))}
- B24C 7/0092
 - {-the abrasive material being fed by mechanical means, e.g. by screw conveyors}

U B24C 11/00**Selection of abrasive materials { or additives} for abrasive blasts (polishing compositions [C09G](#))**

- B24C 11/005
 - {-of additives, e.g. anti-corrosive or disinfecting agents in solid, liquid or gaseous form}

Project: N/A (B24D)**U B24D 3/00****Physical features of abrasive bodies, or sheets, e.g. abrasive surfaces of special nature; Abrasive bodies or sheets characterised by their constituents (composition of friction linings [F16D 69/02](#))**

- U B24D 3/02
 - the constituent being used as bonding agent
- U B24D 3/20
 - • and being essentially organic
- B24D 3/28
 - • • Resins {or natural or synthetic macromolecular compounds-[B24D 3/22](#) takes precedence}

U B24D 15/00**Hand tools or other devices for non-rotary grinding, polishing, or stropping**

- U B24D 15/04
 - resilient; with resiliently-mounted operative surface
- B24D 15/045
 - • {-Glove-shaped abrasive devices}
- U B24D 15/06
 - specially designed for sharpening cutting edges
- U B24D 15/08
 - • of knives; of razors
- B24D 15/085
 - • • {-with reciprocating whetstones}
- B24D 15/087
 - • • • {-having a crank handle}
- B24D 15/088
 - • • {-with whetting leather}

- U B24D 18/00** **Manufacture of grinding tools {or other grinding devices}, e.g. wheels, not otherwise provided for**
- B24D 18/0072 · {-using adhesives for bonding abrasive particles or grinding elements to a support, e.g. by gluing}
- B24D 18/0081 · {-of wire-reinforced grinding tools}
- B24D 18/009 · {-Tools not otherwise provided for}
- U B24D 99/00** **Subject matter not provided for in other groups of this subclass {{B28D 1/124 takes precedence}}**
- B24D 99/005 · {-Segments of abrasive wheels}

Project: N/A (B25B)

- U B25B 23/00** **Details of, or accessories for, spanners, wrenches, screwdrivers (bolt tensioners [B25B 29/02](#))**
- U B25B 23/14 · Arrangement of torque limiters or torque indicators in wrenches or screwdrivers (couplings for transmitting rotation or clutches [F16D](#); devices for measuring torque per se [G01L](#))
- B25B 23/1415 · · {-Break members; Arrangements specially adapted for break-bolts (break-bolts per se [F16B 31/00](#))}
- U B25B 27/00** **Hand tools, specially adapted for fitting together or separating parts or objects whether or not involving some deformation, not otherwise provided for (machines for simply fitting together or separating metal parts or objects [B23P 19/00](#))**
- B25B 27/0085 · {-explosive-powered}

Project: N/A (B25C)

- U B25C 1/00** **Hand-held nailing tools (hammers per se [B25D](#); nailing machines [B27F 7/02](#)); Nail feeding devices**
- U B25C 1/04 · operated by fluid pressure, { e.g. by air pressure}
- B25C 1/048 · · {-Hydraulically operated}

Project: N/A (B25D)

- B25D 16/00** **Portable percussive machines with superimposed rotation, {the rotational movement of the output shaft of a motor being modified to generate axial impacts on the tool bit-(combined percussion and rotary drilling adapted for earth drilling [E21B 6/00](#))}**
- U B25D 17/00** **Details of, or accessories for, portable power-driven percussive tools {(details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))}**
- B25D 17/08 · Means for retaining and guiding the tool bit, e.g. chucks {allowing axial oscillation of the tool bit-([B25D 17/005](#) takes precedence)}

Project: N/A (B25J)

B25J

MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES ({ manipulators specially adapted for use in surgery [A61B 19/22](#) ; manipulators used in cleaning hollow articles [B08B 9/04](#) } ; manipulators associated with rolling mills [B21B 39/20](#) ; manipulators associated with forging machines [B21J 13/10](#) ; { manipulators associated with picking-up and placing mechanisms [B23P 19/007](#) } ; means for holding wheels or parts thereof [B60B 30/00](#) ; { vehicles with ground-engaging propulsion means, e.g. walking members [B62D 57/02](#) , [B62D 57/032](#) ; devices for picking-up and depositing articles or materials between conveyers [B65G 47/90](#) , [B65G 47/91](#) ; manipulators with gripping or holding means for transferring packages [B65H 67/065](#) } ; cranes [B66C](#) ; { manipulators used in the protection or supervision of pipe-line installations [F17D 5/00](#) ; walking equipment adapted for nuclear steam-generators [F22B 37/006](#) } ; manipulators specially adapted for, or associated with, nuclear reactors [G21C](#) ; { apparatus used for handling wafers during manufacture or treatment of semiconductor [H01L 21/68](#) })

NOTE

In this subclass, the following term is used with the meaning indicated :

- "manipulator" covers handling tools, devices, or machines having a gripping or work head capable of bodily movement in space and of change of orientation, such bodily movement and change of orientation being controlled, at will, by means remote from the head.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B25J 9/18](#) covered by [B25J 9/16](#)
[B25J 9/22](#) " " [B25J 9/1656](#) ,
[G05B 19/42](#)

B25J 1/00 Manipulators positioned in space by hand (-of master-slave type [B25J 3/00](#) ; micromanipulators [B25J 7/00](#)-)

B25J 1/04 · rigid, e.g. shelf-reachers{(-without grippers [A47F 13/06](#)-)}

U B25J 3/00 Manipulators of master-slave type, i.e. both controlling unit and controlled unit perform corresponding spatial movements

B25J 3/02 · involving a parallelogram coupling of the master and slave units (-pantographic instruments [B43L 13/00](#)-)

B25J 3/04 · involving servo mechanisms (-servo-actuated heads [B25J 15/02](#)-)

B25J 5/00 Manipulators mounted on wheels or on carriages (-[B25J 1/00](#) takes precedence; programme-controlled manipulators [B25J 9/00](#) ; { vehicle aspects [B60](#) , [B62](#) , e.g. remote-controlled steering for motor vehicles [B62D 1/24](#) ; control of position of vehicles [G05D 1/00](#) })

B25J 7/00 Micromanipulators{(-specimen supports for investigating or analysing materials [G01N 23/2204](#) ; associated with microscopes [G02B 21/32](#) ; means for supporting or positioning the objects or the material in discharge tubes [H01J 37/20](#)-)}

U B25J 9/00 Programme-controlled manipulators

U B25J 9/0084 · {comprising a plurality of manipulators}

- B25J 9/0087
 - • {Dual arms (-double SCARA arms [B25J 9/043](#)-)}
- B25J 9/02
 - characterised by movement of the arms, e.g. cartesian coordinate type (-[B25J 9/06](#) takes precedence-)
- U B25J 9/10
 - characterised by positioning means for manipulator elements
- B25J 9/102
 - • {Gears specially adapted therefor, e.g. reduction gears (-gearings in general [F16H](#)-)}
- B25J 9/1025
 - • • {Harmonic drives (-in general: [F16H 49/001](#)-)}
- B25J 9/105
 - • {using eccentric means (-[B25J 9/109](#) takes precedence-)}
- B25J 9/108
 - • {Bearings specially adapted therefor (-bearings in general [F16C](#)-)}
- B25J 9/1085
 - • {positioning by means of shape-memory materials (-shape memory actuators [F03G 7/06](#)-)}
- U B25J 9/14
 - • fluid
- U B25J 9/146
 - • • {Rotary actuators}
- B25J 9/148
 - • • • {of the oscillating vane-type (-in general [F15B 15/12](#)-)}
- B25J 9/16
 - Programme controls (-programme controls in general [G05B 19/00](#), e.g. numerical programme controls [G05B 19/18](#); { recording or playback systems [G05B 19/42](#) })
- B25J 13/00**
 - Controls for manipulators (-programme controls [B25J 9/16](#); control in general [G05](#)-)**
- B25J 13/003
 - {by means of an audio-responsive input (-audible safety signals [B25J 19/061](#)-)}
- B25J 13/02
 - Hand grip control means({handles or pedals for crane control [B66C 13/56](#); for measuring the force applied to control members [G01L 5/22](#); hand-held casings for switching devices, e.g. joy-sticks [H01H 9/0214](#)})
- U B25J 13/08
 - by means of sensing devices, e.g. viewing or touching devices
- U B25J 13/081
 - • {Touching devices, e.g. pressure-sensitive}
- B25J 13/082
 - • • {Grasping-force detectors (-in general [G01L 5/16](#), [G01L 5/22](#)-)}
- B25J 13/084
 - • • {Tactile sensors (-in general [G01L 5/16](#), [G01L 5/22](#)-)}
- B25J 13/085
 - • {Force or torque sensors (-[B25J 13/082](#), [B25J 13/084](#) take precedence-)}
- B25J 15/00**
 - Gripping heads {and other end effectors (-grippers used in machine tools [B23Q 7/04](#); gripping members fitted on cranes [B66C 1/42](#), [B66C 1/44](#); gripping means used in the manufacture of semiconductors {[H01L 21/68707](#)}; gripping means used for mounting electrical components [H05K 13/04](#)-)}**
- B25J 15/0023
 - {Gripper surfaces directly activated by a fluid (-flexible fingers [B25J 15/12](#)-)}
- U B25J 15/0052
 - {multiple gripper units or multiple end effectors}
- B25J 15/0066
 - • {with different types of end effectors, e.g. gripper and welding gun (-[B25J 15/0057](#) and [B25J 15/0061](#) take precedence-)}
- B25J 15/08
 - having finger members (-[B25J 15/02](#), [B25J 15/04](#) take precedence-)
- B25J 15/10
 - • with three or more finger members((-[B25J 15/0009](#) takes precedence-)}
- B25J 19/00**
 - Accessories fitted to manipulators, e.g. for monitoring, for viewing; Safety devices combined with or specially adapted for use in connection with manipulators (-safety-devices in general [F16P](#); protection against radiation in general [G21F](#)-)**
- B25J 19/0004
 - {Braking devices (-brakes in general [F16D](#)-)}
- B25J 19/0091
 - {Shock absorbers (-in general [F16F](#)-)}
- U B25J 19/06
 - Safety devices
- B25J 19/061
 - • {with audible signals (-audio controls [B25J 13/003](#)-)}

B25J 21/00 Chambers provided with manipulation devices (~~constructional features of the mounting of the manipulator in the wall~~ [B25J 1/08](#) ; { glove-boxes for nuclear applications [G21F 7/04](#) })

B25J 21/02 · Glove-boxes, i.e. chambers in which manipulations are performed by the human hands in gloves built into the chamber walls(~~glove- boxes for removal of dirt~~ [B08B 15/026](#) ; glove-boxes shielded against radiation [G21F 7/04\); Gloves therefor](#)

Project: N/A (B26B)

U B26B 1/00 Hand knives with adjustable blade; Pocket knives ([B26B 11/00](#) takes precedence)

U B26B 1/02 · with pivoted blade

U B26B 1/04 · · lockable in adjusted position

B26B 1/042 · · · {by a spring biased locking lever pivoting around an axis parallel to the pivot axis of the blade}

B26B 1/044 · · · {by a spring tongue snapping behind or into the tang of the blade from a side part of the handle}

B26B 1/048 · · · {with a locking member being slidable or movable along the handle}

U B26B 5/00 Hand knives with one or more detachable blades

U B26B 5/001 · {with blades being slid out of handle immediately prior to use}

B26B 5/002 · · {segmented blades}

B26B 5/003 · · {comprising retraction means for the blade or the blade holder}

U B26B 7/00 Hand knives with reciprocating motor-driven blades

B26B 7/005 · {Counter reciprocating blades}

U B26B 11/00 Hand knives combined with other implements, e.g. with corkscrew, with scissors, with writing implement (combined table-ware [A47G 21/06](#))

B26B 11/001 · {of the Swiss-knife type}

B26B 11/003 · {having folding handles}

B26B 11/005 · {Handle also acting as a part of a scissors}

B26B 11/006 · {Several functions combined in the blade}

B26B 11/008 · {comprising electronic or electrical features, e.g. illuminating means, computing devices or sensors}

U B26B 17/00 Hand cutting tools {i.e. with the cutting action actuated by muscle power} with two jaws which come into abutting contact (nail clippers or cutters [A45D 29/02](#); joints therefor [B25B 7/06](#))

B26B 17/006 · {having cutting edges parallel to a pivot axis}

U B26B 19/00 Clippers or shavers operating with a plurality of cutting edges, e.g. hair clippers, dry shavers

U B26B 19/02 · of the reciprocating-cutter type

U B26B 19/04 · · Cutting heads therefor; Cutters therefor; Securing equipment thereof

B26B 19/042 · · · {Long hair cutters or older types comprising a cutting grid}

B26B 19/048 · · · {Complete cutting head being movable}

U B26B 19/06 · · · involving co-operating cutting elements both of which have shearing teeth

B26B 19/063 · · · · {Movable or adjustable cutting head}

B26B 19/066 · · · · {Manually operated}

- U B26B 19/14 · of the rotary-cutter type; Cutting heads therefor; Cutters therefor ([B26B 19/04](#) takes precedence)
- B26B 19/141 · · {-Details of inner cutters having their axes of rotation perpendicular to the cutting surface}
- B26B 19/143 · · {-Details of outer cutters}
- B26B 19/145 · · {-Cutters being movable in the cutting head}
- B26B 19/146 · · {-Complete cutting head being movable}
- B26B 19/148 · · {-specially adapted for removing hair from inaccessible places, e.g. nostrils}
- U B26B 19/20 · with provision for shearing hair of preselected or variable length
- B26B 19/205 · · {-by adjustment of the cutting members}
- U B26B 19/28 · Drive layout for hair clippers or dry shavers, e.g. providing for electromotive drive (electric motors per se [H02](#))
- B26B 19/282 · · {-Motors without a rotating central drive shaft, e.g. linear motors}
- B26B 19/284 · · · {-with an actuator oscillating about a pivot axis}
- B26B 19/288 · · {-Balance by opposing oscillation}
- U B26B 19/38 · Details of, or accessories for, hair clippers, or dry shavers, e.g. housings, casings, grips, guards (cutters, cutting heads [B26B 19/04](#), [B26B 19/12](#), [B26B 19/14](#); cleaning or disinfecting devices [A45D 27/46](#); drying devices [A45D 27/48](#); casings for electric apparatus in general [H05K](#))
- B26B 19/3806 · · {-Accessories}
- B26B 19/3813 · · · {-Attachments}
- B26B 19/382 · · · {-Built-in accessories}
- B26B 19/3826 · · · {-Separate accessories}
- B26B 19/3833 · · · {-Storage and cleaning devices; Power cord storage}
- B26B 19/3846 · · {-Blades; Cutters ([B26B 19/044](#), [B26B 19/141](#) take precedence)}
- B26B 19/3853 · · {-Housing or handle}
- B26B 19/386 · · · {-Means for attaching the head thereto}
- B26B 19/3866 · · · {-Seals or dampers}
- B26B 19/3873 · · {-Electric features; Charging; Computing devices}
- B26B 19/388 · · · {-Sensors; Control}
- B26B 19/3886 · · {-Actuating members, e.g. switches or control knobs}
- B26B 19/3893 · · {-Manufacturing of shavers or clippers or components thereof}
- U B26B 21/00 Razors of the open or knife type; Safety razors or other shaving implements of the planing type; Hair-trimming devices involving a razor-blade; Equipment therefor**
- U B26B 21/40 · Details or accessories
- B26B 21/4012 · · {-Housing details, e.g. for cartridges}
- B26B 21/4018 · · · {-Guard elements}
- B26B 21/4025 · · · {-Cap elements}
- B26B 21/4031 · · · {-characterised by special geometric shaving parameters, e.g. blade span or exposure}
- B26B 21/4037 · · {-Details or parts covering the blades, e.g. caps for storage; Attachments}
- B26B 21/4043 · · {-Contour trimming}
- B26B 21/405 · · {-Electric features; Charging; Computing devices}
- B26B 21/4056 · · · {-Sensors or controlling means}
- B26B 21/4062 · · {-Actuating members, e.g. switches or control knobs; Adjustments}

- B26B 21/4068
 - • {-Mounting devices; Manufacture of razors or cartridges ([B26B 21/528](#) takes precedence)}
- B26B 21/4075
 - • • {-Mounting devices}
- B26B 21/4081
 - • {-Shaving methods; Usage or wear indication; Testing methods}
- B26B 21/4087
 - • • {-Usage or wear indication}
- B26B 21/4093
 - • • {-Testing of shaving razors or components thereof}
- U B26B 21/44
 - • Means integral with, or attached to, the razor for storing shaving-cream, styptic, or the like
- B26B 21/443
 - • • {-Lubricating strips attached to the razor head}
- B26B 21/446
 - • • {-Shaving aid stored in the razor handle}
- U B26B 21/52
 - • Handles, e.g. tiltable, flexible {(handles and attaching handles in general [B25G](#))}
- B26B 21/521
 - • • {-Connection details, e.g. connection to razor heads}
- B26B 21/522
 - • • {-Ergonomic details, e.g. shape, ribs or rubber parts}
- B26B 21/523
 - • • {-Extendible or foldable handles; Extensions}
- B26B 21/525
 - • • {-for longitudinally arranged cutting edges}
- B26B 21/526
 - • • {-Electric features}
- B26B 21/527
 - • • {-attachable to fingers or to the human hand}
- B26B 21/528
 - • • {-Manufacture of razor handles}
- U B26B 21/54
 - Razor-blades {([B26B 21/4006](#) takes precedence)}
- U B26B 21/56
 - • characterised by the shape
- B26B 21/565
 - • • {-Bent razor blades; Razor blades with bent carriers}
- U **B26B 25/00**
 - Hand cutting tools involving disc blades, e.g. motor-driven (details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))**
- B26B 25/005
 - {-Manually operated, e.g. pizza cutters}
- B26B 25/007
 - • {-Operable only in combination with guiding means, e.g. paper cutters}
- U **B26B 27/00**
 - Hand cutting tools not provided for in the preceding groups, e.g. finger rings for cutting string, devices for cutting by means of wires**
- B26B 27/007
 - {-with handles specifically adapted to be attached to a human hand or finger, e.g. thimbles (for razors [B26B 21/527](#))}
- U **B26B 29/00**
 - Guards or sheaths {or guides} for hand cutting tools; Arrangements for guiding hand cutting tools (guards for hair clippers or dry shavers [B26B 19/38](#))**
- U B26B 29/02
 - Guards or sheaths for knives
- B26B 29/025
 - • {-Knife sheaths or scabbards}
- U B26B 29/06
 - Arrangements for guiding hand cutting tools (guiding equipment or arrangements for specific cutting tools, see the particular places, e.g. for hair trimming devices [A45D 24/36](#), for saw blades [B27B 11/02](#), [B26B 13/10](#))
- B26B 29/063
 - • {-Food related applications}

Project: N/A (B26D)

B26D

CUTTING; -DETAILS COMMON TO MACHINES FOR PERFORATING, PUNCHING, CUTTING-OUT, STAMPING-OUT OR SEVERING (soil-working [A01B](#); for growing crops or plants [A01D](#), [G A01G](#); for fodder or straw [A01F](#); for bulk butter [A01J](#); for dough [A21C](#); slaughtering [A22B](#); for tobacco, cigars or cigarettes [A24](#); marking-out, perforating or making buttonholes [A41H 25/00](#); manufacturing footwear [A43D](#); brushmaking [A46D](#); surgery [A61B](#); disintegrating, mincing or shredding in general [B02C](#); cutting wire, making pins or nails [B21F](#), [G B21G](#); of the kind used for metal [B23](#); cutting by abrasive fluid jets [B24C 5/02](#); hand-held cutting tools [B26B](#); perforating, cutting-out, stamping-out or punching, or severing by means other than cutting [B26F](#); for wood [B27](#); for stone [B28D](#); working of plastics or substances in a plastic state [B29](#); making boxes, cartons, envelopes or bags, of paper or similarly worked materials, e.g. metal foil, [B31B](#); article or web delivery apparatus incorporating cutting or line-perforating devices [B65H 35/00](#); for leather or upholstery [B68](#); [C14B](#); for glass [C03B](#); making matches [C06F](#); for peat [C10E](#); for sugar [C13H](#); for textile materials [D06H](#); civil engineering, building, mining, see Section E; for light guides [G02B 6/25](#); cutting processed photographic material [G03D 15/04](#))

NOTES

This subclass covers:

cutting non-metallic sheet material and metal foil in general;
cutting other forms of non-metallic material not otherwise provided for;
features specific to machines for cutting, perforating, punching, cutting-out, stamping-out and severing by means other than cutting, which relate to a requirement or problem of a nature which is not peculiar to a machine for these purposes, that is, details of or arrangements for operating or controlling such machines, although the realisation of such features may differ according to the kind of machine concerned. This subclass covers such features in general even if the feature in any particular case is to some extent peculiar to, or is claimed only for, a machine designed for perforating, punching, cutting-out, stamping-out, or for severing other than by cutting.

If the details or arrangements have no essential features specific to cutting, perforating, punching, cutting-out, stamping-out or severing machines, the more general classes, e.g. [F16](#), take precedence.

In this subclass, in groups [B26D 5/00](#) and [B26D 7/00](#), the following term is used with the meaning indicated:

"cutting" includes cutting-out, stamping-out, punching, perforating, and severing by means other than cutting.

U B26D 3/00

Cutting work characterised by the nature of the cut made; Apparatus therefor

B26D 3/003

- {-specially adapted for cutting rubber}

B26D 3/005

- • {-for cutting used tyres}

B26D 3/006

- {-specially adapted for cutting blocs of plastic material}

B26D 3/008

- • {-by sliding}

U B26D 3/28

- Splitting layers from work; Mutually separating layers by cutting ([B26D 3/30](#) takes precedence; Recovery of plastics or other constituents of waste material containing plastics [B29B 17/00](#))

B26D 3/281

- • {-the work being simultaneously deformed by the application of pressure to obtain profiled workpieces}

B26D 3/283

- • {-Household devices therefor}

- U B26D 5/00 Arrangements for operating and controlling machines or devices for cutting, cutting-out, stamping-out, punching, perforating, or severing by means other than cutting**
- B26D 5/005 · {-Computer numerical control means}
 - B26D 5/007 · {-Control means comprising cameras, vision or image processing systems}
- U B26D 5/08 Means for actuating the cutting member to effect the cut**
- B26D 5/083 · · {-Rack-and-pinion means}
 - B26D 5/086 · · {-Electric, magnetic, piezo-electric, electro-magnetic means}
- U B26D 7/00 Details of apparatus for cutting, cutting-out, stamping-out, punching, perforating, or severing by means other than cutting (cutters [B26D 1/00](#); arrangements for guiding hand cutting tools [B26B 29/06](#); punching tools or dies, cutting-out knives or dies [B26F](#))**
- U B26D 7/06 · Arrangements for feeding or delivering work of other than sheet, web, or filamentary form (feeding or discharging sheets, webs, or filaments [B65H](#))
 - B26D 7/0691 · · {-by centrifugal force}
 - U B26D 7/08 · Means for treating work or cutting member to facilitate cutting (tensioning band cutters [B26D 1/48](#))
 - B26D 7/084 · · {-specially adapted for cutting articles composed of at least two different materials, e.g. using cutters of different shapes (cutting concrete [B28B 11/14](#))}
 - U B26D 7/20 · Cutting beds {([B26D 7/018](#) takes precedence; supporting beds for severing by means of a fluid jet [B26F 3/008](#))}
 - B26D 7/204 · · {-Anvil rollers}
 - U B26D 7/22 · Safety devices specially adapted for cutting machines (safety devices in general [F16P](#))
 - B26D 7/225 · · {-for food slicers}
 - U B26D 7/26 · Means for mounting or adjusting the cutting member; Means for adjusting the stroke of the cutting member
 - U B26D 7/2628 · · {Means for adjusting the position of the cutting member}
 - B26D 7/265 · · · {-Journals, bearings or supports for positioning rollers or cylinders relatively to each other}
 - U B26D 7/27 · Means for performing other operations combined with cutting ([B26D 9/00](#) takes precedence)
 - U B26D 7/32 · · for conveying or stacking cut product (means for removing cut-out material or waste [B26D 7/18](#))
 - B26D 7/325 · · · {-stacking the cut product individually separated by separator elements}

Project: N/A (B26F)

- U B26F 1/00 Perforating; Punching; Cutting-out; Stamping-out; Apparatus therefor (subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency [B24B 1/04](#), perforating by sand-blasting [B24C](#); {e.g. abrasive blasting used for cutting [B24C 1/045](#)}; punching cards or tapes for statistical and record purposes [G06K 1/00](#))**
- U B26F 1/38 · Cutting-out; Stamping-out
 - U B26F 1/3806 · · {wherein relative movements of tool head and work during cutting have a component tangential to the work surface ([B26F 1/40](#) takes precedence)}
 - B26F 1/3813 · · · {wherein the tool head is moved in a plane parallel to the work in a coordinate system fixed with respect to the work} ~~{9809}~~

- B26F 1/382 . . . {-wherein the cutting member reciprocates in, or substantially in, a direction parallel to the cutting edge}

Project: N/A (B27B)

B27B 21/00 Hand saws without power drive ({ hand saws with oscillating saw blades,} [B27B 19/14](#) takes precedence); Equipment for hand sawing, e.g. saw horses ({work benches [B25H 1/00](#); saw guides [B27B 11/02](#)-)}

B27B 31/00 Arrangements for conveying, loading, turning, adjusting, or discharging the log or timber, specially designed for saw mills or sawing machines ([B27B 29/00](#) takes precedence; { arrangements for raising or lowering the feed rollers of gang saw mills [B27B 3/14](#) ; driving mechanisms for the feed rollers of gang saw mills [B27B 3/16](#) })

Project: N/A (B27K)

U B27K 3/00 Impregnating wood, {e.g. impregnation pretreatment, for example puncturing; Wood impregnation aids not directly involved in the impregnation process}{dyeing, staining [B27K 5/00](#)}

B27K 3/002 . {-employing compositions comprising micro-organisms}

B27K 3/005 . {-employing compositions comprising microparticles}

B27K 3/007 . {-employing compositions comprising nanoparticles}

U B27K 3/02 . Processes; Apparatus

B27K 3/0207 . . {-Pretreatment of wood before impregnation}

B27K 3/0214 . . . {-Drying (drying in general [F26B](#))}

B27K 3/0221 . . . {-Pore opening ([B27K 3/0214](#) takes precedence)}

B27K 3/0242 . . {-using melt impregnation}

B27K 3/025 . . {-Controlling the process}

B27K 3/0257 . . {-using rods or tablets, or ampoules, e.g. inserted in pre-drilled cavities}

B27K 3/0264 . . {-using staples or nails}

B27K 3/0271 . . {-Vapour phase impregnation}

B27K 3/0278 . . {-involving an additional treatment during or after impregnation}

B27K 3/0285 . . . {-for improving the penetration of the impregnating fluid}

B27K 3/0292 . . . {-for improving fixation ([B27K 3/0285](#) takes precedence)}

U B27K 3/08 . . Impregnating by pressure, {e.g. vacuum impregnation}

B27K 3/083 . . . {-along the fibers, i.e. longitudinal impregnation}

B27K 3/086 . . . {-using supercritical or high pressure fluids}

B27K 3/15 . . Impregnating involving polymerisation { including use of polymer-containing impregnating agents-(macromolecular compounds derived from lignocellulosic materials [C08H](#); compositions of lignin-containing materials [C08L 97/02](#))}

NOTE

1. When classifying in group [B27K 3/15](#), classification is additionally made in the groups of subclass **M08L** for defining the chemical polymeric structure
2. In groups [B27K 3/16](#) to [B27K 3/50](#), in the absence of an indication to the contrary, impregnating agents are classified in the last appropriate place

B27K 3/153 . . . {-Without in-situ polymerisation, condensation, or cross-linking reactions}

B27K 3/156 . . . {-Combined with grafting onto wood fibres}

U B27K 3/16 . Inorganic impregnating agents

- B27K 3/163 · · {-Compounds of boron}
- B27K 3/166 · · {-Compounds of phosphorus}
- U B27K 3/34 · Organic impregnating agents {(polymers [B27K 3/15](#))}
- B27K 3/346 · · {-Grafting onto wood fibres ([B27K 3/156](#) takes precedence; macromolecular compounds derived from lignocellulosic materials [C08H](#))}
- U B27K 5/00** **Treating of wood not provided for in groups [B27K 1/00](#), [B27K 3/00](#)**
- B27K 5/0005 · {-Cryogenic treatment}
- B27K 5/001 · {-Heating}
- B27K 5/0015 · {-by electric means}
- B27K 5/002 · · {-Electric discharges, plasma}
- B27K 5/0025 · {-by magnetic fields}
- B27K 5/003 · {-by using electromagnetic radiation or mechanical waves (infra-red heating of wood [B27K 5/001](#))}
- B27K 5/0035 · · {-Electron beam-radiation}
- B27K 5/004 · · {-Gamma-radiation}
- B27K 5/0045 · · {-X-rays}
- B27K 5/005 · · {-Laser-light}
- B27K 5/0055 · · {-Radio-waves, e.g. microwaves}
- B27K 5/006 · · {-Vibrations}
- B27K 5/0065 · · {-Ultrasonic treatment}
- B27K 5/007 · {-using pressure ([B27K 3/08](#) takes precedence)}
- B27K 5/0075 · · {-Vacuum}
- B27K 5/008 · · {-Supercritical or high pressure fluids}
- B27K 5/0085 · {-Thermal treatments, i.e. involving chemical modification of wood at temperatures well over 100°C}
- B27K 5/009 · · {-using a well-defined temperature schedule}
- B27K 5/0095 · {-by employing wrappers}
- U B27K 5/06 · Softening or hardening of wood
- B27K 5/065 · · {-Hardening}
- U B27K 9/00** **Chemical or physical treatment of reed, straw, or similar material (mechanical working of cane or the like [B27J 1/00](#))**
- B27K 9/002 · {-Cane, bamboo}
- B27K 9/005 · {-Reed}
- B27K 9/007 · {-Straw}

Project: N/A (B27L)

- B27L 5/00** **Manufacture of veneer (working veneer or plywood [B27D](#)){Preparatory processing therefor-(drying [F26B](#))}**

Project: N/A (B27M)

- U B27M 3/00** **Manufacture or reconditioning of specific semi-finished or finished articles (features of copying devices [B23Q](#); manufacture of plywood or veneer, shaping plywood or veneer into articles [B27D](#); of central layers for plywood [B27D 1/06](#); nailing or stapling machines in general [B27F 7/00](#); of elements for cooperage or wheel making [B27H](#)){presses therefor [B27D 3/00](#)}**
- B27M 3/18 · of furniture {or of doors-([B27D 5/003](#) takes precedence)}

B27M 3/34

- of cases, trunks, or boxes, of wood or equivalent material which cannot satisfactorily be bent without softening (nailing or stapling in general [B25C](#), [B27F](#); of cardboard, paper, or similarly workable material [B31B](#)){Manufacture of cleats therefor-(manufacture of tubes, coops or barrels [B27D 1/00](#), [B27D 1/08](#); by folding grooved panels [B27G 5/00](#))}

Project: N/A (B28B)**B28B**

SHAPING CLAY OR OTHER CERAMIC COMPOSITIONS, SLAG, OR MIXTURES CONTAINING CEMENTITIOUS MATERIAL, e.g. PLASTER (foundry moulding [B22C](#); working stone or stone-like material [B28D](#); shaping of substances in a plastic state, in general [B29C](#); making layered products not composed wholly of these substances [B32B](#); shaping in situ, see the relevant classes of section E)

NOTE

In this subclass, the following term is used with the meaning indicated:

- "the material" means: a. clay or other ceramic compositions; b. slag; c. mixtures with water-setting properties given by clay, cementitious material, or slag.

WARNING

The following IPC group(s) are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

[B28B 23/08](#) covered by [B28B 21/60](#) , [B28B 23/06](#)

B28B 1/00

Producing shaped {prefabricated}articles from the material (-using presses [B28B 3/00](#) ; shaping on moving conveyers [B28B 5/00](#) ; producing tubular articles [B28B 21/00](#) ; { producing articles with embedded elements [B28B 23/00](#) })

B28B 1/001

- {Rapid manufacturing of 3D objects by additive depositing, agglomerating or laminating of material (-selective deposition modelling of metallic powder [B22F 3/008](#) ; rapid manufacturing of 3D objects in general and in particular of plastics [B29C 67/0051](#)-)}

B28B 1/004

- {Devices for shaping artificial aggregates from ceramic mixtures or from mixtures containing hydraulic binder (-from slag [C04B 5/00](#) ; composition of artificial aggregates [C04B 18/02](#)-)}

B28B 1/005

- {Devices or processes for obtaining articles having a marble appearance (-producing decorative effects [B44C](#) ; design of stone surfaces, e.g. marble, [B44F 9/04](#)-)}

B28B 1/008

- {made from two or more materials having different characteristics or properties (-casting for producing layered articles [B28B 1/16](#) ; feeding several successive layers, optionally of different materials [B28B 13/022](#) ; coating [B28B 11/04](#) ; applying material to surfaces to form a permanent layer thereon [B28B 19/00](#)-)}

B28B 1/02

- by turning or jiggering {in moulds or moulding surfaces on rotatable supports}

B28B 1/04

- by tamping or ramming (-followed by pressing [B28B 3/02](#)-)

B28B 1/08

- by vibrating or jolting{(-of moulding sand [B22C 15/10](#) ; of concrete in general [E04G 21/063](#)-)}

B28B 1/082

- {combined with a vacuum, e.g. for moisture extraction (-in general [E04G 21/061](#)-)}

B28B 1/093

- by means directly acting on the material, e.g. by cores wholly or partly immersed in the material {or elements acting on the upper surface of the material}{ [B28B 1/084](#) takes precedence; } internal vibrators for compacting concrete in situ [E04G 21/08](#)-)

- B28B 1/14
- by simple casting, the material being neither forcibly fed nor positively compacted (-for molten material [B28B 1/54](#)-)
- B28B 1/16
- • for producing layered articles (-coating [B28B 11/04](#)-)
- B28B 1/20
- by centrifugal or rotational casting (-slip-casting involving rotation of the mould [B28B 1/28](#) ; for molten material [B28B 1/54](#)-)
- B28B 1/24
- by injection moulding{-injection moulding of ceramic slips [B28B 1/265](#) ; of tubular articles [B28B 21/38](#)-}
- B28B 1/26
- by slip-casting, i.e. by casting a suspension or dispersion of the material in a liquid-absorbent or porous mould, the liquid being allowed to soak into or pass through the walls of the mould; Moulds therefor (-[B28B 1/52](#) takes precedence-); {specially for manufacturing articles starting from a ceramic slip; Moulds therefor (-of tubular articles [B28B 21/08](#)-)}
- B28B 1/261
- • {Moulds therefor (-absorbent moulds in general [B28B 7/344](#)-)}
- B28B 1/268
- • {by dipping moulding surfaces in the slip (-in general [B28B 1/38](#)-)}
- B28B 1/269
- • {by electrophoresis (-electrophoresis in general [C25](#)-)}
- B28B 1/28
- • involving rotation of the mould {about a centrifugal axis}
- B28B 1/29
- by profiling or strickling the material in open moulds or on moulding surfaces{-in rotary moulds [B28B 1/02](#) ; by means of profiled rollers [B28B 3/12](#) , [B28B 3/123](#)-}
- B28B 1/30
- by applying the material on to a core or other moulding surface to form a layer thereon (-to form a permanent layer [B28B 19/00](#)-)
- B28B 1/32
- • by projecting, e.g. spraying (-spraying in general [B05B](#) , ~~[B05D](#)~~)
- B28B 1/34
- • • by centrifugal force{-centrifugally acting implements for applying plaster or the like to walls [E04F 21/10](#)-}
- B28B 1/38
- • by dipping (in general [B05C](#), ~~[B05D](#)~~ ; { shaping from synthetic resin [B29C 41/14](#) })
- B28B 1/50
- specially adapted for producing articles of expanded material, e.g. cellular concrete (chemical aspects{or making expanded aggregate} [C04B](#)-)
- U B28B 1/503
- • {Moulds therefor}
- B28B 1/506
- • • {with means for, or adapted for, cutting the moulded article into pieces (-in general [B28B 7/14](#)-)}
- B28B 1/52
- specially adapted for producing articles from mixtures containing fibres, {e.g. asbestos cement} (-by wrapping on +o mandrels [B28B 1/42](#)-)
- B28B 1/521
- • {from dry mixtures to which a setting agent is applied after forming (-[B28B 1/526](#) , [B28B 1/527](#) take precedence-)}
- B28B 1/522
- • {for producing multi-layered articles (-[B28B 1/526](#) , [B28B 1/527](#) take precedence-)}
- B28B 1/523
- • {containing metal fibres (-[B28B 1/526](#) , [B28B 1/527](#) take precedence-)}
- B28B 1/525
- • {containing organic fibres, e.g. wood fibres (-[B28B 1/526](#) , [B28B 1/527](#) take precedence-)}
- B28B 1/528
- • {for producing corrugated sheets (-[B28B 1/526](#) , [B28B 1/527](#) take precedence-)}
- B28B 1/54
- specially adapted for producing articles from molten material, e.g. slag {refractory ceramic materials}{-chemical aspects [C04B](#) ; { from molten bituminous material [B29C](#) }}
- B28B 3/00**
- Producing shaped articles from the material by using presses (-shaping on moving conveyers [B28B 5/00](#)-); Presses specially adapted therefor (-presses in general [B30B](#)-)**

- B28B 3/003 · {Pressing by means acting upon the material via flexible mould wall parts, e.g. by means of inflatable cores, isostatic presses (-isostatic presses in general [B30B 5/02-](#))}
- B28B 3/006 · {Pressing by atmospheric pressure, as a result of vacuum generation or by gas or liquid pressure acting directly upon the material, e.g. jets of compressed air (-moulds for treating with gases or degassing [B28B 7/44](#) ; compacting concrete by means of vacuum in general [E04G 21/061-](#))}
- U B28B 3/02 · wherein a ram exerts pressure on the material in a moulding space; Ram heads of special form
- B28B 3/04 · · with one ram per mould (-[B28B 3/10](#) takes precedence-)
- B28B 3/20 · wherein the material is extruded{(-extrusion moulding of plastics [B29C 47/00-](#))}
- B28B 5/00** **Producing shaped articles from the material in moulds or on moulding surfaces, carried or formed by, in, or on conveyers irrespective of the manner of shaping (shaping aspects see the relevant groups)**
- B28B 5/02 · on conveyers of the endless-belt or chain type (-in combination with pressing rollers [B28B 3/12-](#))
- U B28B 5/021 · · {the shaped articles being of definite length}
- B28B 5/022 · · · {the moulds or the moulding surfaces being individual independant units and being discontinuously fed (-feeding [B28B 13/0215](#) and sub-groups-)}
- B28B 5/025 · · · {the moulds or the moulding surfaces being divided by separating walls and being continuously fed (-feeding [B28B 13/02-](#))}
- U B28B 5/026 · · {the shaped articles being of indefinite length}
- B28B 5/027 · · · {the moulding surfaces being of the indefinite length type, e.g. belts, and being continuously fed (-feeding [B28B 13/02-](#))}
- B28B 5/028 · · · {the moulding surfaces being of definite length, e.g. succession of moving pallets, and being continuously fed (-feeding [B28B 13/02-](#))}
- B28B 5/04 · in moulds moved in succession past one or more shaping stations (-on turntables [B28B 5/06-](#))
- B28B 7/00** **Moulds; Cores; Mandrels (-specially adapted for the production of the tubular articles [B28B 21/00](#) ; { for casting metals [B22C 9/00](#) ; moulds for plastic materials in general [B29C 33/00](#) ; falsework, forms or shutterings for forming buildings or parts thereof in situ [E04G 9/00](#) to [E04G 15/00](#) })**
- U B28B 7/0002 · {Auxiliary parts or elements of the mould}
- B28B 7/0014 · · {Fastening means for mould parts, e.g. for attaching mould walls on mould tables; Mould clamps (-clamping means specially adapted for counteracting a pressure being applied on a slip or on the moulded article in the mould [B28B 1/266-](#))}
- B28B 7/0029 · {-Moulds or moulding surfaces not covered by [B28B 7/0058](#) to [B28B 7/36](#) and [B28B 7/40](#) to [B28B 7/465](#) , e.g. moulds assembled from several parts-}
- B28B 7/0064 · {Moulds characterised by special surfaces for producing a desired surface of a moulded article, e.g. profiled or polished moulding surfaces (-[B28B 7/36](#) takes precedence; producing decorative effects [B44C](#) ; designs of stone surfaces [B44F-](#))}
- B28B 7/0073 · · {with moulding surfaces simulating assembled bricks or blocks with mortar joints (-[B28B 7/007](#) takes precedence-)}
- B28B 7/0082 · · {with surfaces for moulding parallel grooves or ribs (-[B28B 7/0073](#) , [B28B 7/0079](#) takes precedence-)}
- B28B 7/02 · Moulds with adjustable parts {specially for modifying at will the dimensions or form of the moulded article}
- U B28B 7/08 · Moulds provided with means for tilting or inverting

- B28B 7/082
 - {Tiltable moulding tables or similar moulding surfaces (-specially for casting and erecting walls or parts thereof during construction work [E04G 11/32-](#))}
- B28B 7/10
 - Moulds with means incorporated therein, or carried thereby, for ejecting {or detaching}the moulded article ({ flexible moulds bent open for ejecting [B28B 7/06](#) ; ejecting by tilting or inverting the mould [B28B 7/08](#) ; } devices, not forming part of the mould, for ejecting the moulded article [B28B 13/06-](#))
- B28B 7/14
 - Moulds with means incorporated therein, or carried thereby, for cutting the moulded article into parts ({ for expanded material [B28B 1/506](#) ; } cutting means independent of the mould [B28B 11/14-](#))
- B28B 7/22
 - Moulds for making units for prefabricated buildings {i.e. units each comprising an important section of at least two limiting planes of a room or space, e.g. cells (-for making rooms or entire buildings in situ [E04G 11/02-](#))}; Moulds for making prefabricated stair units
- B28B 7/225
 - {for making stairs or stair units comprising more than one step (-in situ [E04G 13/06-](#))}
- B28B 7/24
 - Unitary mould structures with a plurality of moulding spaces,{e.g. moulds divided into multiple moulding spaces by integratable partitions, mould part structures providing a number of moulding spaces in mutual co-operation}(-assemblies of individually complete moulds [B28B 7/26-](#))}
- B28B 7/26
 - Assemblies of separate moulds {i.e. of moulds or moulding space units, each forming a complete mould or moulding space unit independently from each other}
- B28B 7/28
 - Cores; Mandrels({-[B28B 1/44](#) takes precedence; of special materials in general [B28B 7/34](#) ; cores for making blind holes in situ [E04G 15/04](#) ; for making recesses [E04G 15/06-](#))}
- B28B 7/30
 - adjustable, collapsible, or expanding({-for making tubular objects [B28B 21/88-](#))}
- B28B 7/32
 - • inflatable({-connection of valves to inflatable elastic bodies [B60C 29/00-](#))}
- B28B 7/34
 - Moulds, cores, or mandrels of special material, e.g. destructible materials (-for slip casting [B28B 1/26-](#))
- B28B 7/36
 - Linings or coatings,{e.g. removable, absorbent linings, permanent anti-stick coatings; Linings becoming a non-permanent layer of the moulded article} (-lubricating surfaces of moulds, cores or mandrels [B28B 7/38-](#))
- U B28B 7/38
 - Treating surfaces of moulds, cores, or mandrels to prevent sticking
- B28B 7/384
 - {Treating agents (-for plastic moulding materials in general [B29C 33/60](#) ; lubricants in general [C10M-](#))}
- U B28B 7/40
 - characterised by means for modifying the properties of the moulding material
- B28B 7/44
 - • for treating with gases or degassing, e.g. for de-aerating({-treating with hot gases or vapour [B28B 7/42-](#))}
- B28B 11/00**

Apparatus or processes for treating or working the shaped {or preshaped}articles (-specially adapted for tubular articles [B28B 21/92](#) ; decoration or surface treatment in general [B05](#) , [B44](#) ; compacting concrete in situ in connection with building [E04G 21/06](#) ; drying [F26-](#))
- B28B 11/003
 - {the shaping of preshaped articles, e.g. by bending (-[B28B 11/08](#) takes precedence-)}
- B28B 11/04
 - for coating {or applying engobing layers}(-glazing, engobing [C04B-](#))
- U B28B 11/14
 - for dividing shaped articles by cutting
- B28B 11/16
 - • for extrusion {or for materials supplied in long webs}
- B28B 11/24
 - for curing, setting or hardening (-processes for influencing or modifying the setting or hardening ability of mortars, concrete or artificial stone compositions, in general [C04B 40/00-](#))

- B28B 11/243 · · {Setting, e.g. drying, dehydrating or firing ceramic articles ([-B28B 11/242](#) takes precedence-)}
- B28B 11/245 · · {Curing concrete articles ([-B28B 11/242](#) takes precedence-)}
- B28B 13/00** **Feeding the unshaped material to moulds or apparatus for producing shaped articles; Discharging shaped articles from such moulds or apparatus (feeding or discharging devices incorporated in, or operatively associated with, a particular type of shaping apparatus, or specially designed to supply materials to a particular type of shaping apparatus, see the relevant groups for the apparatus)**
- U B28B 13/02 · Feeding the unshaped material to moulds or apparatus for producing shaped articles
- U B28B 13/0215 · · {Feeding the moulding material in measured quantities from a container or silo}
- U B28B 13/023 · · · {by using a feed box transferring the moulding material from a hopper to the moulding cavities}
- B28B 13/0235 · · · · {the feed box being provided with agitating means, e.g. stirring vanes to avoid premature setting of the moulding material (agitation in general [B01F](#))}
- B28B 13/04 · Discharging the shaped articles ({ discharging tubular articles after shaping [B28B 21/90](#) ; } conveying systems for ceramic mouldings [B65G 49/08](#)-)
- B28B 13/06 · · Removing the shaped articles from moulds (-by means incorporated in, or carried by, the moulds [B28B 7/10](#)-)
- B28B 15/00** **General arrangement or lay-out of plant {Industrial outlines, plant installations}**
- B28B 15/005 · {Machines using pallets co-operating with a bottomless mould; Feeding or discharging means for pallets (~~Feeding pallets for making a continuous moulding surface B28B 5/025 , B28B 5/028~~ *Feeding pallets for making a continuous moulding surface [B28B 5/025](#) , [B28B 5/028](#)*)}
- B28B 17/00** **Details of, or accessories for, apparatus for shaping the material; Auxiliary measures taken in connection with such shaping (-moulds [B28B 7/00](#) ; after-treatment [B28B 11/00](#) ; feeding or discharging [B28B 13/00](#) ; arrangements for embedding elements in the material [B28B 23/00](#) ; details, accessories, or auxiliary measures special to any one type of shaping, machine or method of shaping, see the relevant groups for such machines or methods-)**
- B28B 17/0009 · {Shaping of preshaped articles (-shaping the surface of articles [B28B 11/08](#)-)}
- B28B 17/02 · Conditioning the material prior to shaping((-for mixtures containing clay or cement [B28C](#)-)}
- B28B 19/00** **Machines or methods for applying the material to surfaces to form a permanent layer thereon (-making shaped articles on mandrels [B28B 1/30](#) ; applying liquids or other fluent materials to surfaces in general [B05C](#) ; glazing or engobing [C04B](#) ; applying the material to walls or other fixed structures, see the relevant classes of section E-)**
- U B28B 21/00 **Methods or machines specially adapted for the production of tubular articles**
- U B28B 21/02 · by casting into moulds
- B28B 21/06 · · into moulds having sliding parts (-[B28B 21/26](#) takes precedence; forms, shutterings, or falsework for making rooms as a whole, whole stories, or whole buildings in situ [E04G 11/02](#)-)
- U B28B 21/10 · · using compacting means

- U B28B 21/18 · · · using expansible or retractable mould or core elements
- B28B 21/20 · · · · using inflatable cores, e.g. having a frame inside the inflatable part of the core (-connection of valves to inflatable elastic bodies [B60C 29/00-](#))
- B28B 21/36 · · · applying fluid pressure or vacuum to the material (-combined with slip-casting [B28B 21/08-](#))
- B28B 21/56 · incorporating reinforcements {or inserts}
- U B28B 21/60 · · prestressed reinforcements
- B28B 21/62 · · · circumferential {laterally tensioned}
- U B28B 21/70 · by building-up from preformed elements
- B28B 21/74 · · Producing pipe bends, sockets, sleeves; Moulds therefor (-combined with extrusion presses [B28B 21/54-](#))
- B28B 21/76 · Moulds{-for slip-casting [B28B 21/08-](#)}
- B28B 21/86 · Cores (-in general [B28B 7/00-](#))
- B28B 21/88 · · adjustable, collapsible or expansible (-using inflatable cores [B28B 21/20](#) { for compacting [B28B 21/18](#) })
- B28B 21/90 · Methods or apparatus for {demoulding or}discharging after shaping
- B28B 23/00** **Arrangements specially adapted for the production of shaped articles with elements wholly or partly embedded in the moulding material; {Production of reinforced objects} (-[B28B 21/00](#) takes precedence; in units for prefabricated buildings [B28B 7/22-](#))**
- B28B 23/0043 · {with gaskets or sealing elements, e.g. for tunnelings or man holes (-[B28B 21/563](#) takes precedence-)}
- B28B 23/0056 · {Means for inserting the elements into the mould or supporting them in the mould (-[B28B 23/022](#) takes precedence-)}
- B28B 23/02 · wherein the elements are reinforcing members{(-[B28B 23/0006](#) takes precedence-)}
- B28B 23/022 · · {Means for inserting reinforcing members into the mould or for supporting them in the mould (-inserting during extrusion [B28B 3/2645-](#))}
- B28B 23/18 · · for the production of elongated articles (-[B28B 23/06](#) takes precedence-)
- B28B 23/20 · · the shaping being effected by centrifugal or rotational moulding (-[B28B 23/10](#) takes precedence-)

Project: N/A (B28C)**B28C**

PREPARING CLAY; PRODUCING MIXTURES CONTAINING CLAY OR CEMENTITIOUS MATERIAL, e.g. PLASTER (-preparing material for foundry moulds [B22C 5/00-](#))

NOTE

In this subclass, the following terms or expressions are used with the meanings indicated:

"cement" or "mixtures of cement with other substance" includes plaster;
"clay" includes like ceramic compositions.

B28C 1/00

Apparatus or methods for obtaining or processing clay (-filtration in general [B01D](#) ; separation of solids from solids [B03](#) , [B07](#) ; chemical part [C04B](#) ; by mining or quarrying [E21C 41/16](#) , [E21C 41/26](#) , [E21C 47/10-](#))

- B28C 1/02 · for producing or proccessing clay suspensions,{e.g. slip} (-producing or processing suspensions in general [B01-](#))
- B28C 1/04 · · Producing suspensions, e.g. by blunging {or mixing; with means for removing stones}
- B28C 1/06 · · Processing suspensions {i.e. after mixing}

- U B28C 1/08
 - • • Separating suspensions, e.g. for obtaining clay, for removing stones; {Cleaning clay slurries}
- B28C 1/082
 - • • • {Dewatering ([B28C 1/088](#) takes precedence-); Using sieves}
- B28C 1/10
 - for processing clay-containing substances in non-fluid condition (-clay slurries [B28C 1/02-](#)); {Plants}
- B28C 1/12
 - • Storing and conditioning in storage; Specially adapted storage spaces or devices for their filling or emptying; {Tower structures for the storage of clay} (-feeding clay to shaping apparatus [B28B 13/00-](#))
- B28C 1/14
 - • specially adapted for homogenising, comminuting or conditioning clay in non-fluid condition or for separating undesired admixtures therefrom (-processes involving conversion to a slurry [B28C 1/02](#) ; conditioning in storage [B28C 1/12](#) ; comminuting in general [B02C](#) ; chemical features in eliminating iron or lime [C04B-](#))
- B28C 1/18
 - • • for comminuting {clay lumps}
- B28C 3/00 -
B28C 9/00**

Mixing clay or cement with other material (-general arrangement or layout of plant [B28C 9/00](#) ; mixers in general [B01F](#) ; concrete paving mixers combined with distributing devices [E01C 19/00](#) ; machines for preparing mixtures of road-metal with bitumen [E01C 19/10-](#))

NOTE

In groups [B28C 3/00](#) to [B28C 7/00](#) , the following term is used with the meaning indicated:

- "mixing" includes preliminary mixing, e.g. of some of the ingredients final mixing, and agitating the mixture to prevent segregation thereof
- B28C 3/00**

Apparatus or methods for mixing clay with other substances (-producing clay suspensions [B28C 1/02-](#))
- B28C 5/00**

Apparatus or methods for producing mixtures of cement with other substances, e.g. slurries, mortars, porous or fibrous compositions (-controlling the mixing apparatus and supplying the ingredients [B28C 7/00](#) { separating cement from waste concrete [B03B 9/063](#) })
- B28C 5/003
 - {Methods for mixing (-[B28C 5/386](#) , [B28C 5/402](#) take precedence-)}
- B28C 5/02
 - without using driven mechanical means effecting the mixing (-[B28C 5/48](#) takes precedence-)
- B28C 5/026
 - • {Mixing guns or nozzles; Injector mixers (-applying plaster by gas pressure [E04F 21/12](#) ; both conveying and distributing concrete [E04G 21/04](#) ; conveying concrete [B65G 53/32](#) ; accelerating or decelerating material flow in troughs or tubes [B65G 53/58-](#))}
- B28C 5/04
 - • Gravitational mixing; Mixing by intermingling streams of ingredients ({ [B28C 5/026](#) takes precedence } ; ingredients projected by fluid pressure [B28C 5/06-](#))
- B28C 5/06
 - • the mixing being effected by the action of a fluid (-in combination with driven mechanical means, producing cellular concrete [B28C 5/38-](#))
- B28C 5/08
 - using driven mechanical means affecting the mixing (-[B28C 5/40](#) , [B28C 5/42](#) , [B28C 5/48](#) take precedence; in combination with the action of a fluid [B28C 5/38-](#))
- U B28C 5/0806
 - • {Details; Accessories}
- B28C 5/0831
 - • • {Drives or drive systems, e.g. toothed racks, winches (-[B28C 7/0876](#) takes precedence-)}

- B28C 5/0837 {Drives for mixers of the tilted-drum type (~~B28C 5/085~~ takes precedence)}
- B28C 5/0843 {Drives for drums rotating about a horizontal axis and supported by rotating rollers (~~B28C 5/085~~ takes precedence)}
- U B28C 5/10 {Mixing in containers not actuated to effect the mixing}
- U B28C 5/12 {with stirrers sweeping through the materials {e.g. with incorporated feeding or discharging means or with oscillating stirrers}}
- B28C 5/1238 {for materials flowing continuously through the mixing device and with incorporated feeding or discharging devices (~~feeding or discharging devices per se B28C 5/0818-~~)}
- B28C 5/1246 {with feeding devices (~~B28C 5/1276 , B28C 5/1292~~ take precedence)}
- B28C 5/1253 {with discharging devices (~~B28C 5/1276 , B28C 5/1292~~ take precedence)}
- B28C 5/1261 {Applying pressure for discharging (~~applying pressure during mixing B28C 5/462-~~)}
- B28C 5/1269 {for making cellular concrete (~~in general B28C 5/381-~~)}
- B28C 5/14 the stirrers having motion about a horizontal or substantially horizontal axis (~~with feeding or discharging means B28C 5/12-~~)}
- B28C 5/146 {with several stirrers with parallel shafts in one container (~~B28C 5/145~~ takes precedence)}
- B28C 5/16 the stirrers having motion about a vertical or steeply inclined axis (~~with feeding or discharging means B28C 5/12-~~)}
- U B28C 5/18 {Mixing in containers to which motion is imparted to effect the mixing}
- B28C 5/1806 {rotating about an inclined axis (~~about a steeply inclined axis B28C 5/26-~~)}
- B28C 5/1818 {Mobile or portable devices, e.g. on a wheelbarrow (~~B28C 5/1887~~ takes precedence)}
- U B28C 5/1825 {Mixers of the tilted-drum type, e.g. mixers pivotable about an axis perpendicular to the axis of rotation for emptying}
- B28C 5/1837 {provided with feeding means, e.g. hoisting skips (~~B28C 5/1831 , B28C 5/185~~ , ~~B28C 5/1856~~ take precedence)}
- B28C 5/1856 {Details or parts, e.g. drums (~~drives B28C 5/0831-~~)}
- U B28C 5/20 rotating about a horizontal or substantially horizontal axis during mixing, e.g. without independent stirrers
- B28C 5/2036 {with the material travelling through the mixer, the discharge being opposite the feed inlet (~~B28C 5/2072 , B28C 5/22 , B28C 5/24~~ take precedence)}
- B28C 5/2045 {Parts or components (~~drives B28C 5/0831-~~)}
- B28C 5/2054 {Drums, e.g. provided with non-rotary mixing blades (~~B28C 5/2009~~ takes precedence)}
- B28C 5/34 {Mixing on or by conveyers {e.g. by belts or chains provided with mixing elements}}
- B28C 5/36 Endless-belt mixers {i.e. for mixing while transporting the material on an endless belt, e.g. with stationary mixing elements}
- U B28C 5/38 {wherein the mixing is effected both by the action of a fluid and by directly-acting driven mechanical means, e.g. stirring means; {Producing cellular concrete}}
- B28C 5/381 {Producing cellular concrete (~~B28C 5/1269~~ takes precedence; producing foam ~~B01F 3/04446 , B01F 3/04992-~~)}

- B28C 5/42
 - Apparatus specially adapted for being mounted on vehicles with provision for mixing during transport ({ [B28C 5/1893](#) takes precedence; mounted on a wheelbarrow [B28C 5/1215](#) , [B28C 5/1818](#) , [B28C 5/2018](#) ; } vehicle aspect [B60P 3/16](#)-)
- U B28C 5/4203
 - · {Details; Accessories}
- U B28C 5/4206
 - · · {Control apparatus; Drive systems, e.g. coupled to the vehicle drive-system}
- B28C 5/421
 - · · · {Drives (-in general [B28C 5/0831](#)-)}
- B28C 5/4213
 - · · · · {Hydraulic drives (-[B28C 5/4217](#) takes precedence-)}
- B28C 5/422
 - · · · {Controlling or measuring devices (-[B28C 5/4227](#) takes precedence-)}
- B28C 5/4231
 - · · {Proportioning or supplying water (-in general [B28C 7/12](#)-)}
- U B28C 5/4234
 - · · {Charge or discharge systems therefor}
- B28C 5/4244
 - · · · {Discharging; Concrete conveyer means, chutes or spouts therefor (-in general [B28C 7/168](#)-)}
- B28C 5/4248
 - · · · · {using chutes (-combined with transporting belts [B28C 5/4255](#) , combined with pumps or screws [B28C 5/4258](#)-)}
- B28C 5/4262
 - · · {Closures; Sealing mechanisms (-[B28C 5/4237](#) takes precedence-)}
- B28C 5/4268
 - · · {Drums, e.g. provided with non-rotary mixing blades (-drums for concrete mixers with horizontal axis [B28C 5/2054](#)-)}
- B28C 5/4272
 - · {with rotating drum rotating about a horizontal or inclined axis, e.g. comprising tilting or raising means for the drum (-[B28C 5/4279](#) takes precedence-)}
- B28C 5/4296
 - · {mounted on a tractor or on a tractor wheel (-for tilted-drum type mixers [B28C 5/1831](#) ; charging thereof [B28C 5/4237](#)-)}
- U B28C 5/46
 - Arrangements for applying super- or sub-atmospheric pressure during mixing; Arrangements for cooling or heating during mixing, {e.g. by introducing vapour}
- B28C 5/462
 - · {Mixing at sub- or super-atmospheric pressure (-[B28C 5/1261](#) takes precedence-)}
- B28C 5/48
 - wherein the mixing is effected by vibrations (-mixers with vibrating mechanisms in general [B01F 11/00](#)-)
- B28C 5/485
 - · {with reciprocating or oscillating stirrers; Stirrers therefor (-[B28C 5/4293](#) takes precedence-)}
- B28C 7/00**
 - Controlling the operation of apparatus for producing mixtures of clay or cement with other substances; Supplying or proportioning the ingredients for mixing clay or cement with other substances; Discharging the mixture(-[B28C 5/42](#) takes precedence; feeding material in general [B65G](#) ; proportioning in general [G01F](#) , [G01G](#) ; controlling in general [G05](#)-)}**
- U B28C 7/0007
 - {Pretreatment of the ingredients, e.g. by heating, sorting, grading, drying, disintegrating; Preventing generation of dust}
- B28C 7/0023
 - · {by heating or cooling (-during mixing [B28C 5/46](#)-)}
- B28C 7/0046
 - {Storage or weighing apparatus for supplying ingredients (-[B28C 7/04](#) takes precedence-)}
- B28C 7/0053
 - · {Storage containers, e.g. hoppers, silos, bins (-[B28C 7/0084](#) takes precedences-)}
- B28C 7/04
 - Supplying or proportioning the ingredients((-[B28C 7/022](#) takes precedence; forming a predetermined ratio of the components to be mixed, in general [B01F 15/04](#)-)}
- U B28C 7/0422
 - · {Weighing predetermined amounts of ingredients, e.g. for consecutive delivery}
- B28C 7/044
 - · · {Weighing mechanisms specially adapted therefor; Weighing containers (-other containers [B28C 7/0046](#)-)}

- B28C 7/0445
 - • • {using a weighing receptacle, the feeding thereof being automatically suspended after a predetermined weight has been obtained ([B28C 7/045](#) takes precedence-)}
- B28C 7/045
 - • • {using a weighing receptacle movable between several positions, e.g. moving vertically, horizontally or rotating about an axis ([B28C 7/0427](#) takes precedence-)}
- U B28C 7/0454
 - • {Volumetric measuring devices, e.g. for consecutively delivering predetermined volumes of ingredients}
- U B28C 7/0459
 - • • {the ingredients being first supplied into measuring chambers, e.g. containers or skips}
- B28C 7/0463
 - • • • {Measuring chambers or containers therefor ([B28C 7/0046](#)-)}
- B28C 7/0472
 - • • {for continuous feeding, e.g. by controlling the velocity of a transporting belt or the thickness of the ingredients on the belt or by regulating the outlet of a hopper ([B28C 7/0477](#) takes precedence-)}
- B28C 7/0481
 - • {Plant for proportioning, supplying or batching ([B28C 7/0436](#) , [B28C 7/0811](#) take precedence; plant in general [B28C 9/00](#)-)}
- U B28C 7/06
 - • Supplying the solid ingredients, e.g. by means of endless conveyers or jiggling conveyers
- B28C 7/061
 - • • {from stationary storage means having elements for dividing the ground sectorially ([B28C 7/0811](#) takes precedence-)}
- B28C 7/065
 - • • {with a pivotable charging-bin ([B28C 7/068](#) takes precedence-)}
- B28C 7/067
 - • • {by means of stationary hoppers, chambers or bins from which the material is fed gravitationally, e.g. having agitating means therein ([B28C 7/0053](#)-)}
- U B28C 7/08
 - • • by means of scrapers or skips
- B28C 7/0823
 - • • • {using manually-operated cable-pulled drag shovels ([B28C 7/0841](#) takes precedence-)}
- B28C 7/0835
 - • • • {using skips to be hoisted along guides or to be tilted, to charge working-site concrete mixers ([B28C 7/0427](#) , [B28C 7/0459](#)-)}
- B28C 7/0858
 - • • • • {the skips being tilted ([B28C 7/0852](#) takes precedence-)}
- U B28C 7/16
 - Discharge means, {e.g. with intermediate storage of fresh concrete}
- U B28C 7/162
 - • {by means of conveyers, other than those comprising skips or containers, e.g. endless belts, screws, air under pressure}
- U B28C 7/163
 - • • {using a pump}
- B28C 7/165
 - • • • {using a fluid, e.g. gas ([B28C 5/06](#) , [B28C 5/1261](#) take precedence-)}
- B28C 9/00**
 - General arrangement or layout of plant ({[B28C 7/0061](#) , [B28C 7/0481](#) take precedence-})**
- B28C 9/008
 - {Plant adapted for mixing materials lying on the ground, e.g. in sectors ([B28C 9/0436](#) takes precedence-)}
- B28C 9/04
 - the plant being mobile, {e.g. mounted on a carriage or a set of carriages} ([B28C 5/42](#) , { [B28C 9/004](#) , [B28C 9/006](#) } take precedence)
- B28C 9/0409
 - • {and broken-down for transport ([B28C 9/0445](#) takes precedence-)}
- B28C 9/0454
 - • {Self-contained units, i.e. mobile plants having storage containers for the ingredients ([B28C 9/0472](#) , [B28C 9/0481](#) take precedence-)}
- B28C 9/0481
 - • {with means for loading the material from ground level to the mixing device, e.g. with an endless conveyer or a charging skip ([B28C 9/0436](#) takes precedence-)}

Project: N/A (B28D)

- U B28D 1/00** Working stone or stone-like materials, e.g. brick, concrete {or glass}, not provided for elsewhere; machines, devices, tools therefor (fine working of gems, jewels, crystals [B28D 5/00](#); working by grinding or polishing [B24](#); devices or means for dressing or conditioning abrasive surfaces [B24B 53/00](#))
- B28D 1/006 · {-Artificial ageing of stones; Providing stones with an antique appearance}
- B28D 1/008 · · {-by means of a tumbler}
- U B28D 5/00** Fine working of gems, jewels, crystals, e.g. of semiconductor material; apparatus or devices therefor (working by grinding or polishing [B24](#); for artistic purposes [B44B](#))
- U B28D 5/02 · by rotary tools, e.g. drills {([B28D 5/0005](#) takes precedence)}
- U B28D 5/022 · · {by cutting with discs or wheels}
- B28D 5/028 · · · {-with a ring blade having an inside cutting edge}
- U B28D 7/00** Accessories specially adapted for use with machines or devices of the preceding groups {([B28D 5/0058](#) takes precedence)}
- B28D 7/04 · for supporting or holding work {or conveying or discharging work-([B28D 1/047](#), [B28D 5/0041](#), [B28D 5/0052](#) take precedence)}

Project: N/A (B29B)

- U B29B 7/00** Mixing; Kneading ({for preparation of dough [A21C 1/00](#);} in general [B01F](#); combined with calendering [B29C 43/24](#), with injection [B29C 45/46](#), with extrusion [B29C 47/36](#))
- U B29B 7/30 · continuous, with mechanical mixing or kneading devices
- U B29B 7/34 · · with movable mixing or kneading devices
- U B29B 7/38 · · · rotary ([B29B 7/52](#) takes precedence)
- U B29B 7/40 · · · · with single shaft
- U B29B 7/42 · · · · · with screw or helix
- B29B 7/428 · · · · · · {-Parts or accessories, e.g. casings, feeding or discharging means}
- B29B 7/429 · · · · · · · {Screws ([B29B 7/421](#) takes precedence)}
- U B29B 7/52 · · · with rollers or the like, e.g. calenders
- B29B 7/56 · · · · with co-operating rollers {e.g. with repeated action, i.e. the material leaving a set of rollers being reconducted to the same set or being conducted to a next set}
- U B29B 7/74 · using other mixers or combinations of {mixers, e.g. of} dissimilar mixers; {Plant}
- U B29B 7/76 · · {Mixers} with stream-impingement mixing head
- U B29B 7/7631 · · · {Parts; Accessories ([B29B 7/7684](#) takes precedence)}
- B29B 7/7636 · · · · {-Construction of the feed orifices, bores, ports}
- B29B 7/7642 · · · · · {-Adjustable feed orifices, e.g. for controlling the rate of feeding}
- B29B 7/7647 · · · · {-Construction of the mixing conduit module or chamber part}
- B29B 7/7652 · · · · {-Construction of the discharge orifice, opening or nozzle}
- B29B 7/7657 · · · · · {-Adjustable discharge orifices, openings or nozzle openings, e.g. for controlling the rate of dispensing}
- U B29B 7/7663 · · · {the mixing head having an outlet tube with a reciprocating plunger, e.g. with the jets impinging in the tube}
- U B29B 7/7684 · · · · {Parts; Accessories}
- B29B 7/7689 · · · · · {-Plunger constructions}

- B29B 7/7694 {-comprising recirculation channels; ducts formed in the plunger}
- U B29B 7/80 . Component parts, details or accessories; Auxiliary operations ([B29B 7/22](#), [B29B 7/58](#) take precedence, {cleaning mixers [B01F 15/00019](#)})
- B29B 7/802 . {-Constructions or methods for cleaning the mixing or kneading device (cleaning in general [B08B](#))}
- B29B 7/803 . . {-Cleaning of mixers of the gun type, stream-impingement type, mixing heads}
- B29B 7/805 {-Cleaning of the mixing conduit, module or chamber part}
- B29B 7/806 {-Cleaning of the discharge opening, e.g. orifice of the dispenser}
- B29B 7/807 {-Cleaning of the central body of the plunger}
- B29B 7/808 {-Cleaning of the plunger tip}
- U B29B 7/88 . . Adding charges, {i.e. additives}
- B29B 7/885 . . . {with means for treating, e.g. milling, the charges }([B29B 7/905](#) takes precedence)}
- B29B 7/90 . . . Fillers or reinforcements {e.g. fibres}
- U **B29B 15/00** **Pretreatment of the material to be shaped, not covered by groups [B29B 7/00](#) to [B29B 13/00](#)**
- B29B 15/08 . of reinforcements or fillers (chemical aspects [C08J](#), [K08K](#))
- U B29B 15/10 . . Coating or impregnating {independently of the moulding or shaping step} (applying liquids in general [B05](#))
- NOTE
Where the coating or impregnating is combined with moulding the documents are classified in [B29C 53/8066](#), [B29C 70/00](#)
- B29B 15/105 . . . {-of reinforcement of definite length with a matrix in solid form e.g. powder, fibre or sheet form (calendering [B29C 70/506](#))}
- U **B29B 17/00** **Recovery of plastics or other constituents of waste material containing plastics; ({ volume reduction of waste plastics, e.g. by mechanical compacting or melting disposal of solid waste [B09B](#);} chemical recovery [C08J 11/00](#))**
- U B29B 17/04 . Disintegrating plastics, { e.g. by milling }([B29B 9/02](#), [B29B 11/02](#), [B29B 13/10](#), { [B29B 17/02](#) } take precedence)
- B29B 17/0404 . . {-to powder}
- B29B 17/0408 . . . {-using cryogenic systems}
- B29B 17/0412 . . {-to large particles, e.g. beads, granules, flakes, slices}

Project: N/A (B29C)**B29C**

SHAPING OR JOINING OF PLASTICS; SHAPING OF SUBSTANCES IN A PLASTIC STATE, IN GENERAL; AFTER-TREATMENT OF THE SHAPED PRODUCTS, e.g. REPAIRING ({{ moulding devices for producing toilet or cosmetic sticks [A45D 40/16](#) } ; working in the manner of metal [B23](#); grinding, polishing [B24](#); cutting [B26D](#), [B26F](#); making preforms [B29B 11/00](#) ; making laminated products by combining previously unconnected layers which become one product whose layers will remain together [B32B 37/00](#) - [B32B 41/00](#)-)

NOTE

1. Attention is drawn to Note (3) following the title of class [B29](#).

2. In this subclass:

- repairing of articles made from plastics or substances in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass [B29D](#), is classified in group [B29C 73/00](#) ;
- component parts, details, accessories or auxiliary operations which are applicable to more than one moulding technique a reclassified in groups [B29C 31/00](#) to [B29C 37/00](#) ;
- component parts, details, accessories or auxiliary operations which are only of use for one specific shaping technique a reclassified only in the relevant subgroups of groups [B29C 39/00](#) to [B29C 71/00](#) .

- B29C 31/00** Handling, e.g. feeding of the material to be shaped, {storage of plastics material before moulding; Automation, i.e. automated handling lines in plastics processing plants, e.g. using manipulators or robots} (-discharging moulded articles from the mould [B29C 37/0003](#) ; storage of prepregs or SMC after impregnation or during ageing [B29C 70/54](#) ; baling of rubber [B29B 15/02](#) ; in general [B65G](#)-)}
- B29C 31/006 • {Handling moulds, e.g. between a mould store and a moulding machine (-movable moulds [B29C 33/34](#) ; for injection moulding [B29C 45/1756](#)-)}
- B29C 31/008 • {Handling preformed parts, e.g. inserts (-[B29C 37/001](#) takes precedence; for injection moulding [B29C 45/14008](#) ; for blow moulding [B29C 49/2408](#) ; for thermoforming [B29C 51/165](#)-)}
- B29C 31/02 • Dispensing from vessels, e.g. hoppers ({into a mould cavity [B29C 31/04](#) ; large containers characterised by discharge means [B65D 88/28](#) , [B65D 88/54](#)-)}
- B29C 31/04 • Feeding {of the material to be moulded}, e.g. into a mould cavity ({ [B29C 39/08](#) takes precedence; using a material distribution system to two or more fixed injection moulds [B29C 45/125](#) } ; to presses in general [B30B 15/30](#)-}
- B29C 31/041 • • {using filling or dispensing heads placed in closed moulds or in contact with mould walls (-[B29C 45/27](#) takes precedence-)}
- B29C 31/042 • • {using dispensing heads, e.g. extruders, placed over or apart from the moulds (-positioning extruded preforms on conveyers [B29C 31/085](#)-)}
- B29C 31/047 • • {combined with moving moulds (-[B29C 31/044](#) , [B29C 31/048](#) take precedence-)}
- B29C 31/06 • • in measured doses, {e.g. by weighting (-feeding mixers with measured doses [B01F 15/0216](#) , [B01F 15/0454](#) , [B29B 7/24](#) , [B29B 7/603](#) ; in general [G01F](#)-)}
- B29C 31/08 • • of preforms {to be moulded, e.g. tablets, fibre reinforced preforms, extruded ribbons, tubes or profiles; Manipulating means specially adapted for feeding preforms, e.g. supports conveyers (-[B29C 31/066](#) , [B29C 37/001](#) , [B29C 43/085](#) take precedence-)}

NOTE

Documents describing feeding preforms, e.g. parisons, tubes, sheets in connection with shaping techniques described in groups [B29C 49/00](#) to [B29C 65/00](#) are not classified in group [B29C 31/08](#) , but in the relevant groups of these techniques

- B29C 31/085
- • • {combined with positioning the preforms according to predetermined patterns, e.g. positioning extruded preforms on conveyers (~~B29C 70/30~~ takes precedence; for building tyres [B29D 30/08\)}](#)
- U B29C 33/00 Moulds or cores; Details thereof or accessories therefor**
- U B29C 33/0011
- {thin-walled moulds}
- B29C 33/0016
- • {Lost moulds, e.g. staying on the moulded object (~~flexible bags without particular shape filled with expandable material [B29C 44/182](#) ; single use mandrels for winding and forming [B29C 53/822](#)~~)}
- B29C 33/0022
- {Multi-cavity moulds (~~B29C 33/301~~ takes precedence)}
- B29C 33/0027
- • {with deep narrow cavities, e.g. for making piles (~~non-woven pile fabrics [D04H 11/00](#)~~)}
- B29C 33/0038
- {with sealing means or the like (~~seals on envelopes used in tyre retreading [B29D 30/542](#) ; for injection moulding footwear [B29D 35/0045](#)~~)}
- B29C 33/0055
- {with incorporated overflow cavities (~~in particular in injection moulds [B29C 45/2669](#)~~)}
- B29C 33/0061
- {characterised by the configuration of the material feeding channel (~~sprue channels for injection moulding [B29C 45/27](#)~~)}
- B29C 33/0077
- {characterised by the configuration of the mould filling gate (~~mixing chambers situated in the mould opening [B29B 7/7471](#)~~); accessories for connecting the mould filling gate with the filling spout}
- U B29C 33/02
- with incorporated heating or cooling means
- B29C 33/04
- • using liquids, gas or steam (~~tyre moulds with incorporated heating or cooling means using liquids, gas or steam [B29D 30/0601](#))}~~
- B29C 33/12
- with incorporated means for positioning inserts, e.g. labels (~~positioning reinforcements [B29C 70/541](#)~~)}
- U B29C 33/20
- Opening, closing or clamping
- B29C 33/202
- • {Clamping means operating on closed or nearly closed mould parts, the clamping means being independently movable of the opening or closing means (~~clamping devices for injection moulding machines [B29C 45/64](#)~~)}
- B29C 33/30
- Mounting, exchanging or centering (~~moulds, mould parts or cores; [B29C 33/485](#) takes precedence}~~
- B29C 33/301
- • {Modular mould systems [MMS], i.e. moulds built up by stacking mould elements, e.g. plates, blocks, rods (~~B29C 33/0088~~ takes precedence)}
- B29C 33/305
- • {Mounting of moulds or mould support plates (~~handling of moulds [B29C 31/006](#) ; mounting of moulds for injection moulding [B29C 45/1742](#)~~)}
- B29C 33/306
- • {Exchangeable mould parts, e.g. cassette moulds, mould inserts (~~moulds with exchangeable mould parts for injection moulding [B29C 45/2673](#) ; mounting of exchangeable mould inserts for injection moulding [B29C 45/2675](#)~~)}
- B29C 33/307
- • {Mould plates mounted on frames; Mounting the mould plates; Frame constructions therefor (~~shaping plates for making moulds [B29C 33/3842](#) ; thin walled moulds [B29C 33/0011](#)~~)}
- B29C 33/308
- • {Adjustable moulds (~~for injection moulding [B29C 45/376](#)~~)}
- U B29C 33/34
- movable, e.g. to or from the moulding station
- B29C 33/36
- • continuously movable {in one direction, e.g. in a closed circuit (~~B29C 49/0021~~ takes precedence)}
- B29C 33/38
- characterised by the material or the manufacturing process (~~B29C 33/44~~ takes precedence; manufacture of moulds or parts thereof from metal [B22](#) , [B23](#))
- B29C 33/3814
- • {Porous moulds (~~adapted for vacuum forming [B29C 51/365](#)~~)}
- U B29C 33/3842
- • {Manufacturing moulds, e.g. shaping the mould surface by machining}

- B29C 2033/385
 - • • {by laminating a plurality of layers (-moulds built up by stacking mould elements, e.g. plates, blocks, rods, in general [B29C 33/301](#) , tyre moulds made of a plurality of laminations [B29D 2030/0609-](#))}
- U B29C 33/40
 - • Plastics, e.g. foam, rubber
- B29C 33/405
 - • • {Elastomers, e.g. rubber (-[B29C 33/50](#) takes precedence-)}
- U B29C 33/42
 - characterised by the shape of the moulding surface, e.g. ribs, grooves
- B29C 33/424
 - • {Moulding surfaces provided with means for marking or patterning (-for injection moulding [B29C 45/372-](#))}
- B29C 33/428
 - • • {For altering indicia, e.g. data, numbers (-for injection moulding [B29C 45/374-](#))}
- U B29C 33/44
 - with means for , or specially constructed to facilitate, the removal of articles, e.g. of undercut articles
- U B29C 33/442
 - • {with mechanical ejector or drive means therefor}
- U B29C 33/444
 - • • {for stripping articles from a mould core, e.g. using stripper plates}
- B29C 33/446
 - • • • {and using a rotating movement to unscrew articles (-in particular in injection moulds [B29C 45/262-](#))}
- B29C 33/448
 - • {destructible (-[B29C 33/52](#) takes precedence; in particular used in injection moulding [B29C 45/4457-](#))}
- U B29C 33/48
 - • with means for collapsing or disassembling
- B29C 33/485
 - • • {cores or mandrels (-collapsible mandrels for shaping tube ends [B29C 57/02](#) ; collapsible mandrels for winding and joining [B29C 53/824-](#))}
- B29C 33/50
 - • • elastic {or flexible(-for isostatic pressing [B29C 43/3642-](#))}
- B29C 33/505
 - • • • {cores or mandrels, e.g. inflatable (-[B29C 33/0016](#) takes precedence; for winding and joining [B29C 53/824](#) ; for supporting articles during joining [B29C 66/634](#) ; flexible cores for vulcanizing tyres [B29D 30/0654-](#))}
- B29C 33/52
 - • soluble or fusible(-in particular used in injection moulding [B29C 45/4457-](#))}
- B29C 33/56
 - Coatings,{e.g. enamelled, galvanised}; Releasing, lubricating or separating agents(-in-mould coating [B29C 37/0028](#) ; using or applying separating agents [B29C 37/0067-](#))}
- B29C 33/60
 - • Releasing, lubricating or separating agents{ in general [C10M-](#)}
- U B29C 33/70
 - Maintenance
- B29C 33/72
 - • Cleaning{ extruder parts [B29C 47/0877](#) ; in general [B08B 7/00-](#)}
- B29C 33/76
 - Cores (-[B29C 33/02](#) to [B29C 33/70](#) , { [B29C 41/40](#) , [B29C 53/74](#) , [B29C 53/82](#) }take precedence)
- B29C 35/00**

Heating, cooling or curing, e.g. crosslinking, vulcanising; Apparatus therefor (-moulds with incorporated heating or cooling means [B29C 33/02](#) ; { thermal after-treatment of shaped articles [B29C 71/02](#) } ; curing devices for plastic dental prostheses [A61C 13/14](#) ; before moulding [B29B 13/00](#) ; Chemical aspects [C08J 3/00-](#))
- B29C 35/007
 - {Tempering units for temperature control of moulds or cores, e.g. comprising heat exchangers, controlled valves, temperature-controlled circuits for fluids (-[B29C 35/0294](#) takes precedence-)}
- B29C 35/02
 - Heating or curing, e.g. crosslinking, vulcanising {during moulding, e.g. in a mould}(-coldvulcanisation [B29C 35/18](#) ; { vulcanising tyres, presses therefor [B29D 30/0601](#) })
- U B29C 2035/0205
 - • {Not used}
- B29C 2035/0211
 - • • {resistance heating (-[B29C 2035/0811](#) takes precedence-)}
- B29C 35/0222
 - • {the curing continuing after removal from the mould (-[B29C 35/0233](#) takes precedence-)}

- B29C 35/0227
 - {using pressure vessels, e.g. autoclaves, vulcanising pans (~~B29C 35/065 takes precedence~~)}
- B29C 35/0266
 - {Local curing (~~for repairing B29C 73/34~~)}
- B29C 35/0272
 - {using lost heating elements, i.e. heating means incorporated and remaining in the formed article (~~for preforms with internal stresses B29C 61/0625 ; joining using lost heating elements B29C 65/34 ; making electrically conductive articles B29C 70/882~~)}
- B29C 35/0277
 - {Apparatus with continuous transport of the material to be cured (~~B29C 35/025 , B29C 35/06 , B29C 35/10 , B29C 35/14 take precedence~~)}
- B29C 2035/0283
 - {Thermal pretreatment of the plastics material (~~thermal after-treatment B29C 71/02~~)}
- B29C 35/0288
 - {Controlling heating or curing of polymers during moulding, e.g. by measuring temperatures or properties of the polymer and regulating the process (~~controlling or regulating chemical, physical or physico- chemical processes in general B01J 19/0006~~)}
- B29C 35/08
 - {by wave energy or particle radiation (~~B29C 67/0051 , B29C 71/04 take precedence~~)}
- B29C 35/16
 - Cooling (~~cooling extruded material B29C 47/8815 ; cooling preforms for blow moulding B29C 49/6427 ; cooling blown articles B29C 49/66 ; cooling tyres during post cure inflation B29D 30/0643~~)}
- B29C 37/00**
 - Component parts, details, accessories or auxiliary operations, not covered by group B29C 33/00 or B29C 35/00**
- B29C 37/0003
 - {Discharging moulded articles from the mould (~~constructions for removing the articles B29C 33/44~~)}
- U B29C 37/0017
 - {by stripping articles from mould cores}
- B29C 37/0021
 - • {and using a rotating movement to unscrew articles (~~in particular used in injection moulding B29C 45/178~~)}
- B29C 37/0025
 - {Applying surface layers, e.g. coatings, decorative layers, printed layers, to articles during shaping, e.g. in-mould printing (~~moulding on preformed layers as inserts B29C 70/68 ; applying fluent material to surfaces in general B05~~)}
- U B29C 37/0028
 - {In-mould coating, e.g. by introducing the coating material into the mould after forming the article}
- B29C 37/0032
 - • {the coating being applied upon the mould surface before introducing the moulding compound , e.g. applying a gelcoat (~~B29C 44/14 and B29C 44/32 take precedence~~)}
- B29C 37/0053
 - {Moulding articles characterised by the shape of the surface, e.g. ribs, high polish (~~mould construction therefor B29C 33/42 ; surface shaping of articles B29C 59/00 ; by incorporating filler in or near the surface B29C 70/64~~)}
- B29C 37/0057
 - {Moulding single grooves or ribs, e.g. tear lines (~~folding lines B29C 53/06~~)}
- B29C 37/006
 - {Degassing moulding material or draining off gas during moulding (~~venting means in moulds B29C 33/10~~)}
- B29C 37/0067
 - {Using separating agents during or after moulding; Applying separating agents on preforms or articles, e.g. to prevent sticking to each other (~~separating agents B29C 33/60~~)}
- B29C 37/0078
 - {Measures or configurations for obtaining anchoring effects in the contact areas between layers (~~surface shaping B29C 59/00 ; B29C 66/02 takes precedence~~)}
- B29C 37/0082
 - {Mechanical anchoring (~~B29C 66/303 takes precedence~~)}
- B29C 37/0085
 - • {by means of openings in the layers (~~joining through openings B29C 66/304~~)}

- B29C 37/0096 · {Trouble-shooting during starting or stopping moulding or shaping apparatus (~~B29C 66/872~~ takes precedence)}
- B29C 37/02 · Deburring or deflashing (~~by grinding or polishing B24B~~){~~thermal deburring in general B23D 79/005~~}
- B29C 37/04 · · of welded articles, e.g. deburring or deflashing in combination with welding(~~shaping the burr B29C 66/32~~)
- NOTE
Attention is drawn to Note (3) following the subclass title.
- B29C 39/00 Shaping by casting, i.e. introducing the moulding material into a mould or between confining surfaces without significant moulding pressure; Apparatus therefor (~~B29C 41/00~~ takes precedence)**
- U B29C 39/003 · {characterised by the choice of material}
- NOTE
When classifying in this group, it is desirable to add the indexing codes of subclass [B29K](#) to identify the moulding materials and their properties. Documents concerning the choice of moulding materials having a particular influence on the moulding technique should be classified in this group if of interest
- B29C 39/006 · · {Monomers or prepolymers (~~by reaction injection moulding B29C 67/246~~)}
- U B29C 39/02 · for making articles of definite length, i.e. discrete articles
- B29C 39/04 · · using movable moulds (~~B29C 41/02~~ takes precedence){not applied}
- B29C 39/10 · · incorporating preformed parts or layers, e.g. casting around inserts or for coating articles(~~coating a surface by casting in general B05D 1/30 , B29C 39/126~~ takes precedence)}
- B29C 39/12 · · Making multilayered or multicoloured articles(~~B29C 39/021~~ takes precedence)}
- U B29C 39/123 · · · {Making multilayered articles}
- B29C 39/126 · · · · {by casting between two preformed layers, e.g. deformable layers (~~between two glass layers B32B 17/10917~~)}
- B29C 39/14 · for making articles of indefinite length(~~by depositing material on a substrate and stripping off the shaped article B29C 41/24~~)}
- B29C 39/18 · · incorporating preformed parts or layers, e.g. casting around inserts or for coating articles(~~B29C 39/206~~ takes precedence)}
- B29C 39/20 · · Making multilayered or multicoloured articles(~~B29C 39/142~~ takes precedence)}
- U B29C 39/22 · Component parts, details or accessories; Auxiliary operations
- U B29C 39/26 · · Moulds or cores
- B29C 39/28 · · · with means to avoid flashes(~~B29C 39/30~~ takes precedence)}
- B29C 39/40 · · Compensating volume change, e.g. retraction(~~in general B29C 37/005~~)}
- B29C 41/00 Shaping by coating a mould, core or other substrate, i.e. by depositing material and stripping-off the shaped article; Apparatus therefor (~~with compacting pressure B29C 43/00 ; { by lay-up of reinforcement of substantial or continuous length B29C 70/30 }~~)**
- U B29C 41/02 · for making articles of definite length, i.e. discrete articles
- U B29C 41/04 · · Rotational or centrifugal casting, i.e. coating the inside of a mould by rotating the mould
- B29C 41/042 · · · {by rotating a mould around its axis of symmetry (~~for concrete B28B 21/30~~)}

- B29C 41/08
 - • Coating a former, core or other substrate by spraying or fluidisation, e.g. spraying powder~~{(-spray-up of reinforcing fibres [B29C 70/305](#)-)}~~
- B29C 41/12
 - • Spreading-out the material on a substrate {e.g. on the surface of a liquid}
- B29C 41/14
 - • Dipping a core~~{(-[B29C 41/10](#) takes precedence-)}~~
- U B29C 41/34
 - Component parts, details or accessories; Auxiliary operations
- U B29C 41/36
 - • Feeding the material on to the mould, core or other substrate
- B29C 41/365
 - • • {Construction of spray-up equipment e.g. spray-up guns ~~{(-spraying apparatus in general [B05B](#)-)}~~
- B29C 41/42
 - • Removing articles from moulds, cores or other substrates~~{(-[B29C 33/444](#) and [B29C 37/0017](#) take precedence-)}~~
- B29C 43/00**

Compression moulding, i.e. applying external pressure to flow the moulding material; Apparatus therefor ({ by liberation of internal stresses [B29C 61/006](#) } ; shaping or impregnating by compression composites comprising reinforcements other than fibres of short length [[B29C 70/12](#)]; presses in general [B30B](#)-)
- B29C 43/02
 - of articles of definite length, i.e. discrete articles~~{(-[B29C 35/0227](#) takes precedence-)}~~
- U B29C 43/021
 - • {characterised by the shape of the surface}
- B29C 2043/022
 - • • {having locally depressed lines, e.g. hinges ~~{(-single grooves [B29C 37/0057](#) ; folding lines [B29C 53/06](#) ; parting line of the mould parts [B29C 33/005](#)-)}~~
- B29C 43/027
 - • {having an axis of symmetry ~~{(-[B29C 43/102](#) takes precedence-)}~~
- U B29C 43/04
 - • using movable moulds
- B29C 43/06
 - • • continuously movable {in one direction, e.g. mounted on chains, belts}
- B29C 43/08
 - • • • with circular movement {e.g. mounted on rolls, turntables}
- B29C 43/10
 - • Isostatic pressing, i.e. using non-rigid pressure-exerting members against rigid parts or dies~~{(-in general [B30B 11/001](#)-)}~~
- B29C 43/12
 - • • using bags surrounding the moulding material {or using membranes contacting the moulding material~~{(-[B29C 70/44](#) takes precedence; flexible cores for vulcanizing tyres [B29D 30/0654](#)-)}~~
- U B29C 43/14
 - • in several steps
- B29C 2043/141
 - • • {for making single layer articles ~~{(-for indefinite articles [B29C 43/26](#)-)}~~
- B29C 43/18
 - • incorporating preformed parts or layers, e.g. compression moulding around inserts or for coating articles~~{(-[B29C 43/206](#) takes precedence-)}~~
- B29C 2043/181
 - • • {encapsulated ~~{(-outsert moulding [B29C 70/74](#)-)}~~
- B29C 2043/182
 - • • • {completely ~~{(-completely encapsulating inserts [B29C 70/70](#)-)}~~
- B29C 2043/185
 - • • {using adhesives ~~{(-joining using adhesives [B29C 65/48](#)-)}~~
- B29C 2043/186
 - • • • {hot-melt or heat activated adhesives ~~{(-applying molten plastics [B29C 65/40](#) ; joining using adhesives [B29C 65/48](#)-)}~~
- B29C 2043/188
 - • • • {thermosetting adhesives, e.g. polyurethane adhesives ~~{(-joining by heating [B29C 65/02](#)-)}~~
- B29C 43/20
 - • Making multilayered or multicoloured articles~~{(-[B29C 43/14](#) takes precedence-)}~~
- B29C 43/22
 - of articles of indefinite length~~{(-for articles with reinforcements of substantial or continuous length [B29C 70/50](#)-)}~~
- B29C 43/26
 - • in several steps ~~{(-[B29C 43/30](#) takes precedence {not applied})}~~
- B29C 43/30
 - • Making multilayered or multicoloured articles~~{(-[B29C 43/26](#) takes precedence-)}~~
- U B29C 43/32
 - Component parts, details or accessories; Auxiliary operations

- B29C 2043/3205 . . {particular pressure exerting means for making definite articles (~~B29C 43/36 takes precedence~~)}
- B29C 43/34 . . Feeding the material to the mould or the compression means (~~B29C 43/085 takes precedence~~)}
- U B29C 2043/3405 . . . {using carrying means}
- B29C 2043/3427 . . . {hopper, vessel, chute, tube, conveying screw, for material in discrete form, e.g. particles, powder, fibres (~~dispensing from vessels B29C 31/02~~)}
- B29C 2043/3433 . . . {using dispensing heads, e.g. extruders, placed over or apart from the moulds (~~feeding using dispensing heads B29C 31/042 ; applying fluent material for coatings B05D 1/26 ; extrusion coating B05D 1/265~~)}
- B29C 2043/3438 . . . {moving during dispensing over the moulds, e.g. laying up (~~feeding using moving dispensing heads B29C 31/044 ; applying fluent material for coatings B05D 1/26 ; extrusion coating B05D 1/265~~)}
- B29C 2043/3444 . . {using pressurizing feeding means located into the mold, e.g. plungers, pistons (~~injection-compression moulding B29C 45/561~~)}
- B29C 2043/3466 . . . {using rotating supports, e.g. turntables, drums (~~in general B29C 31/065 ; turntables as movable moulds B29C 43/08 ; feeding materials to moulding presses B30B 15/302 ; transfer turntables B65G 47/80~~)}
- B29C 2043/3472 . . . {using star wheels comprising arms (~~transfer stars B65G 47/84~~)}
- B29C 2043/3477 . . . {centrally fed, e.g. feeding the material in the center of the mold turntables (~~turntables as movable moulds B29C 43/08~~)}
- U B29C 43/36 . . Moulds for making articles of definite length, i.e. discrete articles
- B29C 2043/3602 . . . {with means for positioning, fastening or clamping the material to be formed or preforms inside the mould (~~moulds with incorporated means for positioning inserts B29C 33/14 ; positioning articles in the mould for injection moulding B29C 45/14065~~)}
- B29C 43/361 . . . {with pressing members independently movable of the parts for opening or closing the mould, e.g. movable pistons (~~transfer moulding B29C 45/02 ; injection-compression moulding B29C 45/561~~)}
- B29C 2043/3615 . . . {forming elements, e.g. mandrels, rams, stampers, pistons, plungers, punching devices (~~ram pressing B30B 11/02 , B30B 11/04 ; forming pockets in sheets B65B 47/04 ; moulding lenses B29D 11/00413~~)}
- B29C 2043/3639 . . . {hand operated (~~forming pockets or receptacles in or from sheets, blanks, or webs B65B 47/04~~)}
- B29C 43/3642 . . . {Bags, bleeder sheets or cauls for isostatic pressing (~~flexible cores for vulcanizing tyres B29D 30/0654~~)}
- B29C 2043/3644 . . . {vacuum bags and related details e.g. fixing, clamping (~~vacuum bagging B29C 70/44 ; flexible pressing means B30B 5/02 ; membrane press B30B 9/22 ; applying pressure through membranes B29C 51/28 ; bladders for making tires B29D 30/0601 ; vacuum laminating B32B 37/1018~~)}
- B29C 2043/3647 . . . {membranes, diaphragms (~~vacuum bagging B29C 70/44 ; applying pressure through membranes B29C 51/28 ; bladders for making tires B29D 30/0601 ; vacuum laminating B32B 37/1018 ; flexible pressing means B30B 5/02 ; membrane press B30B 9/22~~)}
- B29C 2043/3649 . . . {infatable bladders using gas or fluid and related details (~~vacuum bagging B29C 70/44 ; flexible moulds B29C 33/50 ; flexible pressing means B30B 5/02 ; membrane press B30B 9/22 ; deep drawing membranes B29C 51/28 ; bladders for making tires B29D 30/0601 ; vacuum laminating B32B 37/1018~~)}

- B29C 2043/3652
 - {elastic moulds or mould parts, e.g. cores, inserts} (-isostatic pressing [B29C 43/10](#) ; moulds in elastomer [B29C 33/405](#) ; plastic cores [B29C 33/50](#)-)}
- U B29C 2043/3665
 - . . . {cores or inserts, e.g. pins, mandrels, sliders}
- B29C 2043/3668
 - {destructible or fusible} (-moulds for making articles with holes [B29C 33/0033](#) ; lost moulds [B29C 33/0016](#) ; fusible cores [B29C 33/52](#) ; making porous articles [B22F 3/11](#)-)}
- U B29C 2043/3676
 - . . . {moulds mounted on rotating supporting constuctions}
- B29C 2043/3678
 - {on cylindrical supports with moulds or mould cavities provided on the periphery} (-rollers for making indefinite articles [B29C 43/46](#) ; turntables presses [B30B 11/08](#) , roller presses [B30B 11/006](#)-)}
- B29C 2043/3689
 - {on a support table, flat disk-like tables having moulds on the periphery} (-press rams on turntables [B30B 11/08](#) , [B30B 9/042](#)-)}
- B29C 43/38
 - . . . with means to avoid flashes{{(-[B29C 43/40](#) takes precedence-)}
- U B29C 43/42
 - . . . for undercut articles
- B29C 2043/425
 - {mould parts or sliders being movable independently from the mould halves for making undercut portions} (-collapsible cores or mandrels [B29C 33/485](#)-)}
- U B29C 43/44
 - . . Compression means for making articles of indefinite length
- U B29C 43/46
 - . . . Rollers
- B29C 2043/467
 - {plurality of rollers arranged in a specific manner in relation to each other} (-calender configuration [B29C 43/24](#)-)}
- B29C 2043/468
 - {take-off rollers, i.e. arranged adjacent a material feeding device} (-calendering [B29C 43/24](#)-)}
- U B29C 43/50
 - . . Removing moulded articles
- U B29C 2043/5007
 - . . . {using cores, i.e. the cores forming part of the mould cavity}
- B29C 2043/5015
 - {having undercuts or being threaded} (-using a rotating movement to unscrew articles [B29C 33/446](#)-)}
- B29C 2043/5023
 - {moving away} (-collapsible cores or mandrels [B29C 33/485](#)-)}
- B29C 2043/5084
 - . . . {using rotary devices, e.g. turntables, carousels} (-blow moulding machines [B29C 49/36](#) , [B29C 49/4205](#)-)}
- U B29C 43/56
 - . . Compression moulding under special conditions, e.g. vacuum
- B29C 2043/561
 - . . . {under vacuum conditions} (-vacuum laminating [B32B 37/1018](#)-)}
- B29C 43/58
 - . . Measuring, controlling or regulating{{(-for bank adjustment in calendering [B29C 43/245](#)-)}
- U B29C 2043/5833
 - . . . {movement of moulds or mould parts, e.g. opening or closing, actuating}
- B29C 2043/5841
 - {for accomodating variation in mould spacing or cavity volume during moulding} (-compensating shrinkage [B29C 43/54](#)-)}
- U B29C 44/00**
 - Shaping by internal pressure generated in the material, e.g. swelling, foaming;{Producing porous or cellular expanded plastics articles}**
 - WARNING**
 - Group [B29C 44/00](#) and subgroups are not complete, see also [B29C 67/22](#) and subgroups
- U B29C 44/02
 - . . for articles of definite length, i.e. discrete articles
- U B29C 44/04
 - . . consisting of at least two parts of chemically or physically different materials, e.g. having different densities
- B29C 44/06
 - . . . Making multilayered articles{{(-[B29C 44/0407](#) - [B29C 44/0492](#) take precedence-)}

- B29C 44/08
 - • using several expanding {or moulding}steps
- U B29C 44/12
 - • Incorporating or moulding on preformed parts, e.g inserts, reinforcements
- B29C 44/1214
 - • • {Anchoring by foaming into a preformed part, e.g. by penetrating through holes (-anchoring by moulding in general [B29C 37/0078](#) ; outsert moulding [B29C 45/14344](#) , [B29C 70/74-](#))}
- U B29C 44/1228
 - • • {Joining preformed parts by the expanding material}
- B29C 44/1242
 - • • • {the preformed parts being concentric (-[B29C 44/1233](#) takes precedence-)}
- B29C 44/14
 - • • the preformed part being a lining((-[B29C 44/1209](#) takes precedence-))
- B29C 44/143
 - • • • {Means for positioning the lining in the mould (-in general [B29C 33/12-](#))}
- B29C 44/18
 - • • Filling preformed cavities((-[B29C 44/1204](#) takes precedence-))
- U B29C 44/182
 - • • • {Filling flexible bags not having a particular shape}
- B29C 44/183
 - • • • • {the components being kept apart in different containers within the bag, and mixed upon rupture of the containers (-[B29C 44/184](#) takes precedence-)}
- B29C 44/186
 - • • • {Filling multiple cavities (-[B29C 44/181](#) , [B29C 44/182](#) and [B29C 44/188](#) takes precedence-)}
- U B29C 44/20
 - for articles of indefinite length
- B29C 44/28
 - • Expanding the moulding material on continuous moving surfaces {without restricting the upwards growth of the foam}
- B29C 44/30
 - • Expanding the moulding material between endless belts or rollers((-[B29C 44/203](#) takes precedence-))
- U B29C 44/34
 - Auxiliary operations
- B29C 44/3442
 - • {Mixing, kneading or conveying the foamable material (mixing plastics [B29B 7/00](#); mixing in general [B01F](#))}
- U B29C 44/3492
 - • {Expanding without a foaming agent}
- B29C 44/3496
 - • • {The foam being compressed and later released to expand (-[B29C 44/3465](#) takes precedence-)}
- B29C 44/36
 - • Feeding the material to be shaped((-[B29C 44/0492](#) takes precedence-))
- B29C 44/38
 - • • into a closed space, i.e. to make articles of definite length((-[B29C 44/365](#) and [B29C 44/367](#) take precedence-))
- B29C 44/46
 - • • into an open space or onto moving surfaces, i.e. to make articles of indefinite length((-[B29C 44/365](#) , [B29C 44/367](#) take precedence-))
- B29C 44/48
 - • • • by gravity, e.g. casting onto, or between, moving surfaces((-[B29C 44/468](#) takes precedence-))
- B29C 44/50
 - • • • using pressure difference, e.g. by extrusion, by spraying((-[B29C 44/468](#) takes precedence-))
- B29C 45/00**
 - Injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a closed mould; Apparatus therefor (-injection blow-moulding [B29C 49/06-](#))**
- B29C 45/0025
 - {Preventing defects on the moulded article, e.g. weld lines, shrinkage marks (-preventing defects on the preformed parts or layers [B29C 45/14836-](#))}
- B29C 2045/0039
 - • {intermixing the injected material front at the weld line, e.g. by applying vibrations to the melt front (-[B29C 2045/0031](#) takes precedence-)}
- B29C 2045/0044
 - • {expelling moulding material outside the mould cavity at the weld line location (-moulds with overflow cavities [B29C 45/2669-](#))}
- B29C 45/0053
 - {combined with a final operation, e.g. shaping (-injection-compression moulding [B29C 45/561-](#))}
- U B29C 45/006
 - • {Joining parts moulded in separate cavities}

- B29C 2045/0072
 - • • {the parts to be joined being moulded in a stack mould (-stack moulds in general [B29C 45/32-](#))}
- B29C 2045/0077
 - • {removing burrs or flashes (-in general [B29C 37/02-](#))}
- B29C 45/0084
 - {General arrangement or lay-out of plants (-[B29C 45/1468](#) takes precedence-)}
- B29C 2045/0089
 - {successive filling of parts of a mould cavity, i.e. one cavity part being filled before another part is filled (-sequential filling to prevent weld lines [B29C 2045/0032-](#))}
- B29C 2045/0098
 - {shearing of the moulding material e.g. for obtaining molecular orientation or reducing the viscosity (-[B29C 45/0082](#) takes precedence-)}
- B29C 45/03
 - Injection moulding apparatus (-transfer moulding [B29C 45/02-](#))
- B29C 45/04
 - • using movable moulds {or mould halves}(-[B29C 45/08](#) takes precedence-)
- B29C 45/0408
 - • • {involving at least a linear movement (-[B29C 45/0433](#) takes precedence-)}
- B29C 45/0441
 - • • {involving a rotational movement (-[B29C 45/06](#) takes precedence-)}
- B29C 2045/0483
 - • • {pivotally mounted mould halves (-[B29C 2045/0425](#) takes precedence-)}
- B29C 45/06
 - • • {mounted}on a turntable {i.e. on a rotating support having a rotating axis parallel to the mould opening, closing or clamping direction}
- B29C 45/12
 - • using two or more fixed moulds, e.g. in tandem{(-[B29C 45/076](#) takes precedence-)}
- B29C 45/14
 - incorporating preformed parts or layers, e.g. injection moulding around inserts or for coating articles{(-[B29C 45/1671](#) takes precedence-)}
- B29C 45/14008
 - • {Inserting articles into the mould (-[B29C 45/14827](#) takes precedence-)}
- B29C 45/14016
 - • • {Intermittently feeding endless articles, e.g. transfer films, to the mould (-[B29C 45/14262](#) takes precedence-)}
- B29C 45/14311
 - • {using means for bonding the coating to the articles (-[B29C 45/14795](#) takes precedence-)}
- B29C 45/14336
 - • {Coating a portion of the article, e.g. the edge of the article (-[B29C 45/14573](#) and [B29C 45/14598](#) take precedence-)}
- B29C 45/14434
 - • • {Coating brittle material, e.g. glass (-[B29C 45/14377](#) , [B29C 45/14418](#) take precedence-)}
- B29C 45/14467
 - • {Joining articles or parts of a single article (-[B29C 45/14377](#) , [B29C 45/14385](#) , [B29C 45/14581](#) , [B29C 45/14614](#) and [B29C 45/006](#) take precedence-)}
- B29C 45/14549
 - • {Coating rod-like, wire-like or belt-like articles (-[B29C 45/14426](#) takes precedence-)}
- B29C 45/14631
 - • {Coating reinforcements (-fibre reinforcements [B29C 45/0005-](#))}
- U B29C 45/14778
 - • {the article consisting of a material with particular properties, e.g. porous, brittle}
- B29C 45/14811
 - • • {Multilayered articles (-[B29C 45/14827](#) takes precedence-)}
- B29C 45/14836
 - • {Preventing damage of inserts during injection, e.g. collapse of hollow inserts, breakage (-[B29C 45/14434](#) takes precedence-)}
- B29C 2045/14852
 - • {incorporating articles with a data carrier, e.g. chips (-memory cards, chip cards [B29L 2017/006-](#))}
- U B29C 2045/1486
 - • {Details, accessories and auxiliary operations}
- B29C 2045/14934
 - • • {Preventing penetration of injected material between insert and adjacent mould wall (-sealing means between mould and article [B29C 45/14418-](#))}
- B29C 45/16
 - Making multilayered or multicoloured articles{(-[B29C 45/0062](#) takes precedence; feeding colouring materials into the injection unit [B29C 45/1816-](#))}
- B29C 2045/1601
 - • {the injected materials not being adhered or bonded to each other (-[B29C 45/0017](#) takes precedence-)}
- U B29C 45/1615
 - • {The materials being injected at different moulding stations}

- B29C 45/1618
 - • • {using an auxiliary treatment station, e.g. for cooling or ejecting (~~B29C 45/1628~~ takes precedence)}
- B29C 45/1642
 - • {having a "sandwich" structure (~~B29C 45/1603~~ takes precedence)}
- B29C 45/1646
 - • • {Injecting parison-like articles (~~B29C 45/1643~~ takes precedence)}
- B29C 45/1657
 - • {using means for adhering or bonding the layers or parts to each other (~~mechanical anchoring B29C 37/0082~~)}
- B29C 45/1679
 - • {applying surface layers onto injection-moulded substrates inside the mould cavity, e.g. in-mould coating (IMC)(~~applying surface layers after ejection B29C 45/0053~~)}
- B29C 45/1684
 - • {Injecting parison-like articles (~~B29C 45/1625~~, ~~B29C 45/1643~~ and ~~B29C 45/1646~~ take precedence)}
- B29C 2045/1698
 - • {multicoloured articles moulded in one step (~~non-uniform dispersion of colours B29C 45/1634~~)}
- U B29C 45/17
 - Component parts, details or accessories; Auxiliary operations
- B29C 45/1703
 - • {Introducing an auxiliary fluid into the mould (~~B29C 45/1701~~ takes precedence)}
- B29C 45/1704
 - • • {the fluid being introduced into the interior of the injected material which is still in a molten state, e.g. for producing hollow articles (~~B29C 45/1732~~ and ~~B29C 45/1734~~ take precedence; injection blow-moulding ~~B29C 49/06~~)}
- U B29C 45/1734
 - • • {Nozzles therefor}
- B29C 45/1736
 - • • • {provided with small holes permitting the flow of gas therethrough, e.g. using a porous element of sintered material (~~B29C 45/1735~~ takes precedence)}
- U B29C 45/174
 - • • {Applying a pressurised fluid to the outer surface of the injected material inside the mould cavity, e.g. for preventing shrinkage marks}
- B29C 2045/1741
 - • • • {Seals preventing pressurized fluid to escape from the mould cavity (~~mould seals B29C 45/2608~~)}
- B29C 45/1742
 - • {Mounting of moulds; Mould supports (~~mounting of exchangeable mould inserts B29C 45/2675~~)}
- B29C 45/1753
 - • {Cleaning or purging, e.g. of the injection unit (~~B29C 45/24~~ takes precedence)}
- B29C 45/1756
 - • {Handling of moulds or mould parts, e.g. mould exchanging means (~~moulds per se B29C 45/26~~)}
- B29C 45/1761
 - • {Means for guiding movable mould supports or injection units on the machine base or frame; Machine bases or frames (~~B29C 45/1747~~ takes precedence)}
- B29C 45/1773
 - • {Means for adjusting or displacing the injection unit into different positions, e.g. for co-operating with different moulds (~~B29C 45/1781~~ takes precedence)}
- B29C 45/178
 - • {Means disposed outside the mould for unscrewing threaded articles, e.g. chuck devices (~~moulds with incorporated unscrewing drive means B29C 45/262~~)}
- U B29C 2045/1784
 - • {Component parts, details or accessories not otherwise provided for; Auxiliary operations not otherwise provided for}
- B29C 2045/1787
 - • • {Mould parts driven by pressure of injected material (~~B29C 2045/14081~~ takes precedence)}
- U B29C 2045/1792
 - • • {Machine parts driven by an electric motor, e.g. electric servomotor}
- B29C 2045/1793
 - • • • {by an electric linear motor (~~linear motors in general H02K 41/02~~)}
- B29C 2045/1794
 - • • • {by a rotor or directly coupled electric motor e.g. using a tubular shaft motor (~~for driving axially movable screws B29C 2045/5024~~)}

- B29C 2045/1797
 - . . . {Machine parts provided with a shroud or cover or shield, e.g. for preventing oil or dust scattering (-used as safety device [B29C 45/84](#) ; for guiding or orienting ejected articles [B29C 45/1771](#) ; for obtaining a particular moulding environment [B29C 45/1701](#) ; for obtaining a vacuum environment [B29C 45/34](#)-)}
- U B29C 45/18
 - . . Feeding the material into the injection moulding apparatus,{i.e. feeding the non-plastified material into the injection unit}
- B29C 45/1866
 - . . . {Feeding multiple materials (-[B29C 45/1816](#) takes precedence-)}
- B29C 45/20
 - . . Injection nozzles{(-[B29C 45/1603](#) takes precedence-)}
- U B29C 45/23
 - . . . Feed stopping equipment
- B29C 45/234
 - {Valves opened by the pressure of the moulding material (-[B29C 45/231](#) takes precedence-)}
- U B29C 45/26
 - . . Moulds
- U B29C 45/2618
 - . . . {having screw-threaded mould walls}
- B29C 45/262
 - {provided with unscrewing drive means (-unscrewing means outside the mould [B29C 45/178](#)-)}
- U B29C 45/263
 - . . . {with mould wall parts provided with fine grooves or impressions, e.g. for record discs}
- B29C 2045/2661
 - {The thickness of the mould cavity being changeable in radial direction (-[B29C 2045/2667](#) takes precedence-)}
- B29C 45/2669
 - . . . {with means for removing excess material, e.g. with overflow cavities (-[B29C 45/1711](#) takes precedence-)}
- B29C 45/2673
 - . . . {with exchangeable mould parts, e.g. cassette moulds (-[B29C 45/1756](#) takes precedence-)}
- U B29C 2045/2683
 - . . . {Plurality of independent mould cavities in a single mould}
- B29C 2045/2687
 - {controlling the filling thereof (-[B29C 2045/2691](#) takes precedence-)}
- B29C 45/27
 - . . . Sprue channels {Runner channels or runner nozzles}
- B29C 45/2701
 - {Details not specific to hot or cold runner channels (-[B29C 45/2725](#) takes precedence-)}
- B29C 45/2708
 - {Gates (-[B29C 45/2703](#) takes precedence-)}
- B29C 45/2737
 - {Heating or cooling means therefor (-[B29C 45/7331](#) takes precedence-)}
- B29C 2045/2754
 - {Plurality of independent heating or cooling means, e.g. independently controlling the heating of several zones of the nozzle,(-[B29C 2045/2753](#) takes precedence-)}
- B29C 45/278
 - {Nozzle tips (-[B29C 45/2735](#) takes precedence-)}
- U B29C 45/28
 - Closure devices therefor
- B29C 45/2806
 - {consisting of needle valve systems (-[B29C 45/2896](#) takes precedence-)}
- U B29C 45/37
 - . . . Mould cavity walls,{i.e. the inner surface forming the mould cavity, e.g. linings}
- B29C 45/376
 - {adjustable (-[B29C 45/374](#) takes precedence-)}
- U B29C 45/40
 - . . Removing or ejecting moulded articles
- B29C 45/4005
 - . . . {Ejector constructions; Ejector operating mechanisms (-[B29C 45/44](#) takes precedence-)}
- U B29C 45/44
 - . . . for undercut articles
- B29C 45/4471
 - {using flexible or pivotable undercut forming elements (-[B29C 45/4435](#) takes precedence-)}

- B29C 45/46
 - • Means for plasticising or homogenising the moulding material or forcing it into the mould{(-combined with mould opening, closing or clamping devices [B29C 45/70-](#))}
- B29C 45/47
 - • • using screws ([B29C 45/54](#) takes precedence-)
- B29C 45/48
 - • • • Plasticising screw and injection screw {comprising two separate screws}
- U B29C 45/53
 - • • using injection ram or piston
- B29C 45/54
 - • • • and plasticising screw{(-[B29C 45/532](#) takes precedence-)}
- B29C 2045/547
 - • • • • {continuously rotating plasticising screw cooperating with a single injection plunger}(-[B29C 45/542](#) takes precedence-)}
- B29C 45/56
 - • • using mould parts movable during or after injection, e.g. injection-compression moulding{(-[B29C 45/1705](#) and [B29C 45/572](#) take precedence-)}
- U B29C 45/561
 - • • • {Injection-compression moulding}
- B29C 2045/5665
 - • • • • {Compression by transversely movable mould parts}(-transversely movable mould parts in general [B29C 45/33-](#))}
- B29C 45/57
 - • • Exerting after-pressure on the moulding material{(-[B29C 45/174](#) takes precedence-)}
- B29C 45/64
 - • Mould opening, closing or clamping devices{(-combined with means for plasticising or homogenising [B29C 45/70-](#))}
- U B29C 45/72
 - • Heating or cooling
- B29C 45/73
 - • • of the mould{(-[B29C 45/2642](#) and [B29C 45/2737](#) take precedence-)}
- B29C 45/7337
 - • • • {using gas or steam}(-[B29C 45/7331](#) takes precedence-)}
- U B29C 45/76
 - • Measuring, controlling or regulating{(measuring in general [G01](#); controlling or regulating in general [G05](#))}

NOTES

In groups [B29C 45/76](#) to [B29C 45/80](#) it is desirable to add the indexing codes of [B29C 2945/76](#) relating to measuring, controlling or regulating in injection moulding

- U B29C 45/7626
 - • • {the ejection or removal of moulded articles}
- B29C 2045/764
 - • • • {detecting or preventing overload of an ejector}(-controlling overload in general [G01L 5/0071-](#))}
- B29C 45/768
 - • • {Detecting defective moulding conditions}(-[B29C 45/84](#) takes precedence-)}
- B29C 45/82
 - • • Hydraulic {or pneumatic}circuits
- B29C 45/84
 - • Safety devices{(-[B29C 45/7626](#) takes precedence-)}
- B29C 2045/848
 - • • {detecting or preventing overload of an injection plunger}(-controlling overload in general [G01L 5/0071-](#))}

B29C 47/00

Extrusion moulding, i.e. expressing the moulding material through a die or nozzle which imparts the desired form; Apparatus therefor (-extrusion blow-moulding [B29C 49/04](#) ; extrusion presses in general [B30B 11/22-](#))

- U B29C 47/0009
 - {characterised by the shape of the articles}
- B29C 47/0011
 - • {Particle-shaped}(-making granules [B29B 9/00-](#))}
- B29C 47/0014
 - • {Filamentary-shaped articles, e.g. strands}(-making granules in the form of filamentary material [B29B 9/06-](#))}
- U B29C 47/0038
 - {Combined shaping operations}
- B29C 47/004
 - • {Extrusion moulding combined with compression moulding}(-compression moulding in general [B29C 43/00-](#))}

- B29C 47/0042
 - {Extrusion moulding combined with shaping by internal pressure generated in the material, e.g. foaming (~~-shaping by internal pressure generated in the material, e.g. foaming, in general [B29C 44/00](#)-~~)}
- B29C 47/0045
 - {Extrusion moulding in several steps, i.e. components merging outside the die (~~-[B29C 47/02](#) takes precedence-~~)}
- B29C 47/0054
 - {Extrusion moulding combined with blow-moulding or thermoforming (~~-blow-moulding in general [B29C 49/00](#) ; thermoforming in general [B29C 51/00](#)-~~)}
- B29C 47/0057
 - {Extrusion moulding combined with shaping by orienting, stretching or shrinking, e.g. film blowing (~~-[B29C 47/0054](#) takes precedence-~~)(~~-shaping by stretching in general [B29C 55/00](#) ; shaping by liberation of internal stresses in general [B29C 61/00](#)-~~)}
- B29C 47/0059
 - {Extrusion moulding combined with shaping by flattening, folding or bending (~~-bending, folding or flattening in general [B29C 53/00](#)-~~)}
- B29C 47/0061
 - {Extrusion moulding combined with surface shaping (~~-surface shaping in general [B29C 59/00](#)-~~)}
- B29C 47/0064
 - {Extrusion moulding combined with joining, lining or laminating (~~-joining in general [B29C 65/00](#) ; lining in general [B29C 63/00](#) ; laminating in general [B32B 37/00](#)-~~)}
- U B29C 47/0071
 - {extruding under particular conditions, e.g. in particular environments or using vacuum or vibrations}
- B29C 47/0076
 - {using force fields, e.g. gravity or electrical fields (~~-[B29C 47/887](#) takes precedence-~~)}
- B29C 47/04
 - of multilayered {or multi-component, e.g. co-extruded layers or components}or multicoloured articles {or coloured articles}{(~~-adapter blocks [B29C 47/56](#)-~~)}
- U B29C 47/08
 - Component parts, details or accessories; Auxiliary operations
- B29C 47/0811
 - {Flow control means, i.e. adjustable parts, e.g. valves (~~-throttling of flow [B29C 47/0871](#)-~~)}
- B29C 47/0816
 - • {provided in or in the proximity of dies (~~-[B29C 47/124](#) , [B29C 47/16](#) , [B29C 47/22](#) take precedence-~~)}
- B29C 47/0818
 - {Exchangeable extruder parts (~~-[B29C 47/681](#) takes precedence-~~)}
- U B29C 47/0838
 - {General arrangement or layout of plants}
- B29C 47/084
 - • {for extruding parallel streams of material, e.g. several separate parallel streams of extruded material forming separate articles (~~-[B29C 47/30](#) , [B29C 47/0045](#) take precedence-~~)}
- B29C 47/0842
 - {Extruder machines or parts thereof characterised by the material or by their manufacturing process (~~-[B29C 47/0818](#) take precedence; making of dies [B23P 15/24](#)-~~)}
- B29C 47/0869
 - {Intermediate treatments, e.g. relaxation, annealing or decompression step for the melt (~~-[B29C 47/76](#) takes precedence-~~)}
- B29C 47/0871
 - {Throttling of the flow, e.g. for cooperating with plasticising elements or for degassing (~~-flow control means [B29C 47/0811](#)-~~)}
- U B29C 47/10
 - • Feeding the material to the extruder
- B29C 47/1018
 - • • Raw material pre-treatment while feeding (~~-pre-treatment of the material to be shaped in general [B29B 15/00](#) ; handling of the material to be shaped in general [B29C 31/00](#) ; [B29C 47/78](#) takes precedence-~~)
- U B29C 47/12
 - • Extrusion nozzles or dies
- B29C 47/126
 - • • {using dies or die parts movable in a closed circuit, e.g. mounted on movable endless support (~~-[B29C 47/32](#) takes precedence-~~)}
- U B29C 47/14
 - • • with broad opening, e.g. for sheets
- B29C 47/16
 - • • • {being}adjustable {i.e. having adjustable exit sections}

- U B29C 47/20
 - • • with annular opening, e.g. for tubular articles
- B29C 47/22
 - • • • {being}adjustable {i.e. having adjustable exit sections}
- B29C 47/26
 - • • • Multiple annular extrusion nozzles {specially adapted for bringing together components, e.g. melts within the die}
- B29C 47/30
 - • • Multi-port extrusion nozzles{(-for making granules in the form of filamentary material [B29B 9/06](#)-)}
- B29C 47/34
 - • Conveyers for extruded material{(-[B29C 47/0898](#) takes precedence-)}
- U B29C 47/36
 - • Means for plasticising or homogenising the moulding material or forcing it through the nozzle or die
- B29C 47/365
 - • • {Multi stage plasticisers, homogenisers or feeders}(-multi stage plasticisers using at least two screws in the same barrel [B29C 47/50](#)-)}
- B29C 47/38
 - • • using screws {surrounded by a cooperating barrel}
- B29C 47/40
 - • • • using at least two {parallel}intermeshing screws {or at least two parallel non-intermeshing screws}
- B29C 47/408
 - • • • • {using more than two screws (-[B29C 47/42](#) takes precedence-)}
- B29C 47/44
 - • • • using axially movable screws {in relation to the barrel}
- B29C 47/46
 - • • • using screws extruding in opposite directions {e.g. separate screws arranged after each other and feeding in opposite directions}
- B29C 47/50
 - • • • using at least two screws {in the same barrel}, one after the other, e.g. multi stage plasticisers
- B29C 47/54
 - • • using press rams or pistons {or accumulators}
- U B29C 47/58
 - • • Details
- B29C 47/60
 - • • • {Screws} (-screws characterized by the material or by their manufacturing process [B29C 47/0844](#)-)
- B29C 47/64
 - • • • • having incorporated mixing devices{(-[B29C 47/6006](#) to [B29C 47/627](#) take precedence-)}
- U B29C 47/68
 - • • • Filters;{Screens}
- U B29C 47/681
 - • • • • {Filtering devices with at least two parallel filters to be used alternately; Movable filters and changing mechanisms therefor}
- B29C 47/682
 - • • • • • {the filters being fitted on a single rectilinearly reciprocating slide (-[B29C 47/685](#) takes precedence-)}
- B29C 47/686
 - • • • • {Substantially flat filters mounted at the end of an extruder screw and perpendicular to its axis (-[B29C 47/681](#) takes precedence-)}
- B29C 47/687
 - • • • • {Cylindrical or conical filters (-[B29C 47/681](#) takes precedence-)}
- B29C 47/78
 - • Heating or cooling the material to be extruded or the stream of extruded material {or of a preformed part}
- U B29C 47/80
 - • • at plasticising zone{, e.g. from the feed section until the die entrance}
- B29C 47/82
 - • • • Heating {or cooling}the cylinders
- B29C 47/84
 - • • • Heating {or cooling}the screws
- B29C 47/88
 - • • Heating or cooling the stream of extruded material {Attention is drawn to Note (3) following the subclass title}
- B29C 49/00**
 - Blow-moulding, i.e. blowing a preform or parison to a desired shape within a mould; Apparatus therefor{(-extrusion moulding of tubular films [B29C 47/0026](#) ; enlarging tube ends using pressure difference [B29C 57/08](#)-)}**
- B29C 49/0073
 - {characterised by the parison configuration, e.g. nestable (-[B29C 49/22](#) takes precedence-)}
- U B29C 49/02
 - Combined blow-moulding and manufacture of the preform or the parison

- B29C 49/06
 - • Injection blow-moulding~~{(-introducing a fluid into the interior of the injected material which is still in a molten state [B29C 45/1704-](#))}~~
- B29C 49/08
 - Biaxial stretching during blow-moulding {with or without prestretching}
- B29C 49/10
 - • using mechanical means ~~{for prestretching}~~
- B29C 49/16
 - • using pressure difference {for prestretching}, e.g. pre-blowing~~{(-[B29C 49/649](#) takes precedence-)}~~
- B29C 49/18
 - using several blowing steps ~~(-[B29C 49/16](#) takes precedence-)~~
- U B29C 49/22
 - using multilayered preforms or parisons
- B29C 49/221
 - • {at least one layer being injected ~~(-injection moulding of multilayered parisons [B29C 45/1643](#) , [B29C 45/1646-](#))}~~
- U B29C 49/24
 - Lining or labelling
- B29C 2049/2464
 - • {Means for positioning labels ~~(-Moulds with incorporated means for positioning inserts in general [B29C 33/12-](#))}~~
- U B29C 49/28
 - Blow-moulding apparatus
- U B29C 49/30
 - • having movable moulds or mould parts
- B29C 49/38
 - • • mounted on movable endless supports~~{(-[B29C 49/0021](#) takes precedence-)}~~
- U B29C 49/42
 - Component parts, details or accessories; Auxiliary operations
- B29C 49/4205
 - • {Handling means, e.g. transfer, loading or discharging means ~~(-handling of inserts or reinforcements [B29C 49/20](#) ; handling of labels [B29C 49/2408-](#))}~~
- B29C 49/4242
 - • {Means for deforming the parison prior to the blowing operation ~~([B29C 49/08](#) takes precedence)}~~
- B29C 49/4252
 - • {Auxiliary operations prior to the blow moulding operation, e.g. cutting ~~(-[B29C 49/64](#) , [B29C 49/76](#) , [B29C 49/78](#) take precedence-)}~~
- B29C 49/4268
 - • {Auxiliary operations during the blow moulding operation ~~(-[B29C 49/64](#) , [B29C 49/76](#) , [B29C 49/78](#) take precedence-)}~~
- B29C 49/4273
 - • {Auxiliary operations after the blow moulding operation ~~(-[B29C 49/64](#) , [B29C 49/70](#) , [B29C 49/72](#) , [B29C 49/76](#) , [B29C 49/78](#) take precedence-)}~~
- U B29C 49/46
 - • characterised by using a particular environment or blow fluids other than air
- U B29C 2049/4602
 - • • {Blowing fluids}
- U B29C 2049/465
 - • • • {being incompressible}
- B29C 2049/4661
 - • • • • {solid media, e.g. powder ~~(-[B29C 2049/4644](#) takes precedence-)}~~
- U B29C 2049/4673
 - • • {Particular environments}
- U B29C 2049/4685
 - • • • {after blow moulding}
- B29C 2049/4694
 - • • • • {purging or cleaning the blow moulding apparatus or parts of it, e.g. cleaning blow moulds ~~(-cleaning moulds in general [B29C 33/72-](#))}~~
- U B29C 49/48
 - • Moulds
- U B29C 49/4823
 - • • {with incorporated heating or cooling means}
- B29C 2049/4825
 - • • • {for cooling moulds or mould parts ~~(-[B29C 2049/5889](#) takes precedence-)}~~
- B29C 2049/4853
 - • • • {having additional means for improving heat transfer between the mould cavity and the parisons or preforms ~~(-in general [B29C 33/30-](#))}~~
- B29C 2049/4856
 - • • {Mounting, exchanging or centering moulds or parts thereof ~~(-[B29C 2049/5893](#) takes precedence; in general [B29C 33/30-](#))}~~
- B29C 2049/4897
 - • • {characterised by the manufacturing process ~~(-in general [B29C 33/38-](#))}~~
- U B29C 49/54
 - • • for undercut articles
- B29C 2049/542
 - • • • {having means to facilitate the removal of the blow moulded articles ~~(-in general [B29C 33/44-](#))}~~
- B29C 49/58
 - • Blowing means~~{(-[B29C 45/1734](#) takes precedence-)}~~

- U B29C 49/64 · · Heating or cooling preforms, parisons or blown articles
- B29C 49/6409 · · · {Thermal conditioning of preforms ([-B29C 49/68](#) takes precedence)}
- B29C 49/6418 · · · · {by reheating cold preforms in a single stage} ([-B29C 49/6436](#) takes precedence-)}]
- B29C 49/6427 · · · · {by cooling hot or molten preforms in a single stage ([-B29C 49/6436](#) takes precedence)}
- B29C 49/6472 · · · {in several stages ([-B29C 49/6409](#) takes precedence)}
- B29C 51/00 Shaping by thermoforming, {i.e. shaping sheets or sheet like preforms after heating}, e.g. shaping sheets in matched moulds or by deep-drawing; Apparatus therefor**{**-blow moulding of tubular preforms [B29C 49/00](#) , deforming of tubular or hollow preforms [B29C 67/0014](#) }**
- U B29C 51/002 · {characterised by the choice of material}
- NOTE
When classifying in this group, it is desirable to add the indexing codes of subclass [B29K](#) to identify the moulding materials and their properties. Documents concerning the choice of moulding materials having a particular influence on the moulding technique should be classified in this group if of interest
- B29C 51/004 · · {Textile or other fibrous material made from plastics fibres ([-combined with plastic layers \[B29C 51/145\]\(#\) ; compression moulding of reinforced plastic articles in matched moulds \[B29C 70/46\]\(#\) ; using pressure difference \[B29C 70/44\]\(#\)-\)}](#)
- B29C 51/008 · {without using a mould, e.g. ballooning (as prestretching step [B29C 51/06](#))}
- U B29C 51/04 · Combined thermoforming and prestretching, e.g. biaxial stretching
- B29C 51/06 · · using pressure difference {for prestretching}
- U B29C 51/08 · Deep drawing or matched-mould forming, i.e. using mechanical means only
- U B29C 51/082 · · {by shaping between complementary mould parts}
- B29C 51/087 · · · {with at least one of the mould parts comprising independently movable sections ([-B29C 51/32](#) and [B29C 51/34](#) take precedence-)}
- U B29C 51/10 · Forming by pressure difference, e.g. vacuum
- B29C 51/105 · · {Twin sheet thermoforming, i.e. deforming two parallel opposing sheets or foils at the same time by using one common mould cavity and without welding them together during thermoforming ([-B29C 51/267](#) , [B29C 49/0047](#) take precedence-)}
- U B29C 51/16 · Lining or labelling
- B29C 51/165 · · {combined with the feeding or the shaping of the lining or the labels ([-by injection moulding \[B29C 45/14008\]\(#\) , \[B29C 45/1418\]\(#\)-\)}](#)
- U B29C 51/18 · Thermoforming apparatus
- U B29C 51/20 · · having movable moulds or mould parts
- U B29C 51/22 · · · rotatable about an axis
- B29C 51/225 · · · · {mounted on a vacuum drum ([-for surface shaping \[B29C 59/06\]\(#\)-\)}](#)
- U B29C 51/26 · Component parts, details or accessories; Auxiliary operations
- B29C 51/261 · · {Handling means, e.g. transfer means, feeding means ([-B29C 51/44](#) takes precedence)}
- B29C 51/264 · · {Auxiliary operations prior to the thermoforming operation, e.g. cutting ([-B29C 51/42](#) , [B29C 51/46](#) take precedence)}
- B29C 51/265 · · {Auxiliary operations during the thermoforming operation ([-B29C 51/42](#) , [B29C 51/46](#) take precedence)}

- B29C 51/266
- • {Auxiliary operations after the thermoforming operation (~~B29C 51/42~~ , ~~B29C 51/44~~ , ~~B29C 51/46~~ take precedence-)}
- B29C 51/267
- • • {Two sheets being thermoformed in separate mould parts and joined together while still in the mould (~~B29C 49/0047~~ takes precedence-)}
- U B29C 51/30
- • Moulds
- B29C 51/306
- • • {with means for forming a rim (~~combined with cutting B29C 51/325~~ ; rim rolling per se ~~B29C 53/34~~-)}
- U B29C 51/42
- • Heating or cooling
- B29C 51/421
- • • {of preforms, specially adapted for thermoforming (~~preheating sheets in general B29B 13/023~~ ; ~~B29C 51/427~~ takes precedence-)}
- B29C 51/422
- • • • {to produce a temperature differential (~~B29C 51/426~~ takes precedence-)}
- B29C 53/00**
- Shaping by bending, folding, twisting, straightening or flattening; Apparatus therefor (~~B29C 61/10~~ takes precedence-)**
- B29C 53/005
- {characterised by the choice of material (~~B29C 53/36~~ and ~~B29C 53/56~~ take precedence-)}
- NOTE**
- When classifying in this group, it is desirable to add the indexing codes of subclass [B29K](#) to identify the moulding materials and their properties. Documents concerning the choice of moulding materials having a particular influence on the moulding technique should be classified in this group if of interest
- B29C 53/02
- Bending or folding (~~B29C 53/22~~ , ~~B29C 53/34~~ , ~~B29C 53/36~~ , ~~B29C 53/56~~ take precedence-)
- B29C 53/04
- • of plates or sheets(~~B29C 63/04~~ takes precedence; bending or folding paper ~~B31F 1/0003~~ ; folding films ~~B65H 45/00~~-)}
- B29C 53/08
- • of tubes {or other profiled members}
- B29C 53/10
- • of blown tubular films, e.g. gusseting(~~flattening blown films during extrusion moulding B29C 47/0009~~-)}
- B29C 53/12
- • helically, e.g. for making springs(~~for textile fibres D02G 1/00~~)}
- B29C 53/14
- Twisting(~~for textile fibres D01H~~-)}
- U B29C 53/22
- Corrugating
- B29C 53/30
- • of tubes (~~by blow-moulding B29C 49/00~~-)
- B29C 53/32
- Coiling (~~B29C 53/56~~ takes precedence-)
- B29C 53/34
- Rim rolling (~~of tube ends B29C 57/12~~-)
- B29C 53/36
- Bending and joining, e.g. for making hollow articles (~~B29C 53/56~~ takes precedence; from paper ~~B31C~~ , { ~~B31F~~ })
- B29C 53/56
- Winding and joining, e.g. winding spirally{ winding in general ~~B65H~~-}
- B29C 53/564
- • {for making non-tubular articles (~~for winding of reinforced articles having a non-circular cross-section followed by compression B29C 70/347~~-)}
- U B29C 53/58
- • helically
- B29C 53/581
- • • {using sheets or strips consisting principally of plastics material (~~using profiled sheets or strips B29C 53/78~~-)}
- U B29C 53/60
- • • using internal forming surfaces, e.g. mandrels
- B29C 53/607
- • • • {having driving means for advancing the wound articles, e.g. belts, rolls (~~B29C 53/74~~ takes precedence-)}
- U B29C 53/62
- • • • rotatable about the winding axis
- B29C 53/66
- • • • • with axially movable winding feed member {e.g. lathe type winding}
- U B29C 53/80
- Component parts, details or accessories; Auxiliary operations

- U B29C 53/8008 • • {specially adapted for winding and joining}
- B29C 53/8041 • • • {Measuring, controlling or regulating (~~B29C 53/665~~ takes precedence)}
- B29C 53/8066 • • • {Impregnating (~~impregnating as pretreatment B29B 15/10~~)}
- U B29C 53/82 • • Cores or mandrels
- U B29C 53/821 • • • {Mandrels especially adapted for winding and joining}
- B29C 53/822 • • • • {Single use mandrels, e.g. destructible, becoming part of the wound articles (~~B29C 53/825~~ takes precedence)}
- B29C 53/824 • • • • {collapsible, e.g. elastic or inflatable; with removable parts, e.g. for regular shaped, straight tubular articles (~~B29C 53/825~~ takes precedence)}
- B29C 53/828 • • • • {Arrangements comprising a plurality of cores or mandrels, e.g. to increase production speed (~~B29C 53/827~~ takes precedence)}

- B29C 55/00 Shaping by stretching, e.g. drawing through a die; Apparatus therefor (~~B29C 61/08~~ takes precedence)**
- B29C 55/22 • of tubes(~~B29C 61/08~~ takes precedence)}
- B29C 55/28 • of blown tubular films, e.g. by inflation(~~extrusion moulding of tubular films B29C 47/0009~~)}
- B29C 55/30 • Drawing through a die(~~pultrusion B29C 70/52~~)}

- U B29C 57/00 Shaping of tube ends, e.g. flanging, belling, closing; Apparatus therefor, {e.g. collapsible mandrels}**
- B29C 57/005 • {the end of an internal lining (~~fixing the end of the lining B29C 63/346~~)}
- U B29C 57/02 • Belling or enlarging, e.g. combined with forming a groove
- B29C 57/04 • • using mechanical means(~~B29C 57/025~~ takes precedence)}

- B29C 59/00 Surface shaping {of articles}e.g. embossing; Apparatus therefor{(~~in-mould printing B29C 37/0025~~ ; by using liquids B29C 71/0009 ; by using gases without chemical reaction B29C 71/009 ; for decorating in general B44 ; abrasive blasting B24C ; chemical aspects C08J 7/00)}**
- B29C 59/007 • {Forming single grooves or ribs, e.g. tear lines, weak spots (~~by moulding B29C 37/0057 ; folding lines B29C 53/06 ; in metal articles B21D 17/00 ; by cutting B26D 3/08~~)}
- B29C 59/02 • by mechanical means, e.g. pressing(~~B29C 59/007~~ takes precedence; embossing expanded porous articles B29C 44/5627)}
- B29C 59/06 • • using vacuum drums(~~for thermoforming B29C 51/225~~)}
- B29C 59/10 • by electric discharge treatment (~~electrodes H01T~~)
- B29C 59/14 • by plasma treatment (~~in general H05H~~)(~~plasma tubes per se H01J~~)}
- B29C 59/16 • by wave energy or particle radiation, {e.g. infra-red heating(~~B29C 59/007~~ takes precedence)}

- B29C 61/00 Shaping by liberation of internal stresses; Making preforms having internal stresses; Apparatus therefor (~~for surface shaping B29C 59/18 ; for lining articles B29C 63/38 ; for joining preformed parts B29C 65/66~~) {(~~for packaging B65B 53/00 ; connecting arrangements or other fittings for plastics pipes using shrink-down material F16L 47/22 , electrical connections insulated using heat shrinking insulating sleeves H01R 4/72 ; cable junctions protected by sleeves H02G 15/18~~)}**
- U B29C 61/06 • Making preforms having internal stresses, e.g. plastic memory
- U B29C 61/0608 • • {characterised by the configuration or structure of the preforms}
- B29C 61/0616 • • • {layered or partially layered preforms, e.g. preforms with layers of adhesive or sealing compositions (~~B29C 61/0625~~ and ~~B29C 61/065~~ take precedence)}

- B29C 61/0633 . . . {Preforms comprising reinforcing elements (~~B29C 61/0625~~ takes precedence-)}
- B29C 61/0641 . . . {Clips for dividing preforms or forming branch-offs (~~clips in general F16B 2/20-~~)}
- B29C 61/08 . . by stretching tubes{(in general [B29C 55/22](#) , [B29C 55/28-](#))}
- B29C 61/10 . . by bending plates or sheets{ in general [B29C 53/36-](#)}
- B29C 63/00** **Lining or sheathing, i.e. applying preformed layers or sheathing of plastics; Apparatus therefor (~~B29C 73/00~~ takes precedence; by blowing [B29C 49/00](#) ; by thermoforming [B29C 51/00-](#))**
- B29C 63/0026 . {an edge face with strip material, e.g. a panel edge (~~securing a veneer strip to a panel edge [B27D 5/003-](#))}~~
- B29C 63/0073 . {of non-flat surfaces e.g. curved, profiled (~~B29C 63/042~~ takes precedence-)}
- B29C 63/02 . using sheet or web-like material (~~B29C 63/26~~ { and [B29C 63/38](#) }take precedence)
- U B29C 63/04 . . by folding, winding, bending or the like
- B29C 63/044 . . . {continuously (~~B29C 63/065~~ , [B29C 63/105](#) take precedence-)}
- B29C 63/18 . using tubular layers or sheathings (~~B29C 63/26~~ { and [B29C 63/38](#) }take precedence;{ placing tubular labels around rigid containers [B65C 3/065](#) })
- B29C 63/22 . using layers or sheathings having a shape adapted to the shape of the article (~~B29C 63/26~~ { and [B29C 63/38](#) }take precedence)
- B29C 63/26 . Lining or sheathing of internal surfaces (~~B29C 63/38~~ takes precedence-)
- U B29C 63/34 . . using tubular layers or sheathings
- B29C 63/346 . . . {Fixing the end of the lining (~~shaping tube ends [B29C 57/005-](#))}~~
- B29C 63/36 . . . being turned inside out{(for plastic tubes in general [B29C 67/0018-](#))}
- U B29C 63/48 . Preparation of the surfaces
- B29C 63/486 . . {of metal surfaces (~~B29C 63/481~~ takes precedence-)}
- B29C 65/00** **Joining {or sealing}of preformed parts,{e.g. welding of plastics materials}; Apparatus therefor ({ general aspects of processes or apparatus for joining preformed parts [B29C 66/00](#) ; using porous material formed by internal pressure generated therein for joining preformed parts [B29C 44/1228](#) , [B29C 44/326](#) ; } for making boxes, cartons, envelopes or bags [B31B](#); for sealing or securing package folds or closures [B65B 51/00](#) ; joining constructional elements in general [F16B](#); splicing of light guides [G02B 6/255-](#))**
- WARNING**
Groups [B29C 65/00](#) to [B29C 65/70](#) are not complete, mainly for documents published before the year 1995, pending reclassification; see also [B29C 65/74](#) and its subgroups
- U B29C 65/002 . {Joining methods not otherwise provided for}
- B29C 65/006 . . {Diffusion joining (~~measures for intermixing the material of the joint interlayer [B29C 66/341-](#))}~~
- B29C 65/008 . . {making use of electrostatic charges (~~holding means using electrostatic forces to hold at least one of the parts to be joined [B29C 65/7852-](#))}~~
- U B29C 65/02 . by heating, with or without pressure
- WARNING**
Group [B29C 65/02](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/48](#) and its subgroups

- B29C 65/04
- • Dielectric heating, e.g. high-frequency welding {i.e. radio frequency welding of plastic materials having dielectric properties, e.g. PVC}
- B29C 65/06
- • using friction, e.g. spin welding{(-non-plastics elements to plastic elements [B29C 65/645](#)-)}
- WARNING
- Subgroups of [B29C 65/06](#) are not complete, pending a reorganisation; see also this group and its subgroups
- B29C 65/0609
- • • {characterised by the movement of the parts to be joined (-[B29C 65/0672](#) takes precedence-)}
- B29C 65/0627
- • • • {Angular, i.e. torsional (-[B29C 65/082](#) takes precedence-)}
- U B29C 65/0636
- • • • • {Orbital}
- B29C 65/0663
- • • • • {-Other specific orbital movements not provided for in [B29C 65/0645](#) to [B29C 65/0654](#) , e.g. Lissajous-}
- B29C 65/08
- • using ultrasonic vibrations{(-non-plastics element to plastics elements [B29C 65/645](#)-)}
- WARNING
- Subgroups of [B29C 65/08](#) are not complete pending reclassification; see also this group and its other subgroups
- B29C 65/10
- • ~~using hot gases~~{(e.g. combustion gases) *using hot gases* {(e.g. combustion gases)} or flames coming in contact with at least one of the parts to be joined}
- B29C 65/14
- • using wave energy{, i.e. electromagnetic radiation,}or particle radiation{(-using mechanical waves [B29C 65/06](#) ; using ultrasonic waves [B29C 65/08](#) ; pressing means transparent to electromagnetic radiation [B29C 66/81267](#)-)}
- WARNING
- Subgroups [B29C 65/1403](#) to [B29C 65/1496](#) are not complete pending a reorganisation; see also this group and its subgroups
- B29C 65/1403
- • • {characterised by the type of electromagnetic or particle radiation (-[B29C 65/1603](#) takes precedence-)}
- B29C 65/1406
- • • • {Ultraviolet [UV]}radiation}}
- B29C 65/1412
- • • • {Infrared [IR]}radiation}}
- B29C 65/1416
- • • • • {Near-infrared radiation [NIR]}}}
- B29C 65/1419
- • • • • {Mid-infrared radiation [MIR]}}}
- B29C 65/1422
- • • • • {Far-infrared radiation [FIR]}}}
- B29C 65/1429
- • • {characterised by the way of heating the interface (-[B29C 65/1629](#) takes precedence-)}
- U B29C 65/1435
- • • • {at least passing through one of the parts to be joined, i.e. transmission welding}
- B29C 65/1441
- • • • • {making use of a reflector on the opposite side, e.g. a polished mandrel or a mirror (-pressing means reflective to electromagnetic radiation [B29C 66/81268](#)-)}
- B29C 65/1477
- • • {making use of an absorber or impact modifier (-[B29C 65/1677](#) takes precedence-)}
- B29C 65/1487
- • • {making use of light guides (-[B29C 65/1687](#) takes precedence-)}
- B29C 65/1496
- • • {making use of masks (-[B29C 65/1696](#) takes precedence-)}

- U B29C 65/16 . . . Laser beams
- WARNING
Subgroups of [B29C 65/16](#) are not complete, pending a reorganisation; see also this group and its subgroups
- U B29C 65/1603 {characterised by the type of electromagnetic radiation}
- B29C 65/1606 {Ultraviolet [UV]} radiation, e.g. by ultraviolet excimer lasers}}
- B29C 65/1612 {Infrared [IR]} radiation, e.g. by infrared lasers}}
- B29C 65/1616 {Near infrared radiation [NIR]} , e.g. by YAG lasers}}
- B29C 65/1619 {Mid infrared radiation [MIR]} , e.g. by CO or CO₂ lasers}}
- B29C 65/1622 {Far infrared radiation [FIR]} , e.g. by FIR lasers}}
- U B29C 65/1629 {characterised by the way of heating the interface}
- U B29C 65/1635 {at least passing through one of the parts to be joined, i.e. laser transmission welding}
- B29C 65/1641 {making use of a reflector on the opposite side, e.g. a polished mandrel or a mirror (-pressing means reflective to electromagnetic radiation [B29C 66/81268-](#))}
- B29C 65/1674 {making use of laser diodes ([-B29C 65/167](#) takes precedence-)}
- U B29C 65/18 . . . using heated tools
- B29C 65/22 . . . Heated wire {resistive ribbon, resistive band or resistive strip(-electrical insulating support therefor [B29C 66/81871-](#))}
- WARNING
Subgroups of [B29C 65/22](#) are not complete, pending reclassification; see also this group
- B29C 65/221 {characterised by the type of heated wire, resistive ribbon, band or strip (-Specific electrical or thermal properties also to be classified in [B29C 66/81262](#) or [B29C 66/81261-](#))}
- B29C 65/229 {characterised by the means for tensioning said heated wire, resistive ribbon, resistive band or resistive strip (-means for compensating for the thermal expansion of welding jaws in general [B29C 66/8185-](#))}
- B29C 65/24 . . . characterised by the means for heating the tool{(-by impulse heating [B29C 65/38-](#))}
- NOTES
Classification is made in groups [B29C 65/24](#) to [B29C 65/32](#) only if the details or adaptations of the heating means are of interest.
When classifying in this group, heated tools are additionally classified in groups [B29C 65/18](#) , [B29C 65/20](#) or [B29C 65/22](#)
- B29C 65/245 {the heat transfer being achieved contactless, e.g. by radiation ([-B29C 65/32](#) takes precedence-)}
- WARNING
Not complete, pending a reorganisation; see also [B29C 65/24](#)
- B29C 65/30 {Electrical means ([-B29C 65/38](#) takes precedence-)}
- U B29C 65/34 . . . using heated elements which remain in the joint, e.g. "verlorenes Schweisselement"
- WARNING
Subgroups [B29C 65/3404](#) to [B29C 65/3472](#) are not complete, pending a reorganisation; see also [B29C 65/34](#)

- B29C 65/3404 . . . {characterised by the type of heated elements which remain in the joint (~~B29C 65/3604~~ takes precedence)}
- U B29C 65/342 {comprising at least a single wire, e.g. in the form of a winding}
- B29C 65/3432 {comprising several wires, e.g. in the form of several independent windings (~~B29C 65/3436~~ , ~~B29C 65/344~~ take precedence)}
- B29C 65/3468 . . . {characterised by the means for supplying heat to said heated elements which remain in the join, e.g. special electrical connectors of windings (~~B29C 65/3668~~ takes precedence)}
- B29C 65/3472 . . . {characterised by the composition of the heated elements which remain in the joint (~~B29C 65/3672~~ takes precedence)}
- U B29C 65/36 . . . heated by induction
- WARNING
Subgroups of [B29C 65/36](#) are not complete, pending a reorganisation; see also [B29C 65/36](#)
- U B29C 65/3604 {characterised by the type of elements heated by induction which remain in the joint}
- U B29C 65/362 {comprising at least a single wire, e.g. in the form of a winding}
- B29C 65/3632 {comprising several wires, e.g. in the form of several independent windings [B29C 65/364](#) takes precedence}
- B29C 65/40 . . . Applying molten plastics, e.g. hot melt (using welding bar{combined with hot gases} [B29C 65/12](#) ; by moulding [B29C 65/70](#))
- B29C 65/405 . . . {characterised by the composition of the applied molten plastics (~~B29C 65/425~~ takes precedence)}
- WARNING
Not complete, pending a reorganisation; see also [B29C 65/40](#)
- B29C 65/42 between pre-assembled parts(~~B29C 65/605~~ takes precedence)}
- B29C 65/48 . . . using adhesives{, i.e. using supplementary joining material} (heat-activated{to be additionally classified in} [B29C 65/02](#) {and subgroups};{applying molten plastics, e.g.}hot melts{to be additionally classified in} [B29C 65/40](#) ; non-mechanical parts of adhesive processes, in general [C09J 5/00](#)); {solvent bonding}
- NOTE
When classifying in this group, heat-activated adhesives are further classified in group [B29C 65/02](#) . When classifying in this group, applying molten plastics is further classified in group [B29C 65/40](#) .
- WARNING
Subgroups [B29C 65/4805](#) to [B29C 65/4895](#) are not complete, pending a reorganisation; see also this group and [B29C 65/4895](#)
- B29C 65/486 . . . {characterised by their physical form being non-liquid, e.g. in the form of granules or powders (~~B29C 65/50~~ takes precedence)}
- B29C 65/4865 . . . {containing additives (~~C09J 11/00~~ and subgroups take precedence)}
- B29C 65/50 . . . using adhesive tape {e.g. thermoplastic tape; using threads or the like(~~B29C 65/3444~~ takes precedence)}
- U B29C 65/5007 . . . {characterised by the structure of said adhesive tape, threads or the like}
- WARNING
Group [B29C 65/5007](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/50](#) and its subgroups
- B29C 65/5014 {being fibre-reinforced (~~B29C 65/5028~~ takes precedence)}

- B29C 65/5057
- • {positioned between the surfaces to be joined (~~B29C 65/5035~~ takes precedence-)}
- B29C 65/52
- • {characterised by the way of applying the adhesive (~~B29C 65/50~~ takes precedence; apparatus for applying liquids in general [B05C](#); processes for applying liquids in general [B05D](#)-)}
- WARNING
Subgroups [B29C 65/521](#) to [B29C 65/528](#) are not complete, pending a reorganisation; see also this group
- B29C 65/56
- using mechanical means {or mechanical connections, e.g. form-fits}
- WARNING
Subgroups [B29C 65/561](#) to [B29C 65/568](#) are not complete, pending a reorganisation; see also this group and its subgroups
- B29C 65/562
- • {using extra joining elements, i.e. which are not integral with the parts to be joined (~~using plastic snap elements [B29C 65/58](#) ; using plastic rivets [B29C 65/601](#)-)}~~
- B29C 65/564
- • {hidden in the joint, e.g. dowels or Z-pins (~~B29C 65/603~~ takes precedence-)}
- B29C 65/565
- • {involving interference fits, e.g. force-fits or press-fits (~~B29C 65/66~~ takes precedence-)}
- B29C 65/60
- • Riveting {or staking}
- WARNING
Subgroups of [B29C 65/60](#) are not complete, pending a reorganisation; see also this group
- U B29C 65/601
- • {using extra riveting elements, i.e. the rivets being non-integral with the parts to be joined}
- B29C 65/602
- • • {using hollow rivets (~~B29C 65/607~~ takes precedence-)}
- B29C 65/64
- • Joining a non-plastics element to a plastics element, e.g. by force (~~B29C 65/44~~ takes precedence-)
- NOTE
When classifying in this group, compositions of the non-plastics element are additionally classified in the relevant groups, i.e. in [B29C 66/74](#) and subgroups
- B29C 65/70
- by moulding (using a particular moulding technique, see the relevant technique{ e.g. by injection [B29C 45/14467](#) })
- NOTE
This group covers only techniques involving the use of a mould
- B29C 65/72
- by combined operations {or combined techniques}, e.g. welding and stitching
- U B29C 65/74
- by welding and severing,{or by joining and severing, the severing being performed in the area to be joined, next to the area to be joined, in the joint area or next to the joint area}
- NOTE
When classifying in this group, joining techniques are additionally classified in the relevant groups, e.g. in [B29C 65/02](#) and subgroups
- B29C 65/741
- • {characterised by the relationships between the joining step and the severing step (~~cutting as mechanical pre-treatment [B29C 66/02241](#) ; cutting as thermal pre-treatment [B29C 66/0246](#) ; cutting as mechanical after-treatment [B29C 66/0326](#) ; cutting as thermal after-treatment [B29C 66/0346](#)-)}~~

- U B29C 65/743
 - {using the same tool for both joining and severing, said tool being monobloc or formed by several parts mounted together and forming a monobloc ([B29C 65/2046](#) takes precedence)}
 - B29C 65/7437
 - • {the tool being a perforating tool (~~-perforating as mechanical pre-treatment [B29C 66/02242](#)-~~)}
 - B29C 65/7439
 - • {for continuously and longitudinally welding and severing webs (~~-[B29C 65/7435](#) takes precedence-~~)}
 - U B29C 65/745
 - {using a single unit having both a severing tool and a welding tool}
 - B29C 65/7459
 - • {for continuously and longitudinally welding and severing webs (~~-[B29C 65/7455](#) takes precedence-~~)}
 - B29C 65/749
 - {Removing scrap (~~-deburring welded articles [B29C 37/04](#)-~~)}
 - B29C 65/78
 - Means for handling the parts to be joined, e.g. for making containers or hollow articles {e.g. means for handling sheets, plates, web-like materials, tubular articles, hollow articles or elements to be joined therewith; Means for discharging the joined articles from the joining apparatus}
- WARNING
Subgroups of [B29C 65/78](#) are not complete, pending a reorganisation; see also this group and its subgroups and [B29C 65/20](#) and its subgroups
- U B29C 65/7802
 - {Positioning the parts to be joined, e.g. aligning, indexing or centring}
 - U B29C 65/7805
 - • {the parts to be joined comprising positioning features}
 - B29C 65/7808
 - • • {in the form of holes or slots (~~-[B29C 65/7814](#) takes precedence; holding or clamping means cooperating with specially formed features of at least one of the parts to be joined [B29C 65/7844](#)-~~)}
 - B29C 65/7814
 - • • {in the form of inter-cooperating positioning features (~~-holding or clamping means cooperating with specially formed features of at least one of the parts to be joined [B29C 65/7844](#)-~~), e.g. tenons and mortises (~~-tenon and mortise joints [B29C 66/126](#) ; tongue and groove joints [B29C 66/124](#)-~~)}
 - B29C 65/782
 - • {by setting the gap between the parts to be joined (~~-controlling or regulating the gap between the joining tools [B29C 66/92611](#)-~~)}
 - B29C 65/7835
 - • {by using stops (~~-[B29C 65/7823](#) , [B29C 66/92651](#) take precedence; tongue and groove joints [B29C 66/124](#) ; tenon and mortise joints [B29C 66/126](#)-~~)}
 - B29C 65/7838
 - • {from the inside, e.g. of tubular or hollow articles (~~-[B29C 66/3242](#) takes precedence-~~)}
 - B29C 65/7841
 - {Holding or clamping means for handling purposes (~~-clamping means for the purpose of applying pressure on the parts to be joined, in the area to be joined [B29C 66/81](#) ; work holders in general [B25B](#); devices for holding or positioning work for welding metal [B23K 37/04](#)-~~)}
 - B29C 65/7844
 - • {cooperating with specially formed features of at least one of the parts to be joined, e.g. cooperating with holes or ribs of at least one of the parts to be joined (~~-parts to be joined comprising holes or slots for the purpose of positioning said parts [B29C 65/7808](#) ; parts to be joined comprising inter-cooperating positioning features [B29C 65/7814](#) (~~-welding using friction, the welding tool cooperating with specially formed features of at least one of the parts to be joined, e.g. cooperating with holes or ribs of at least one of the parts to be joined [B29C 65/069](#)-~~)}~~
 - B29C 65/7847
 - • {using vacuum to hold at least one of the parts to be joined (~~-vacuum work holders in general [B25B 11/005](#)-~~)}
 - B29C 65/785
 - • {using magnetic forces to hold at least one of the parts to be joined (~~-magnetic work holders in general [B25B 11/002](#)-~~)}
 - U B29C 65/7858
 - {characterised by the feeding movement of the parts to be joined}

- B29C 65/7861 . . . {In-line machines, i.e. feeding, joining and discharging are in one production line (-[B29C 65/7879](#) , [B29C 65/7888](#) take precedence-)}
- B29C 65/7864 {using a feeding table which moves to and fro (-oscillating around an axis [B29C 65/7876](#)-)}
- B29C 65/787 {using conveyer belts or conveyer chains (-[B29C 66/83421](#) , [B29C 66/83521](#) , [B29C 66/83531](#) take precedence-)}
- B29C 65/7873 {using cooperating conveyer belts or cooperating conveyer chains (-[B29C 66/83423](#) , [B29C 66/83523](#) , [B29C 66/83533](#) take precedence-)}
- B29C 65/7876 {oscillating around an axis (-[B29C 65/7888](#) takes precedence-)}
- B29C 65/7879 {said parts to be joined moving in a closed path, e.g. a rectangular path (-[B29C 65/7888](#) takes precedence-)}
- B29C 65/7897 . . . {Means for discharging the joined articles from the joining apparatus (-[B29C 66/005](#) takes precedence; discharging moulded articles from moulds [B29C 37/0003](#)-)}
- B29C 65/80 . . . Rotatable transfer means {for loading or unloading purposes, i.e. turret transfer means(-[B29C 65/7879](#) takes precedence; in-line machines using carriers, provided with holding means, said carriers moving in a closed path [B29C 65/7867](#) ; in-line machines using conveyer belts or conveyer chains [B29C 65/787](#)-)}
- U B29C 65/82 . Testing the joint
WARNING
Subgroups of [B29C 65/82](#) are not complete, pending a reorganisation; see also this group
- B29C 65/8253 . . . {by the use of waves or particle radiation, e.g. visual examination, scanning electron microscopy, or X-rays (-[B29C 65/8292](#) takes precedence-)}
- B29C 66/00** **{General aspects of processes or apparatus for joining preformed parts (-means for handling the parts to be joined [B29C 65/78](#) ; testing the joint [B29C 65/82](#)-)}**
WARNING
Groups [B29C 66/00](#) - [B29C 66/98](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [B29C 66/00](#) - [B29C 66/98](#) : [B29C 65/00](#)]
- B29C 66/003 . . . {Protecting areas of the parts to be joined from overheating (-[B29C 66/348](#) , [B29C 66/8744](#) take precedence-)}
- U B29C 66/004 . . . {Preventing sticking together, e.g. of some areas of the parts to be joined}
- B29C 66/0042 {of the joining tool and the parts to be joined (-[B29C 66/0046](#) takes precedence; joining tool characterized by its composition [B29C 66/8122](#) ; joining tool characterized by its microstructure [B29C 66/8124](#)-)}
- B29C 66/006 . . . {Preventing damaging, e.g. of the parts to be joined (-[B29C 66/003](#) , [B29C 66/004](#) , [B29C 66/348](#) take precedence-)}
- WARNING
Group [B29C 66/006](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and subgroups
- B29C 66/01 . . . {General aspects dealing with the joint area or with the area to be joined (-[B29C 65/76](#) , [B29C 65/82](#) take precedence-)}
- B29C 66/02 {Preparation of the material, in the area to be joined, prior to joining or welding (-[B29C 66/32](#) takes precedence-)}

- U B29C 66/022 . . . {Mechanical pre-treatments, e.g. reshaping}
WARNING
 Subgroups of [B29C 66/022](#) are not complete, pending a reorganisation; see also this group
- U B29C 66/0224 {with removal of material}
 B29C 66/02241 {Cutting, e.g. by using waterjets, or sawing (-using heat [B29C 66/0246](#) ; cutting-off or cutting-out a part of a strip-like or sheet-like material, transferring that part and fixing it to an article [B29C 69/005](#)-)}
- U B29C 66/024 . . . {Thermal pre-treatments}
WARNING
 Subgroups of [B29C 66/024](#) are not complete, pending a reorganisation; see also this group
- B29C 66/0242 {Heating, or preheating, e.g. drying (-[B29C 66/3464](#) takes precedence-)}
 B29C 66/0246 {Cutting or perforating, e.g. burning away by using a laser or using hot air (-simultaneously welding and severing using a fluid [B29C 65/7471](#) ; simultaneously welding and severing using radiation [B29C 65/7473](#) ; cutting-off or cutting-out a part of a strip-like or sheet-like material, transferring that part and fixing it to an article [B29C 69/005](#)-)}
- B29C 66/026 . . . {Chemical pre-treatments (-[B29C 66/028](#) takes precedence-)}
WARNING
 Not complete, pending a reorganisation; see also [B29C 66/02](#)
- B29C 66/028 . . . {Non-mechanical surface pre-treatments, i.e. by flame treatment, electric discharge treatment, plasma treatment, wave energy or particle radiation (-[B29C 65/14](#) takes precedence; non-mechanical surface treatment of plastics in general [B29C 59/08](#) to [B29C 59/16](#)-)}
WARNING
 Not complete, pending a reorganisation; see also [B29C 66/02](#)
- B29C 66/03 . . {After-treatments in the joint area (-[B29C 66/3262](#) takes precedence-)}
 B29C 66/032 . . . {Mechanical after-treatments (-deburring welded articles [B29C 37/04](#)-)}
 B29C 66/0324 {Reforming or reshaping the joint, e.g. folding over (-reshaping the burr [B29C 66/326](#)-)}
- B29C 66/0326 {Cutting, e.g. by using waterjets, or perforating (-using heat [B29C 66/0346](#)-)}
WARNING
 Not complete, pending a reorganisation; see also [B29C 66/032](#)
- U B29C 66/034 . . . {Thermal after-treatments}
 B29C 66/0346 {Cutting or perforating, e.g. burning away by using a laser or using hot air (-simultaneously joining and severing using a fluid [B29C 65/7471](#) ; simultaneously welding and severing using radiation [B29C 65/7473](#)-)}
WARNING
 Not complete, pending a reorganisation; see also [B29C 66/034](#)
- U B29C 66/038 . . . {Covering the joint by a coating material}
 B29C 66/0382 {the coating material being in liquid or paste form (-joining by applying molten plastics [B29C 65/40](#)-)}
 B29C 66/0384 {the coating material being in tape, strip or band form (-joining using adhesive tapes covering both elements to be joined [B29C 65/5042](#)-)}

- U B29C 66/05 . . {Particular design of joint configurations}
- NOTE
In this group the possible supplementary joining material, e.g. adhesive or adhesive tape, is not taken into account for the joint configuration. The use of supplementary joining material, e.g. adhesive or adhesive tape, has to be additionally classified as such, e.g. in [B29C 65/48](#) and subgroups or [B29C 65/50](#) and subgroups
- WARNING
Group [B29C 66/05](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/10 . . . {particular design of the joint cross-sections}
- NOTE
The scope of the subgroups is defined by the drawings in the Definitions
- B29C 66/11 {Joint cross-sections comprising a single joint-segment, i.e. one of the parts to be joined comprising a single joint-segment in the joint cross-section (~~-B29C 66/12 and subgroups take precedence-~~)}
- U B29C 66/112 {Single lapped joints}
- B29C 66/1122 {Single lap to lap joints, i.e. overlap joints (~~-B29C 66/45 , B29C 66/472 , B29C 66/52272 take precedence-~~)}
- U B29C 66/12 {Joint cross-sections combining only two joint-segments; Tongue and groove joints; Tenon and mortise joints; Stepped joint cross-sections}
- B29C 66/122 {Joint cross-sections combining only two joint-segments, i.e. one of the parts to be joined comprising only two joint-segments in the joint cross-section (~~-B29C 66/124 takes precedence-~~)}
- U B29C 66/124 {Tongue and groove joints}
- U B29C 66/1242 {comprising interlocking undercuts}
- B29C 66/12425 {Other specific interlocking undercuts not provided for in [B29C 66/12421](#) to [B29C 66/12423](#)}
- U B29C 66/1244 {characterised by the male part, i.e. the part comprising the tongue}
- B29C 66/12449 {being asymmetric (~~-B29C 66/12445 takes precedence-~~)}
- B29C 66/1248 {Interpenetrating groove joints (~~-Interpenetrating fingered joints [B29C 66/139](#)-~~)}
- B29C 66/126 {Tenon and mortise joints (~~-tenons and mortises for positioning purposes [B29C 65/7814](#)-~~)}
- B29C 66/13 {Single flanged joints; Fin-type joints; Single hem joints; Edge joints; Interpenetrating fingered joints; Other specific particular designs of joint cross-sections not provided for in groups [B29C 66/11](#) to [B29C 66/12](#)-}
- U B29C 66/131 {Single flanged joints, i.e. one of the parts to be joined being rigid and flanged in the joint area}
- B29C 66/1312 {Single flange to flange joints, the parts to be joined being rigid (~~-the parts to be joined being flexible [B29C 66/133](#)-~~)}
- B29C 66/133 {Fin-type joints, the parts to be joined being flexible (~~-the parts to be joined being rigid [B29C 66/1312](#)-~~)}
- B29C 66/137 {Beaded-edge joints or bead seals (~~-for sealing or securing package folds or closures [B65B 51/24](#)-~~)}
- B29C 66/14 {the joint having the same thickness as the thickness of the parts to be joined (~~-B29C 66/1142 takes precedence-~~)}

- U B29C 66/20 . . . {particular design of the joint lines, e.g. of the weld lines}
- NOTE
The scope of the subgroups is defined by the drawings in the Definitions
- B29C 66/22 {said joint lines being in the form of recurring patterns ([B29C 66/234](#) takes precedence-)}
- B29C 66/221 {being in the form of a sinusoidal wave ([B29C 66/2272](#) takes precedence-)}
- B29C 66/225 {being castellated, e.g. in the form of a square wave or of a rectangular wave ([B29C 66/2276](#) takes precedence-)}
- B29C 66/227 {being in the form of repetitive interlocking undercuts, e.g. in the form of puzzle cuts (-tongue and groove joints or tenon and mortise joints comprising interlocking undercuts [B29C 66/1242](#)-)}
- B29C 66/2272 {Teardrop-like, waterdrop-like or mushroom-like interlocking undercuts (-tongue and groove joints or tenon and mortise joints comprising teardrop-like, waterdrop-like or mushroom-like interlocking undercuts [B29C 66/12421](#)-)}
- B29C 66/2274 {Dovetailed interlocking undercuts (-tongue and groove joints or tenon and mortise joints comprising dovetailed interlocking undercuts [B29C 66/12423](#)-)}
- B29C 66/2276 {-Other specific local geometries of interlocking undercuts not provided for in [B29C 66/2272](#) to [B29C 66/2274](#)-(-tongue and groove joints or tenon and mortise joints comprising other specific interlocking undercuts [B29C 66/12425](#)-)}
- B29C 66/229 {-Other specific patterns not provided for in [B29C 66/221](#) to [B29C 66/227](#)-}
- U B29C 66/24 {said joint lines being closed or non-straight}
- U B29C 66/242 {said joint lines being closed, i.e. forming closed contours}
- U B29C 66/2422 {being circular, oval or elliptical}
- B29C 66/24221 {being circular ([B29C 66/51](#) takes precedence-)}
- U B29C 66/2424 {being a closed polygonal chain}
- B29C 66/24249 {-forming a specific polygon not provided for in [B29C 66/24241](#) to [B29C 66/24243](#)-}
- B29C 66/301 . . . {Three-dimensional joints, i.e. the joined area being substantially non-flat ([B29C 66/5223](#) , [B29C 66/5224](#) , [B29C 66/5225](#) take precedence-)}
- B29C 66/303 . . . {the joint involving an anchoring effect ([B29C 66/341](#) , [B29C 65/56](#) and subgroups take precedence-)}
- B29C 66/3032 {making use of protusions or cavities belonging to at least one of the parts to be joined ([B29C 66/3034](#) takes precedence-)}
- U B29C 66/3034 {making use of additional elements, e.g. meshes}
- B29C 66/30341 {non-integral with the parts to be joined, e.g. making use of extra elements ([B29C 65/562](#) takes precedence-)}
- B29C 66/304 . . . {Joining through openings in an intermediate part of the article ([B29C 66/3034](#) takes precedence-)}
- B29C 66/305 . . . {Decorative or coloured joints (-optical properties of the material of the parts to be joined [B29C 66/733](#)-)}
- B29C 66/32 . . . {Measures for keeping the burr form under control; Avoiding burr formation; Shaping the burr (-deburring welded articles [B29C 37/04](#)-)}
- B29C 66/345 . . . {Progressively making the joint, e.g. starting from the middle ([B29C 66/8341](#) , [B29C 65/12](#) , [B29C 65/14](#) , [B29C 65/16](#) take precedence-)}

- U B29C 66/40
- {General aspects of joining substantially flat articles, e.g. plates, sheets or web-like materials; Making flat seams in tubular or hollow articles; Joining single elements to substantially flat surfaces}
- WARNING
Group [B29C 66/40](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- B29C 66/41
- {Joining substantially flat articles (~~B29C 66/47~~ and subgroups take precedence-); Making flat seams in tubular or hollow articles(~~B29C 66/51~~ and subgroups take precedence-)}
- B29C 66/43
- · {Joining a relatively small portion of the surface of said articles (~~B29C 66/45~~ takes precedence-)}
- B29C 66/431
- · · {Joining the articles to themselves (~~B29C 66/4322~~ and ~~B29C 66/4332~~ take precedence-)}
- U B29C 66/4312
- · · · {for making flat seams in tubular or hollow articles, e.g. transversal seams}
- B29C 66/43121
- · · · · {Closing the ends of tubular or hollow single articles, e.g. closing the ends of bags (~~-closing tube ends B29C 57/10-~~)}
- B29C 66/43122
- · · · · {Closing the top of gable top containers (~~-gable top containers B65D 5/067-~~)}
- B29C 66/43123
- · · · · {Closing the ends of squeeze tubes, e.g. for toothpaste or cosmetics (~~-producing flexible squeeze tubes by combined operations B29D 23/20 ; collapsible tubes B65D 35/00-~~)}
- B29C 66/432
- · · · {for making tubular articles or closed loops, e.g. by joining several sheets (~~B29C 66/547~~ takes precedence; bending and joining sheets at right angles to the longitudinal axis of the article being formed and joining the edges [B29C 53/38](#)); for making hollow articles or hollow preforms}
- B29C 66/4322
- · · · · {by joining a single sheet to itself (~~B29C 66/4332~~ takes precedence-)}
- B29C 66/433
- · · · {Casing-in, i.e. enclosing an element between two sheets by an outlined seam (~~-for bookbinding B42C 11/06 ; for packaging B65B; by laminating B32B 37/00; enclosing tubular articles between substantially flat elements B29C 66/53261-~~)}
- B29C 66/436
- · · · {Joining sheets for making articles comprising cushioning or padding materials, the weld being performed through the cushioning material, e.g. car seats (~~-joining through openings B29C 66/304-~~)}
- B29C 66/437
- · · · {Joining plastics plates for making venetian blinds (~~-making venetian blinds in general E06B 9/266-~~)}
- B29C 66/45
- · · {Joining of substantially the whole surface of the articles (~~-methods or apparatus for laminating B32B 37/00-~~)}
- B29C 66/47
- {Joining single elements to sheets, plates or other substantially flat surfaces (~~B29C 66/5326~~ takes precedence-)}
- U B29C 66/472
- · {said single elements being substantially flat}
- B29C 66/4722
- · · {Fixing strips to surfaces other than edge faces (~~-fixing strips to edge faces B29C 63/0026-~~)}
- B29C 66/49
- {Internally supporting the, e.g. tubular, article during joining (~~B29C 66/63~~ takes precedence-)}

- U B29C 66/50
- {General aspects of joining tubular articles; General aspects of joining long products, i.e. bars or profiled elements; General aspects of joining single elements to tubular articles, hollow articles or bars; General aspects of joining several hollow-preforms to form hollow or tubular articles}
- WARNING
Group [B29C 66/50](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/51
- · {Joining tubular articles, profiled elements or bars; Joining single elements to tubular articles, hollow articles or bars; Joining several hollow-preforms to form hollow or tubular articles}
- U B29C 66/52
- · · {Joining tubular articles, bars or profiled elements}
- B29C 66/522
- · · · {Joining tubular articles (~~-B29C 66/53241 takes precedence-~~)}
- B29C 66/5227
- · · · · {for forming multi-tubular articles by longitudinally joining elementary tubular articles wall-to-wall (*e.g. joining the wall of a first tubular article to the wall of a second tubular article*) or for forming multilayer tubular articles (*e.g. joining the wall of a first tubular article to the wall of a second tubular article*) or for forming multilayer tubular articles}
- U B29C 66/5229
- · · · · {involving the use of a socket}
- B29C 66/52297
- · · · · · {said socket comprising slip-off prevention means (~~-B29C 66/52296 takes precedence-~~)}
- U B29C 66/524
- · · · · {Joining profiled elements}
- B29C 66/5243
- · · · · · {for forming corner connections, e.g. for making window frames or V-shaped pieces (~~-Welded corner joints for window frames E06B 3/9604-~~)}
- U B29C 66/53
- · · {Joining single elements to tubular articles, hollow articles or bars}
- U B29C 66/532
- · · · {Joining single elements to the wall of tubular articles, hollow articles or bars}
- B29C 66/5324
- · · · · {said single elements being substantially annular, i.e. of finite length (~~-B29C 66/5326 takes precedence-~~)}
- B29C 66/53241
- · · · · · {said articles being tubular and said substantially annular single elements being of finite length relative to the infinite length of said tubular articles (~~-Making T-shaped pieces by joining tubular articles B29C 66/52241-~~)}
- U B29C 66/534
- · · · {Joining single elements to open ends of tubular or hollow articles or to the ends of bars}
- U B29C 66/5342
- · · · · {a substantially flat extra element being placed between and clamped by the joined single elements and the end of said tubular or hollow articles}
- B29C 66/53421
- · · · · · {said substantially flat extra element being flexible, e.g. a membrane (~~-B29C 66/53425 takes precedence-~~)}
- B29C 66/53423
- · · · · · {said substantially flat extra element being rigid, e.g. a plate (~~-B29C 66/53425 takes precedence-~~)}
- B29C 66/5344
- · · · · {said single elements being substantially annular, i.e. of finite length, e.g. joining flanges to tube ends (~~-B29C 66/5346 takes precedence-~~)}
- U B29C 66/54
- · · {Joining several hollow-preforms, e.g. half-shells, to form hollow articles, e.g. for making balls, containers; Joining several hollow-preforms, e.g. half-cylinders, to form tubular articles}
- U B29C 66/541
- · · · {a substantially flat extra element being placed between and clamped by the joined hollow-preforms}
- B29C 66/5412
- · · · · {said substantially flat extra element being flexible, e.g. a membrane (~~-B29C 66/5416 takes precedence-~~)}

- B29C 66/5414 {said substantially flat extra element being rigid, e.g. a plate (-[B29C 66/5416](#) takes precedence-)}
- B29C 66/55 . . . {sealing elements being incorporated into the joints, e.g. gaskets (-[B29C 66/52296](#) takes precedence-)}
- B29C 66/61 . . {Joining from or joining on the inside (-for making tubes by bending sheets and joining from the inside [B29C 53/387](#)-)}
- B29C 66/63 . . {Internally supporting the article during joining (-[B29C 66/49](#) takes precedence-)}
- B29C 66/65 . . {with a relative motion between the article and the welding tool (-[B29C 65/10](#) , [B29C 65/12](#) take precedence-)}
- B29C 66/69 . {General aspects of joining filaments (-bundling articles [B65B 13/00](#) ; interconnecting successive lengths of material [B65H 69/00](#)-)}
- B29C 66/70 . {characterised by the composition, physical properties or the structure of the material of the parts to be joined; Joining with non-plastics material (-chemical aspects [C08J 5/12](#) , [C09J](#)-)}
- WARNING
Group [B29C 66/70](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- B29C 66/71 . . {characterised by the composition of the plastics material of the parts to be joined (-welding bar compositions [B29C 65/125](#)-)}
- WARNING
Group [B29C 66/71](#) and subgroups are not complete, pending a reorganisation; see also [B29K1/00](#) to [B29K95/00](#)
- U B29C 66/72 . . {characterised by the structure of the material of the parts to be joined}
- B29C 66/721 . . . {Fibre-reinforced materials (-[B29C 66/729](#) takes precedence-)}
- WARNING
Subgroups of [B29C 66/721](#) are not complete, pending a reorganisation; see also this group
- B29C 66/723 . . . {being multi-layered (-[B29C 66/7292](#) , [B29C 66/72941](#) take precedence-)}
- U B29C 66/7232 {comprising a non-plastics layer}
- B29C 66/72324 {-consisting of inorganic materials not provided for in [B29C 66/72321](#) to [B29C 66/72322](#)-}
- B29C 66/72327 {-consisting of natural products or their composites, not provided for in [B29C 66/72321](#) to [B29C 66/72324](#)-}
- U B29C 66/725 . . . {being hollow-walled or honeycombs}
- U B29C 66/7252 {hollow-walled}
- B29C 66/72523 {multi-channelled or multi-tubular (-[B29C 66/438](#) , [B29C 66/5227](#) take precedence-)}
- U B29C 66/729 . . . {Textile or other fibrous material made from plastics}
- B29C 66/7292 {coated (-[B29C 66/72941](#) takes precedence-)}

- U B29C 66/74
- • {Joining plastics material to non-plastics material}
- NOTE
When classifying in this group, joining techniques are additionally classified in the relevant groups, i.e. in [B29C 65/44](#) and subgroups or in [B29C 65/64](#) and subgroups
- WARNING
Group [B29C 66/74](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- B29C 66/746
- • • {-to inorganic materials not provided for in groups [B29C 66/742](#) to [B29C 66/744](#)-}
- B29C 66/748
- • • {-to natural products or their composites, not provided for in groups [B29C 66/742](#) to [B29C 66/746](#)-}
- U B29C 66/80
- {General aspects of machine operations or constructions and parts thereof}
- WARNING
Group [B29C 66/80](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- B29C 66/81
- • {General aspects of the pressing elements, i.e. the elements applying pressure on the parts to be joined in the area to be joined, e.g. the welding jaws or clamps (-holding or clamping means for handling purposes [B29C 65/7841](#)-)}
- WARNING
Group [B29C 66/81](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/814
- • • {characterised by the design of the pressing elements, e.g. of the welding jaws or clamps}
- U B29C 66/8141
- • • • {characterised by the surface geometry of the part of the pressing elements, e.g. welding jaws or clamps, coming into contact with the parts to be joined}
- U B29C 66/81411
- • • • • {characterised by its cross-section, e.g. transversal or longitudinal, being non-flat}
- B29C 66/81413
- • • • • • {being non-symmetrical (-[B29C 66/81415](#) takes precedence-)}
- B29C 66/81433
- • • • • • {being toothed, i.e. comprising several teeth or pins (-comprising a single tooth [B29C 66/81429](#)-), or being patterned}
- B29C 66/81435
- • • • • • {comprising several parallel ridges, e.g. for crimping (-comprising a single ridge [B29C 66/81427](#)-)}
- B29C 66/8145
- • • • • {characterised by the constructional aspects of the pressing elements, e.g. of the welding jaws or clamps (-[B29C 66/816](#) and [B29C 66/818](#) take precedence; adaptable for making articles or joints of different dimensions [B29C 66/841](#)-)}
- B29C 66/81451
- • • • • • {being adaptable to the surface of the joint (-[B29C 66/81453](#) , [B29C 66/81455](#) , [B29C 66/81457](#) , [B29C 66/81459](#) , [B29C 66/81461](#) take precedence-)}
- B29C 66/81455
- • • • • • {being a fluid inflatable bag or bladder, a diaphragm or a vacuum bag for applying isostatic pressure (-inflatable element positioned between the joining tool and a backing-up part [B29C 66/82421](#)-)}
- B29C 66/81457
- • • • • • {comprising a block or layer of deformable material, e.g. sponge, foam, rubber (-pressing elements supported or backed-up by resilient material [B29C 66/8161](#)-)}

- B29C 66/81459
 - {being a filled deformable bladder, e.g. bladder filled with oil, with granules or with a meltable solid material (-[B29C 66/81455](#) takes precedence-)}
- U B29C 66/816
 - . . . {characterised by the mounting of the pressing elements, e.g. of the welding jaws or clamps}
- B29C 66/8169
 - {the mounting of said pressing elements being laterally movable, e.g. adjustable (-[B29C 66/836](#) , [B29C 66/841](#) , [B29C 66/863](#) take precedence-)}
- B29C 66/818
 - . . . {characterised by the cooling constructional aspects, or by the thermal or electrical insulating or conducting constructional aspects of the welding jaws or of the clamps (-characterised by the heating means [B29C 65/24](#)); comprising means for compensating for the thermal expansion of the welding jaws or of the clamps}
- B29C 66/8185
 - {comprising means for compensating for the thermal expansion of the welding jaws or of the clamps (-means for tensioning resistive elements [B29C 65/229](#)-)}
- U B29C 66/82
 - . . {Pressure application arrangements, e.g. transmission or actuating mechanisms for joining tools or clamps}

WARNING
Group [B29C 66/82](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/824
 - . . . {Actuating mechanisms}
- B29C 66/8242
 - {Pneumatic or hydraulic drives (-using fluid pressure directly acting on the parts to be joined [B29C 66/8266](#)-)}
- B29C 66/82423
 - {using vacuum (-using vacuum directly acting on the parts to be joined [B29C 66/82661](#)-)}
- B29C 66/8248
 - {Pressure application by weights (-by the own weight of the joining tool [B29C 66/8282](#)-)}
- B29C 66/826
 - . . . {without using a separate pressure application tool, e.g. the own weight of the parts to be joined (-[B29C 65/66](#) takes precedence-)}
- U B29C 66/828
 - . . . {Other pressure application arrangements}
- B29C 66/8286
 - {Hand placed clamps (-Wrap-around tapes or bands [B29C 66/81471](#)-)}
- U B29C 66/83
 - . . {characterised by the movement of the joining or pressing tools}

WARNING
Group [B29C 66/83](#) and subgroups are not complete, pending a reorganisation; see also this group and its subgroups and [B29C 65/00](#) and its subgroups
- B29C 66/832
 - . . . {Reciprocating joining or pressing tools (-[B29C 66/834](#) takes precedence-)}
- B29C 66/8324
 - {Joining or pressing tools pivoting around one axis (-scissor or lever transmission mechanisms [B29C 66/8221](#) ; tools self-aligning to the joining plane [B29C 66/8163](#)-)}
- U B29C 66/834
 - . . . {moving with the parts to be joined}
- B29C 66/8341
 - {Roller, cylinder or drum types; Band or belt types; Ball types (-[B29C 66/8351](#) takes precedence-)}
- B29C 66/83411
 - {Roller, cylinder or drum types (-[B29C 66/83431](#) takes precedence; rollers, cylinders or drums moving relative to and tangentially to the parts to be joined [B29C 66/8362](#)-)}
- B29C 66/83415
 - {the contact angle between said rollers, cylinders or drums and said parts to be joined being a non-zero angle (-[B29C 66/83433](#) takes precedence-)}

- B29C 66/83421 {band or belt types (~~B29C 66/83431~~ takes precedence)}
 - B29C 66/836 . . . {Moving relative to and tangentially to the parts to be joined, e.g. transversely to the displacement of the parts to be joined, e.g. using a X-Y table (~~B29C 66/65~~ takes precedence)}
 - U B29C 66/87 . . {Auxiliary operations or devices}
 - U B29C 66/874 . . . {Safety measures or devices}
 - B29C 66/8742 {for operators (~~B29C 66/002~~ takes precedence)}
 - U B29C 66/90 . {Measuring or controlling the joining process}
- WARNING**
Group [B29C 66/90](#) and subgroups are not complete, pending a reorganisation; see also this group and its subgroups
- U B29C 66/91 . . {by measuring or controlling the temperature, the heat or the thermal flux}
 - U B29C 66/914 . . . {by controlling or regulating the temperature, the heat or the thermal flux}
 - U B29C 66/9141 {by controlling or regulating the temperature}
 - U B29C 66/91441 {the temperature being non-constant over time}
 - B29C 66/91443 {following a temperature-time profile (~~B29C 65/38~~ takes precedence)}
 - U B29C 66/9161 {by controlling or regulating the heat or the thermal flux, i.e. the heat flux}
 - U B29C 66/91641 {the heat or the thermal flux being non-constant over time}
 - B29C 66/91643 {following a heat-time profile (~~B29C 65/38~~ takes precedence)}
 - B29C 66/919 . . . {characterised by specific temperature, heat or thermal flux values or ranges (~~specific electrical resistance values B29C 66/81262~~)}
 - U B29C 66/92 . . {by measuring or controlling the pressure, the force, the mechanical power or the displacement of the joining tools}
 - U B29C 66/924 . . . {by controlling or regulating the pressure, the force, the mechanical power or the displacement of the joining tools}
 - U B29C 66/9241 {by controlling or regulating the pressure, the force or the mechanical power}
 - B29C 66/92431 {the pressure, the force or the mechanical power being kept constant over time (~~B29C 66/92613~~ takes precedence)}
 - B29C 66/95 . . {by measuring or controlling specific variables not covered by groups [B29C 66/91](#) to [B29C 66/94](#)}
 - U B29C 66/96 . . {characterised by the method for implementing the controlling of the joining process}
 - B29C 66/962 . . . {using proportional controllers, e.g. PID controllers [~~proportional-integral-derivative controllers~~]}(~~proportional-integral-derivative controllers~~)}
 - U B29C 66/967 . . . {involving special data inputs or special data outputs, e.g. for monitoring purposes}
 - B29C 66/9674 {involving special data outputs, e.g. special data display means (~~B29C 66/8748~~ takes precedence)}
- B29C 67/00** **Shaping techniques not covered by groups [B29C 39/00](#) to [B29C 65/00](#) , [B29C 70/00](#) or [B29C 73/00](#)**
- U B29C 67/0014 . {for shaping tubes or blown tubular films}
 - B29C 67/0018 . . {Turning tubes inside out (~~for lining internal surfaces B29C 63/36~~)}
 - B29C 67/0029 . {Cold deforming of thermoplastics material (~~B29C 43/16~~ , [B29C 59/00](#) take precedence)}

- B29C 67/0037
- {Forming articles from a moulding composition enclosed in a deformable bag (-making moulds composed of particles enclosed in a bag [B29C 33/3821](#) ; from expandable material in flexible bags [B29C 44/182](#) ; with reinforcements placed in a covering element [B29C 70/542-](#))}
- B29C 67/0044
- {for shaping edges or extremities (-[B29C 57/00](#) takes precedence-)}
- B29C 67/0051
- {Rapid manufacturing and prototyping of 3D objects by additive depositing, agglomerating or laminating of plastics material, e.g. by stereolithography or selective laser sintering (-stereolithographic techniques for making dental prostheses [A61C 13/0013](#) ; selective sintering of metallic powder [B22F 3/1055](#) ; from ceramic or cementitious material [B28B 1/00](#) ; photomechanical, e.g. photolithographic, production of textured or patterned surfaces [G03F 7/00](#) ; selective printers for printing on three-dimensional objects [B41J 3/4073-](#))}
- NOTE**
- Material and product properties are classified with the relevant indexing codes
- U B29C 67/0055
- • {using only liquids or viscous materials, e.g. depositing a continuous bead of viscous material}
- U B29C 67/0062
- • • {using layers of liquid which are selectively solidified}
- B29C 67/007
- • • • {-by a source of energy not covered by [B29C 67/0066](#) , e.g. by global irradiation combined with a mask-}
- B29C 67/02
- Moulding by agglomerating{(-[B29C 67/0051](#) , [B29C 67/20](#) take precedence-)}
- B29C 67/04
- • Sintering ({ sintering layers coated on a mould, core or substrate [B29C 41/00](#) ; } combined with compression [B29C 43/00](#) ; { selective sintering for rapid manufacturing or prototyping of 3D objects [B29C 67/0077](#) })
- B29C 67/06
- • Coagulating{(-selective coagulating for rapid manufacturing or prototyping of 3D objects [B29C 67/0055-](#))}
- B29C 67/20
- for porous or cellular articles, e.g. of foam plastics, coarse-pored{(-chemical aspects of working up macro-molecular substances to porous or cellular articles [C08J 9/00-](#))}
- B29C 67/22
- • by internal pressure generated in the material, e.g. swelling, foaming {not used}
- WARNING**
- From 1st April 1995 on the groups [B29C 67/22](#) to [B29C 67/2295](#) are no longer used for the classification of new documents. Documents from the backlog of these groups are in the process of being systematically transferred to [B29C 44/00](#)
- B29C 67/2205
- • • {for articles of definite length, i.e. discrete articles (contains no documents)}
- U B29C 67/222
- • • • {using expandable particles or beads as starting material}
- B29C 67/2225
- • • • • {using high frequency heating (-in general [B29C 33/06-](#))}
- B29C 67/223
- • • {for articles of indefinite length (-not used, see [B29C 44/20-](#))}
- U B29C 67/2235
- • • • {comprising extruding the compounds before foaming}
- B29C 67/224
- • • • • {extruding the compound through a flat die (-in general [B29C 47/0009-](#))}
- B29C 67/2245
- • • • • {extruding the compound through an annular die (-in general [B29C 47/0009-](#))}
- B29C 67/225
- • • • • {on preformed parts (-not used, see [B29C 44/32-](#))}
- B29C 67/2265
- • • • • {the preformed parts being partially embedded (-[B29C 67/227](#) takes precedence-)}
- B29C 67/227
- • • • • {the preformed parts being three-dimensional structures (-[B29C 67/2255](#) takes precedence-)}

- B29C 67/228
- • {Component parts, details or accessories; auxiliary operations (-not used, see [B29C 44/34](#)-)}
- U B29C 67/24
- characterised by the choice of material
- B29C 67/242
- • {Moulding mineral aggregates bonded with resin, e.g. resin concrete (-shaping ceramic compositions without binder or water-setting cementitious material [B28B](#) ; compositions per se [C04B](#)-)}
- B29C 67/246
- • {Moulding high reactive monomers or prepolymers, e.g. by reaction injection moulding (RIM), liquid injection moulding (LIM)(-casting monomers [B29C 39/006](#) , mixing construction [B29B 7/74](#)-)}
- B29C 67/247
- • {Moulding polymers or prepolymers containing ingredients in a frangible packaging, e.g. microcapsules (-expandable components kept in frangible containers within a flexible bag [B29C 44/183](#)-)}
- B29C 67/248
- • {Moulding mineral fibres or particles bonded with resin, e.g. for insulating or roofing board (-articles from wood or lignocellulosic material with binding agents [B27N](#) ; mineral aggregates bonded with resin [B29C 67/242](#) ; thermal insulation in general [F16L 59/00](#)-)}
- B29C 69/00**
- {Combinations of shaping techniques not provided for in a single one of main groups [B29C 39/00](#) to [B29C 67/00](#) , e.g. associations of moulding and joining techniques; Apparatus therefore ([B29C 47/0038](#) takes precedence-)}**
- B29C 69/001
- {a shaping technique combined with cutting, e.g. in parts or slices combined with rearranging and joining the cut parts (-for reinforced material [B29C 70/545](#) ; [B29C 49/4278](#) , [B29C 51/268](#) take precedence-)}
- B29C 69/002
- • {Winding (-cutting of individual length [B26D](#)-)}
- B29C 69/004
- {making articles by joining parts moulded in separate cavities, said parts being in said separate cavities during said joining (-[B29C 45/006](#) , [B29C 51/267](#) take precedence-)}
- B29C 69/005
- {cutting-off or cutting-out a part of a strip-like or sheet-like material, transferring that part and fixing it to an article (-if labeling see [B65C](#) , in combination with box-making [B31B 1/90](#) ; labelling in general [B65C](#)-)}
- U B29C 69/02
- of moulding techniques only
- B29C 69/025
- • {Deforming articles in a simpler intermediate shape without internal stresses for packaging transporting or storage and reshaping and fixing the original configuration on the place of use (-shaping by liberation of internal stresses [B29C 61/00](#)-)}
- B29C 70/00**
- Shaping composites, i.e. plastics material comprising reinforcements, fillers or preformed parts, e.g. inserts (-chemical aspects [C08](#) , e.g. [C08J 5/00](#)-)**

NOTE

In this group, the following terms or expressions are used with the meanings indicated:

- "reinforcement" means a structure in the form of fibres, wires, rods, bars, sections, plates or blocks, which improves the strength of an article;
- "filler" means a relatively inert substance in the form of particles, powder, beads, flakes or spheres, which improves the physical properties or increases the bulk or weight of an article;
- "preformed part" means a part made of any material, being

completely shaped to have a determined form and which is not used as a reinforcement, e.g. wires or nets forced only into the surface of an article;
- "insert" means a preformed part incorporated in an article during moulding.

- U B29C 70/02
 - comprising combinations of reinforcements, {e.g. non-specified reinforcements, fibrous reinforcing inserts} and fillers, {e.g. particulate fillers}, incorporated in matrix material, forming one or more layers and with or without non-reinforced or non-filled layers {(combinations of fibrous reinforcement only [B29C 70/04](#); combinations of fillers only [B29C 70/58](#); combinations with non reinforcing inserts, e.g. foam blocks, [B29C 70/68](#))}
- B29C 70/026
 - {and with one or more layers of pure plastics material, e.g. foam layers} (-applying a non-preformed coating, e.g. a gel-coat [B29C 37/0025](#) ; with foam blocks [B29C 70/86](#)-)}
- U B29C 70/04
 - comprising reinforcements only, e.g. self-reinforcing plastics
- U B29C 70/06
 - • Fibrous reinforcements only
- U B29C 70/08
 - • • comprising combinations of different forms of fibrous reinforcements incorporated in matrix material, forming one or more layers, and with or without non-reinforced layers
- B29C 70/083
 - • • • {Combinations of continuous fibres or fibrous profiled structures oriented in one direction and reinforcements forming a two dimensional structure, e.g. mats (-[B29D 24/00](#) , [B29D 99/001](#) take precedence-)}
- B29C 70/085
 - • • • • {the structure being deformed in a three dimensional configuration (-[B29C 53/805](#) takes precedence-)}
- B29C 70/086
 - • • • {and with one or more layers of pure plastics material, e.g. foam layers} (-applying a non-preformed coating, e.g. a gel-coat, [B29C 37/0025](#) ; with foam blocks [B29C 70/86](#)-)}
- U B29C 70/10
 - • • characterised by the structure of fibrous reinforcements, {e.g. hollow fibres}
- B29C 70/12
 - • • • using fibres of short length, e.g. in the form of a mat {(non-woven fabrics per se [D04H 1/00](#)-)}
- B29C 70/14
 - • • • • oriented (-oriented filler material [B29C 70/62](#)-)}
- B29C 70/16
 - • • • using fibres of substantial or continuous length {(non-woven fabrics per se [D04H 3/00](#)-)}
- B29C 70/20
 - • • • • oriented in a single direction, e.g. roofing or other parallel fibres {([B29C 70/083](#) , [B29C 70/226](#) take precedence-)}
- B29C 70/202
 - • • • • • {arranged in parallel planes or structures of fibres crossing at substantial angles, e.g. cross-moulding compound (XMC) (-[B29C 70/207](#) takes precedence-)}
- B29C 70/22
 - • • • • oriented in at least two directions forming a two dimensional structure {(woven fabrics per se [D03D](#) ; knitted fabrics per se [D04D](#) ; braid per se [D04C](#)-)}
- B29C 70/224
 - • • • • • {the structure being a net (-[B29C 70/688](#) takes precedence-)}
- B29C 70/26
 - • Non-fibrous reinforcements only {([B29C 35/0272](#) , [B29C 61/0625](#) , [B29C 70/887](#) take precedence; combined with fibres [B29C 70/023](#)-)}
- U B29C 70/28
 - • Shaping operations therefor

NOTE

This group covers:

- the shaping of a coherent fibrous reinforcements which are

pre-impregnated or without binder; or of non-coherent reinforcements of fibres in a mould or on a support;
 - the impregnation or introduction of a plastics matrix in reinforcements during shaping;
 This group does not cover:
 - the moulding by a single technique of plastics matrix material mixed with and containing reinforcing fibres of short length, which is covered by the appropriate place for that technique;
 - the pretreatment, e.g. impregnation, of reinforcements per se, i.e. independently of their shaping, which is covered by group [B29B 15/08](#).

- B29C 70/30
 - . . . Shaping by lay-up, i.e. applying fibres, tape or broadsheet on a mould, former or core; Shaping by spray-up, i.e. spraying of fibres on a mould, former or core{(-by winding and joining, e.g. filament winding [B29C 53/56](#) ; for building tyres [B29D 30/08](#)-)}
- B29C 70/305
 - {Spray-up of reinforcing fibres with or without matrix to form a non-coherent mat in or on a mould (~~-[B29C 41/365](#) , [B29C 70/32](#) , [B29C 70/34](#) , [B29C 70/502](#) , [B29C 70/508](#) take precedence; coating a former by spraying plastics [B29C 41/08](#)-)}~~
- B29C 70/38
 - Automated lay-up, e.g. using robots, laying filaments according to predetermined patterns{(-application heads for tyres [B29D 30/28](#)-)}
- B29C 70/40
 - . . . Shaping or impregnating by compression (~~-[B29C 70/34](#) takes precedence-~~) {not applied}
- U B29C 70/42
 - for producing articles of definite length, i.e. discrete articles
- U B29C 70/46
 - using matched moulds, e.g. for deforming sheet moulding compound (SMC), prepregs
- B29C 70/467
 - {and impregnating the reinforcements during mould closing (~~-[B29C 70/465](#) takes precedence-~~)}
- U B29C 70/50
 - for producing articles of indefinite length, e.g. prepregs, sheet moulding compounds (SMC), cross moulding compounds (XMC)
- B29C 70/504
 - {using rollers or pressure bands (~~-for corrugating [B29C 53/22](#)-)}~~
- B29C 70/506
 - {and impregnating by melting a solid material, e.g. sheet, powder, fibres (~~-[B29C 70/508](#) takes precedence-~~)}
- U B29C 70/52
 - Pultrusion, i.e. forming and compressing by continuously pulling through a die
- U B29C 70/525
 - {Component parts, details or accessories; Auxiliary operations}
- B29C 70/526
 - {Pultrusion dies, e.g. dies with moving or rotating parts (~~-[B29C 70/523](#) takes precedence-~~)}
- B29C 70/54
 - . . . Component parts, details or accessories; Auxiliary operations,{e.g. feeding or storage of prepregs or SMC after impregnation or during ageing(~~-pretreatment, e.g. impregnation, of reinforcements [B29B 15/08](#)-)}~~
- B29C 70/541
 - {Positioning reinforcements in a mould, e.g. using clamping means for the reinforcement (~~-positioning inserts in moulds [B29C 33/12](#) ; lay-up on a mould [B29C 70/30](#)-)}~~
- B29C 70/543
 - {Fixing the position or configuration of fibrous reinforcements before or during moulding (~~-for non-woven fabrics [D04H 3/08](#)-)}~~

- B29C 70/58
- comprising fillers only, {e.g. particles, powder, beads, flakes, spheres} (~~B29C 70/025~~ takes precedence, agglomerating hollow spheres to produce synthetic foam [B29C 70/66](#) ; compounding ingredients per se [C08K](#)-)}
- NOTE
Moulding of plastics matrix material mixed with fillers by a single technique is classified in the appropriate place for that technique.
- B29C 70/585
- {incorporation of light reflecting filler, e.g. lamellae to obtain pearlescent effect} (~~partially embedding reflective elements into the surface of or support [B29D 11/00615](#)~~-)}
- U B29C 70/60
- • comprising a combination of distinct filler types incorporated in matrix material, forming one or more layers, and with or without non-filled layers
- B29C 70/603
- • {and with one or more layers of pure plastics material, e.g. foam layers} (~~applying a non-preformed coating, e.g. a gel-coat [B29C 37/0025](#) ; with foam blocks [B29C 70/86](#)~~-)}
- B29C 70/62
- • the filler being oriented during moulding (~~for short fibres [B29C 70/14](#)~~-)
- B29C 70/68
- by incorporating or moulding on preformed parts, e.g. inserts, layers, {e.g. foam blocks} (~~mould constructions therefor [B29C 33/12](#) ; joining preformed parts by moulding [B29C 65/70](#)~~-)}
- NOTE
This group does not cover:
- incorporating, or moulding on, preformed parts by a single technique, which is covered by the appropriate place for that technique;
 - pretreatment of preformed parts per se, i.e. independently of their shaping, which is covered by group [B29B 15/00](#)
- B29C 70/688
- • {the inserts being meshes or lattices} (~~[B29C 70/82](#) , [B29C 70/683](#) take precedence~~-)}
- B29C 70/70
- • Completely encapsulating inserts (~~[B29C 70/86](#) takes precedence~~-)}
- B29C 70/72
- • Encapsulating inserts having non-encapsulated projections, e.g. extremities, terminal portions of electrical components (~~[B29C 70/742](#) takes precedence~~-)}
- B29C 70/74
- • Moulding material on a relatively small portion of the preformed part, e.g. outsert moulding (~~[B29C 70/845](#) takes precedence~~-)}
- B29C 70/745
- • {Filling cavities in the preformed part} (~~for joining [B29C 70/84](#)~~-)}
- U B29C 70/78
- • Moulding material on one side only of the preformed part
- B29C 70/80
- • • Moulding sealing material into closure members (~~placing sealings in closures [B21D 51/46](#)~~-)}
- B29C 70/82
- • Forcing elongated elements, wires, nets or the like partially or completely in the surface of an article, e.g. by cutting and pressing (~~pressing beads or the like in a surface [B29C 70/64](#)~~-)
- B29C 70/84
- • by moulding material on preformed parts to be joined (~~joining plastic parts by moulding [B29C 65/70](#)~~-)}
- U B29C 70/88
- characterised primarily by possessing specific properties, e.g. electrically conductive, locally reinforced
- B29C 70/882
- • {partly or totally electrically conductive, e.g. for EMI shielding} (~~conductive floors or floor coverings [H05F 3/025](#) ; EMI shielding in general [H05K 9/00](#)~~-)}
- B29C 70/885
- • • {with incorporated metallic wires, nets, films or plates} (~~as lost heating elements [B29C 35/0272](#) , [B29C 61/0625](#)~~-)}

- B29C 70/887
- {locally reinforced, e.g. by fillers (-filler concentrated near the surface [B29C 70/64-](#))}
- B29C 71/00** **After-treatment of articles without altering their shape; Apparatus therefor** (-[B29C 73/00](#) takes precedence; surface shaping [B29C 59/00](#) ; { for joined or sealed parts [B29C 66/03](#) ; after-treatment specially adapted for vulcanising tyres [B29D 30/0633](#) } ; chemical aspects [C08J 7/00-](#))
- B29C 71/0009
- {using liquids, e.g. solvents, swelling agents (-spectacle cases, e.g. for cleaning contact lenses [A45C 11/04](#) ; disinfecting or sterilising contact lenses [A61L 12/00](#) , using liquid substances [A61L 2/20](#) ; cleaning involving the use of liquid in general [B08B 3/00](#) ; for hydrating contact lenses [B29D 11/00067-](#))}
- B29C 2071/0027
- {Removing undesirable residual components, e.g. solvents, unreacted monomers (-of material to be shaped [B29B 9/16](#) , [B29B 13/00-](#))}
- B29C 71/0081
- {using an electric field, e. g. for electrostatic charging (-electrostatic pinning of extruded material [B29C 47/887](#) ; fixing linings by electrostatic charges [B29C 63/0043-](#))}
- B29C 71/009
- {using gases without chemical reaction (-[C08J 7/12](#) takes precedence; in combination with blow-moulding [B29C 49/46](#) ; surface treatment using plasma [B29C 59/14](#) , ionised gas [B29C 59/16-](#))}
- B29C 71/02
- Thermal after-treatment{(-[B29C 71/0063](#) and [B29C 71/0072](#) take precedence-)}
- B29C 71/04
- by wave energy or particle radiation,{e.g. for curing or vulcanising preformed articles(-during moulding, e.g. in a mould [B29C 35/08-](#))}
- B29C 73/00** **Repairing of articles made from plastics or substances in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass [B29D](#)(-retreading tyres [B29D 30/54](#) ; { linings for tyres acting locally [B60C5/145](#) ; } devices for covering leaks in pipes or hoses [F16L 55/16-](#))**
- WARNING
- This group was introduced on 24 June, 1987
Documents from the backlog of [B60C21/00](#) - [B60C21/08B](#), [B60C 25/16](#) are in the process of being systematically transferred to [B29C 73/00](#)]
- B29C 73/02
- using liquid or paste-like material (-[B29C 73/16](#) takes precedence-)
- U B29C 73/04
- using preformed elements
- B29C 73/10
- • using patches sealing on the surface of the article (-[B29C 73/14](#) takes precedence-)
- B29C 73/12
- • • Apparatus therefor, e.g. for applying (-[B29C 73/30](#) takes precedence-)
- B29C 73/16
- Auto-repairing or self-sealing arrangement or agents (-sealing compositions, see section C, e.g. [C09K 3/10-](#)){(-incorporating auto-repairing or self-sealing arrangements or agents on or into tyres [B29D 30/0685-](#))}
- U B29C 73/24
- Apparatus or accessories not otherwise provided for
- U B29C 73/30
- • for local pressing or local heating
- B29C 73/305
- • • {specially adapted for toroidal articles, e.g. tyres (-[B29C 73/325](#) takes precedence-)}
- U B29C 2791/00** **Shaping characteristics in general**
- B29C 2791/002
- Making articles of definite length, i.e. discrete articles (-[B29C 53/40](#) takes precedence-)
- B29C 2791/003
- Making articles of indefinite length (-[B29C 53/48](#) takes precedence-)
- U B29C 2791/004
- Shaping under special conditions
- B29C 2791/009
- • Using laser (-curing using laser [B29C 2035/0838](#) , welding using laser beams [B29C 65/16-](#))

U B29C 2945/00 Indexing scheme relating to injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a closed mould

- U B29C 2945/76
 - B29C 2945/76003
 - B29C 2945/76177
 - B29C 2945/76344
 - B29C 2945/76451
 - B29C 2945/76494
 - B29C 2945/76655
 - B29C 2945/76822
 - B29C 2945/76929
- Measuring, controlling or regulating
 - · Measured parameter (not used)
 - · Location of measurement (not used)
 - · Phase or stage of measurement (not used)
 - · Measurement means (not used)
 - · Controlled parameter (not used)
 - · Location of control (not used)
 - · Phase or stage of control (not used)
 - · Controlling method (not used)

Project: N/A (B29D)

U B29D 11/00 Producing optical elements, e.g. lenses or prisms (grinding or polishing of optical elements [B24B](#); constructional form of optical elements [G02B](#); { optical parts of spectacles [G02C 7/00](#)})

- B29D 11/00009
 - B29D 11/00038
 - B29D 11/00096
 - B29D 11/00105
 - U B29D 11/00125
 - B29D 11/00134
 - B29D 11/00144
 - B29D 11/00153
 - B29D 11/00163
 - B29D 11/00173
 - B29D 11/00182
 - B29D 11/00192
 - B29D 11/00201
 - B29D 11/00211
 - B29D 11/00221
 - B29D 11/0023
 - B29D 11/0024
 - B29D 11/0025
 - U B29D 11/00278
 - B29D 11/00288
 - B29D 11/00298
 - B29D 11/00307
 - B29D 11/00317
 - B29D 11/00326
 - B29D 11/00336
 - B29D 11/00346
 - B29D 11/00365
- {Production of simple or compound lenses}
 - · {Production of contact lenses}
 - · · {for delivering compositions, e.g. drugs to the eye}
 - · · {covering a large part of the cornea}
 - · · {Auxiliary operations, e.g. removing oxygen from the mould, conveying moulds from a storage to the production line in an inert atmosphere}
 - · · · {Curing of the contact lens material}
 - · · · · {wherein the lens material is not fully polymerized, e.g. by leaving an unpolymerized volume}
 - · · · · {Differential curing, e.g. by differential radiation}
 - · · · · · {Movable masks or shutters, e.g. to vary the exposure}
 - · · · · {Conveying moulds}
 - · · · · {using carrier plates}
 - · · · · {Demoulding, e.g. separating lenses from mould halves}
 - · · · · · {using cooling means}
 - · · · · · {using heating means}
 - · · · · · {using prying means}
 - · · · · {Transferring contact lenses}
 - · · · · {using a vacuum suction gripper}
 - · · · · {Removing impurities from contact lenses, e.g. leaching}
 - · {Lenticular sheets ([B29D 11/00269](#) takes precedence)}
 - · · {made by a rotating cylinder}
 - · · {Producing lens arrays}
 - · · {Producing lens wafers}
 - · {Production of lenses with markings or patterns}
 - · · {having particular surface properties, e.g. a micro pattern}
 - · · · {by making depressions in the lens surfaces}
 - · · · {having nano size structures or features, e.g. fillers}
 - · {Production of microlenses (lenticular sheets [B29D 11/00278](#))}

- B29D 11/00375 . . . {by moulding lenses in holes through a substrate}
- B29D 11/00384 . . . {Local shaping by heating, e.g. local irradiation causing expansion}
- B29D 11/00394 . . . {Producing solid immersion lenses [SIL]}
- B29D 11/00403 . . . {Producing compound lenses}
- U B29D 11/00432 . . . {Auxiliary operations, e.g. machines for filling the moulds ([B29D 11/00125](#) takes precedence)}
- B29D 11/00451 . . . {Changing a shape by remelting}
- B29D 11/00461 . . . {Adjusting the refractive index e.g. after implanting}
- B29D 11/0048 . . . {Moulds for lenses (moulds for plastic articles in general [B29C 33/00](#))}
- B29D 11/0049 . . . {Double sided moulds}
- B29D 11/005 . . . {having means for aligning the front and back moulds}
- B29D 11/00509 {to make toric lenses}
- B29D 11/00519 . . . {Reusable moulds}
- B29D 11/00528 . . . {Consisting of two mould halves joined by an annular gasket}
- B29D 11/00538 . . . {Feeding arrangements}
- B29D 11/00548 . . . {with surfaces formed by films}
- B29D 11/00557 . . . {with deformable mould walls, e.g. to make lenses with different shapes}
- B29D 11/00567 . . . {wherein the mould forms part of the final package for lenses}
- B29D 11/00576 . . . {with means to engage flash, e.g. HEMA ring}
- B29D 11/00586 {and removing the flash or HEMA ring}
- B29D 11/00605 . . . {Production of reflex reflectors}
- B29D 11/00625 . . . {Moulds for reflex reflectors (moulds for plastic articles in general [B29C 33/00](#))}
- B29D 11/00634 . . . {Production of filters}
- B29D 11/00644 . . . {polarizing}
- B29D 11/00653 . . . {photochromic}
- B29D 11/00663 . . . {Production of light guides}
- B29D 11/00692 . . . {combined with lenses}
- B29D 11/00701 . . . {having an intermediate layer between core and cladding}
- B29D 11/00711 . . . {by shrinking the sleeve or cladding onto the core}
- B29D 11/0074 . . . {Production of other optical elements not provided for in [B29D 11/00009](#)-[B29D 11/0073](#)}
- B29D 11/00769 . . . {Producing diffraction gratings}
- B29D 11/00778 . . . {Producing hyperlenses, superlenses or "perfect" lenses}
- B29D 11/00788 . . . {Producing optical films}
- B29D 11/00798 . . . {Producing diffusers}
- B29D 11/00807 . . . {Producing lenses combined with electronics, e.g. chips}
- B29D 11/00817 {Producing electro-active lenses or lenses with energy receptors, e.g. batteries or antennas}
- B29D 11/00826 {with energy receptors for wireless energy transmission}
- B29D 11/00836 . . . {Producing non-circular, e.g. elliptic lenses}
- B29D 11/00846 . . . {Producing zero power lenses}
- B29D 11/00855 . . . {Producing cylindrical lenses}
- B29D 11/00865 . . . {Applying coatings; tinting; colouring (printing, marking or copying processes [B41M](#); identification in general [G09F 3/00](#); producing decorative effects in general [B44C](#); positioning or marking of lenses [B24B 13/0055](#))}

- B29D 11/00884 · · {-Spin coating}
- B29D 11/00894 · · {-colouring or tinting}
- B29D 11/00903 · · · {-on the surface}
- B29D 11/00951 · {-Measuring, controlling or regulating}
- B29D 11/00961 · · {-using microprocessors or computers}
- B29D 11/00971 · · · {-using CNC machining to make mould surfaces}
- B29D 11/0098 · · {-Inspecting lenses}
- B29D 11/0099 · · · {-while still attached to the mould}
- U B29D 11/02 · Artificial eyes from organic plastic material {(implantable eye parts, artificial eyes [A61F 2/14](#))}
- U B29D 11/023 · · {-Implants for natural eyes}
- B29D 11/026 · · · {-Comprising more than one lens}
- B29D 17/00** **Producing carriers of records containing fine grooves or impressions, e.g. disc records for needle playback, cylinder records (recording sound or other information using formed grooves or the equivalent [G11B](#));**
-Producing record discs from master stencils
- U **B29D 22/00** **Producing hollow articles (tubular articles [B29D 23/00](#); pneumatic tyres [B29D 30/00](#))**
- U B29D 22/02 · Inflatable articles
- B29D 22/023 · · {-Air springs; Air bellows (construction of fluid springs [F16F 9/00](#))}
- B29D 22/026 · · {-Ring shaped inner tubes with ends (endless inner tubes [B29D 23/24](#))}
- U **B29D 23/00** **Producing tubular articles ([B29D 24/00](#) takes precedence)**
- B29D 23/001 · {-Pipes; Pipe joints (pleated hoses [B29D 23/18](#))}
- B29D 23/003 · · {-Pipe joints, e.g. straight joints}
- B29D 23/005 · · · {-provided with electrical wiring}
- B29D 23/006 · · · {-Elbows}
- B29D 23/008 · · · {-T-joints}
- U **B29D 24/00** **Producing articles with hollow walls {([B29D 99/0028](#) takes precedence)}**
- B29D 24/002 · {-formed with structures, e.g. cores placed between two plates or sheets, e.g. partially filled (totally filled [B29D 99/0021](#))}
- U **B29D 30/00** **Producing pneumatic or solid tyres or parts thereof (producing inner tubes [B29D 23/24](#); constructional form of tyres or parts thereof [B60C](#); connection of valves to inflatable elastic bodies [B60C 29/00](#); testing of tyres [G01M 17/02](#))**
- U B29D 30/0005 · {-Pretreatment of tyres or parts thereof, e.g. preheating, irradiation, precuring}
- B29D 2030/0011 · · {-Surface activation of tyres or parts thereof, e.g. by plasma treatment}
- B29D 30/0016 · {-Handling tyres or parts thereof, e.g. supplying, storing, conveying ([B29D 30/2607](#) takes precedence; loading and unloading vulcanizing presses [B29D 30/0603](#))}
- B29D 2030/0022 · · {-Handling green tyres, e.g. transferring or storing between tyre manufacturing steps}
- B29D 2030/0027 · · {-Handling cured tyres, e.g. transferring or storing after vulcanizing}
- B29D 2030/0033 · · {-Rotating tyres or their components, e.g. carcasses, belt-tread packages, beads and the like, around their axis, i. e. for preventing deformation}
- B29D 2030/0038 · · {-Handling tyre parts or semi-finished parts, excluding beads, e.g., storing, transporting, transferring ([B29D 2030/0044](#) takes precedence)}

- B29D 2030/0044
 - • {-Handling tyre beads, e.g., storing, transporting, transferring and supplying to the toroidal support or to the drum}
- B29D 30/005
 - {-General arrangement or lay-out of plants for the processing of tyres or parts thereof (Round cores or cylindrical drums arranged for a single sequence of tire building operations [B29D 30/10](#), [B29D 30/20](#); Vulcanization presses [B29D 30/0601](#))}
- B29D 2030/0055
 - • {-Optimization of the cycle times of the tyre manufacturing process, e.g. adaptation of the tyre building process to the vulcanization process}
- B29D 30/0061
 - {-Accessories, details or auxiliary operations not otherwise provided for}
- B29D 2030/0066
 - • {-Tyre quality control during manufacturing}
- B29D 2030/0072
 - • {-Attaching fasteners to tyres, e.g. patches, in order to connect devices to tyres}
- B29D 2030/0077
 - • {-Directly attaching monitoring devices to tyres before or after vulcanization, e.g. microchips}
- B29D 2030/0083
 - • {-Attaching monitoring devices to tyres before or after vulcanization by inserting them inside tyre cavities}
- B29D 2030/0088
 - • {-Adaptive tyres, i.e. the properties of the tyres, e.g. the stiffness, being changeable during use}
- B29D 2030/0094
 - • {-Tyres been capable of generating, e.g. recovering, energy}
- B29D 30/06
 - Pneumatic tyres or parts thereof ~~{(e.g. produced by casting, moulding, compression moulding, injection moulding, centrifugal casting)}~~~~{e.g. produced by casting, moulding, compression moulding, injection moulding, centrifugal casting)}~~
- U B29D 30/0601
 - • {-Vulcanising tyres; Vulcanising presses for tyres}
- B29D 30/0645
 - • • {-Devices for inserting vulcanising cores, i.e. bladders, into the tyres; Closing the press in combination herewith}
- B29D 30/0649
 - • • {-Devices for removing vulcanising cores, i.e. bladders, from the tyres; Opening the press in combination herewith}
- B29D 30/065
 - • • {-Tyre-vulcanising presses with two or more moulds, e.g. stacked upon each other}
- B29D 30/0654
 - • • {-Flexible cores therefor, e.g. bladders, bags, membranes, diaphragms (elastic cores or mandrels for shaping of plastics [B29C 33/505](#); bags for isostatic pressing in compression moulding [B29C 43/12](#), [B29C 43/3642](#))}
- B29D 30/0661
 - • • {-Rigid cores therefor, e.g. annular or substantially toroidal cores (cores for building tyres [B29D 30/12](#); drums for building tyres [B29D 30/24](#))}
- B29D 30/0662
 - • • {-Accessories, details or auxiliary operations}
- B29D 30/0681
 - • {-Parts of pneumatic tyres; accessories, auxiliary operations}
- B29D 2030/0682
 - • • {-Inner liners (tubeless tyres with impervious liner or coating on the tyre [B60C 5/14](#))}
- B29D 2030/0683
 - • • {-Additional internal supports to be positioned inside the tyre, as emergency supports for run-flat tyres}
- B29D 30/0685
 - • • {-Incorporating auto-repairing or self-sealing arrangements or agents on or into tyres (auto-repairing or self-sealing arrangements or agents [B29C 73/16](#); puncture preventing arrangements [B60C 19/12](#))}
- U B29D 30/08
 - • Building tyres
- U B29D 30/10
 - • • on round cores, i.e. the shape of the core is approximately identical with the shape of the completed tyre
- U B29D 30/16
 - • • • Applying the layers; Guiding or stretching the layers during application { applying tread bands to carcasses [B29D 30/58](#); retreading [B29D 30/54](#)}

- B29D 30/1607 {-by feeding a sheet perpendicular to the core axis and joining the ends to form an annular element (bending sheets and joining the edges [B29C 53/42](#))}
- B29D 30/1614 {-by sliding a preformed tubular layer over the core}
- B29D 30/1621 {-by feeding a continuous band and winding it spirally, i.e. the band is fed without relative movement along the core axis, to form an annular element (winding and joining, spirally in general [B29C 53/562](#))}
- B29D 30/1628 {-by feeding a continuous band and winding it helically, i.e. the band is fed while being advanced along the core axis, to form an annular element (winding and joining, helically in general [B29C 53/58](#))}
- B29D 30/1635 {-by feeding a continuous band and moving it back and forth (zig-zag) to form an annular element}
- B29D 30/1642 {-by feeding cut-to-length pieces in a direction perpendicular to the core axis and in a plane parallel to the core axis, and placing the pieces side-by-side to form an annular element}
- B29D 30/165 {-by feeding cut-to-length pieces in a direction parallel to the core axis and placing the pieces side-by-side to form an annular element}
- B29D 30/1657 {-by feeding cut-to-length pieces in a direction inclined with respect to the core axis and placing the pieces side-by-side to form an annular element}
- B29D 2030/1664 {Details, accessories or auxiliary operations not provided for in the other subgroups of [B29D 30/00](#)}
- U B29D 30/20 . . . by the flat-tyre method, i.e. building on cylindrical drums
- U B29D 30/30 Applying the layers; Guiding or stretching the layers during application { applying tread bands to carcasses [B29D 30/58](#); retreading [B29D 30/54](#)}
- B29D 30/3007 {-by feeding a sheet perpendicular to the drum axis and joining the ends to form an annular element (bending sheets and joining the edges [B29C 53/42](#))}
- B29D 30/3014 {-by sliding a preformed tubular layer over the drum}
- B29D 30/3021 {-by feeding a continuous band and winding it spirally, i.e. the band is fed without relative movement along the drum axis, to form an annular element (winding and joining, spirally in general [B29C 53/562](#))}
- B29D 30/3028 {-by feeding a continuous band and winding it helically, i.e. the band is fed while being advanced along the drum axis, to form an annular element (winding and joining, helically in general [B29C 53/58](#))}
- B29D 30/3035 {-by feeding a continuous band and moving it back and forth (zig-zag) to form an annular element}
- B29D 30/3042 {-by feeding cut-to-length pieces in a direction perpendicular to the drum axis and in a plane parallel to the drum axis, and placing the pieces side-by-side to form an annular element}
- B29D 30/305 {-by feeding cut-to-length pieces in a direction parallel to the drum axis and placing the pieces side-by-side to form an annular element}
- B29D 30/3057 {-by feeding cut-to-length pieces in a direction inclined with respect to the drum axis and placing the pieces side-by-side to form an annular element}

U B29D 35/00**Producing footwear**NOTE

1. Classification is made in this group if the moulding technique is of interest.
2. The assembling of individual parts by mechanical joining is classified in subclass [A43D](#), e.g. by gluing shoe parts [A43D 25/00](#)

- B29D 35/0009 · ~~by injection moulding; Apparatus therefor}~~
- B29D 35/0018 · · ~~{Moulds}~~
- B29D 35/0027 · · · ~~{Last constructions; Mountings therefor}~~
- B29D 35/0036 · · · ~~{with displaceable sole plates}~~
- B29D 35/0045 · · · ~~{Sealing means for the mould cavity}~~
- B29D 35/0054 · ~~by compression moulding, vulcanising or the like; Apparatus therefor}~~
- B29D 35/0063 · · ~~{Moulds}~~
- B29D 35/0072 · · · ~~{Last constructions; Mountings therefor}~~
- B29D 35/0081 · · · ~~{with displaceable sole plates}~~
- B29D 35/009 · · · ~~{Sealing means for the mould cavity}~~
- U B29D 35/06 · having soles or heels formed and joined on to preformed uppers using a moulding technique, e.g. by injection moulding, pressing and vulcanising
- B29D 35/061 · · ~~by injection moulding}~~
- B29D 35/062 · · · ~~using means to bond the moulding material to the preformed uppers}~~
- B29D 35/064 · · · ~~using particular materials for the preformed uppers}~~
- B29D 35/065 · · ~~by compression moulding, vulcanising or the like}~~
- B29D 35/067 · · · ~~using means to bond the moulding material to the preformed uppers}~~
- B29D 35/068 · · · ~~using particular materials for the preformed uppers}~~
- U B29D 35/08 · having multilayered parts
- B29D 35/081 · · · ~~by injection moulding}~~
- B29D 35/082 · · · · ~~injecting first the outer sole part}~~
- B29D 35/084 · · · · ~~using exchangeable mould elements}~~
- B29D 35/085 · · · ~~by compression moulding, vulcanising or the like}~~
- B29D 35/087 · · · · ~~forming first the outer sole part}~~
- B29D 35/088 · · · · ~~using exchangeable mould elements}~~
- U B29D 35/12 · Producing parts thereof, e.g. soles, heels, uppers, by a moulding technique
- B29D 35/122 · · ~~Soles}~~
- B29D 35/124 · · ~~Heels}~~
- B29D 35/126 · · ~~Uppers}~~
- B29D 35/128 · · ~~Moulds or apparatus therefor}~~
- U B29D 35/14 · Multilayered parts
- B29D 35/142 · · · ~~Soles}~~
- B29D 35/144 · · · ~~Heels}~~
- B29D 35/146 · · · ~~Uppers}~~
- B29D 35/148 · · · ~~Moulds or apparatus therefor}~~
- U **B29D 99/00** **Subject matter not provided for in other groups of this subclass {(not used, see subgroups)} üC1203**
- B29D 99/0003 · ~~Producing profiled members, e.g. beams}~~
- B29D 99/0007 · · ~~having a variable cross-section}~~
- B29D 99/001 · ~~Producing wall or panel-like structures, e.g. for hulls, fuselages, or buildings (articles with hollow walls [B29D 24/00](#))}~~
- B29D 99/0014 · · ~~provided with ridges or ribs, e.g. joined ribs}~~
- B29D 99/0017 · · · ~~with filled hollow ridges}~~
- B29D 99/0021 · · ~~provided with plain or filled structures, e.g. cores, placed between two or more plates or sheets, e.g. in a matrix}~~

- B29D 99/0025 · {-Producing blades or the like, e.g. blades for turbines, propellers, or wings}
- B29D 99/0028 · · {-hollow blades}
- B29D 99/0032 · {-Producing rolling bodies, e.g. rollers, wheels, pulleys or pinions (bushes for bearings [B29D 33/00](#); gear wheels [B29D 15/00](#))}
- B29D 99/0035 · · {-rollers or cylinders having an axial length of several times the diameter, e.g. for embossing, pressing, or printing}
- B29D 99/0039 · {-Producing countertops}
- B29D 99/0042 · {-Producing plain balls (hollow balls [B29D 22/04](#))}
- B29D 99/0046 · {-Producing rods (connecting-rods formed from fiber-reinforced resins [F16C 7/026](#))}
- B29D 99/005 · {-Producing membranes}
- B29D 99/0053 · {-Producing sealings ([B29D 99/0085](#) takes precedence)}
- B29D 99/0057 · {-Producing floor coverings}
- B29D 99/006 · {-Producing casings, e.g. accumulator cases}
- B29D 99/0064 · {-Producing wearing apparel}
- B29D 99/0067 · · {-Gloves}
- B29D 99/0071 · · {-Masks, e.g. gas masks}
- B29D 99/0075 · · {-Bathing caps}
- B29D 99/0078 · {-Producing filamentary materials}
- B29D 99/0082 · {-Producing articles in the form of closed loops, e.g. rings ([B29D 29/00](#) takes precedence)}
- B29D 99/0085 · · {-for sealing purposes}
- B29D 99/0089 · {-Producing honeycomb structures (consisting of porous ceramic ware [C04B 38/006](#))}
- B29D 99/0092 · {-Producing upholstery articles, e.g. cushions, seats ([B29C 63/025](#) takes precedence)}
- B29D 99/0096 · {-Producing closure members for containers, e.g. closure caps or stoppers}

Project: N/A (B29K)

B29K

INDEXING SCHEME ASSOCIATED WITH SUBCLASSES [B29B](#), [B29C](#) OR [B29D](#), RELATING TO MOULDING MATERIALSNOTE

1. This subclass constitutes an indexing scheme associated with subclasses [B29B](#), [B29C](#) or [B29D](#).
2. In this subclass, the following term is used with the meaning indicated: "rubber" covers: natural or conjugated diene rubbers; rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for such macromolecular compounds
3. Documents relating to compositions or properties of the materials to be shaped, said compositions having a particular influence on the shaping technique, should be classified in the shaping technique, e.g. [B29C 39/003](#) , [B29C 41/003](#) , [B29C 43/003](#) , [B29C 45/0001](#) , [B29C 47/0004](#) , [B29C 49/0005](#) , [B29C 51/002](#) , [B29C 53/005](#) , [B29C 55/005](#) , [B29C 61/003](#) , [B29C 63/0017](#) and **B2965/00S**

Copolymers are indexed with the same indexing code as the majority polymers

WARNING

The following IPC indexing codes are not being used: [B29K 105/02](#) , [B29K 105/22](#) , [B29K 105/28](#) , [B29K 105/30](#) , [B29K 105/32](#) and [B29K 105/34](#)
The aspect of [B29K 105/02](#) is covered by [B29K 2995/0064](#) The aspect

of [B29K 105/22](#) is covered by [B29K 705/00](#) The aspect of [B29K 105/28](#) is covered by [B29K 2995/0025](#) The aspect of [B29K 105/30](#) is covered by [B29K 2995/003](#) The aspect of [B29K 105/32](#) is covered by [B29K 2995/0026](#) The aspects of [B29K 105/34](#) are covered by [B29K 2995/002](#) , [B29K 2995/0007](#) and [B29K 2995/0015](#) Subclass indexes Compositions for moulding materials, condition, form or state of moulded material: **B29K1/00 - B29K105/00** Compositions for reinforcements: **B29K201/00 - B29K313/00** Compositions for fillers: **B29K401/00 - B29K511/00** Compositions for preformed parts: **B29K601/00 - B29K713/00** Compositions for moulds: **B29K801/00 - B29K913/00** Properties of moulding materials, reinforcements, fillers, preformed parts or moulds: **B29K995/00** Compositions for moulding materials; Condition, form or state of moulded material

From the date indicated below, the following groups have been deleted from the classification scheme. The documents of these groups have been transferred to the new groups as follows :

[B29K 105/28](#) transferred to [B29K 2995/0025](#)

[B29K 105/30](#) transferred to [B29K 2995/003](#)

[B29K 105/32](#) transferred to [B29K 2995/0026](#)

[B29K 105/34](#) transferred to [B29K 2995/002](#) , [B29K 2995/0007](#) , **B29K00D4**

- B29K 2001/00** Use of cellulose, modified cellulose or cellulose derivatives, e.g. viscose, as moulding material{(–as such [C08L 1/00](#)–)}
- B29K 2001/08 · {Cellulose derivatives (–as such [C08L 1/08](#)–)}
- B29K 2001/12 · {Cellulose acetate (–as such [C08L 1/12](#)–)}
- B29K 2001/14 · {Cellulose acetate-butyrate (–as such [C08L 1/14](#)–)}
- B29K 2001/18 · {Cellulose nitrate (–as such [C08L 1/18](#)–)}
- B29K 2003/00** Use of {starch or derivatives as moulding material (–as such [C08L 3/00](#)–)}
- B29K 2005/00** {Polysaccharides or derivatives (–as such [C08L 5/00](#)–)}
- B29K 2007/00** Use of natural rubber as moulding material{(–as such [C08L 7/00](#)–)}
- B29K 2009/00** Use of rubber derived from conjugated dienes, as moulding material{(–as such [C08L 9/00](#)–)}
- B29K 2009/06 · {SBR}, i.e. butadiene-styrene {rubbers (–as such [C08L 9/06](#)–)}
- B29K 2011/00** Use of {rubber derived from chloroprene as moulding material (–as such [C08L 11/00](#)–)}
- B29K 2019/00** Use of rubber not provided for in a single one of main groups **B29K7/00** to { [B29K 2011/00](#) }, as moulding material
- B29K 2021/00** Use of {unspecified rubbers as moulding material (–as such [C08L 21/00](#)–)}
- B29K 2023/00** Use of polyalkenes {or derivatives thereof}as moulding material{(–as such [C08L 23/00](#)–)}
- B29K 2023/04 · {Polymers of ethylene (–as such [C08L 23/04](#)–)}
- B29K 2023/06 · {PE, i.e. polyethylene (–as such [C08L 23/06](#)–)}
- B29K 2023/08 · {Use of copolymers of ethylene as moulding material (–as such [C08L 23/08](#) ; [B29K 2023/16](#) takes precedence–)}
- B29K 2023/10 · {Polymers of propylene (–as such [C08L 23/10](#)–)}
- B29K 2023/12 · {PP, i.e. polypropylene (–as such [C08L 23/12](#)–)}
- B29K 2023/14 · {Copolymers of polypropylene (–as such [C08L 23/14](#) ; [B29K 2023/16](#) takes precedence–)}

- B29K 2023/16
- {EPM, i.e. ethylene-propylene copolymers; EPDM, i.e. ethylene-propylene-diene copolymers; EPT, i.e. ethylene-propylene terpolymers (-as such [C08L 23/16](#)-)}
- B29K 2023/18
- {Polymers of hydrocarbons having four or more carbon atoms, e.g. polymers of butylene (e.g. PB, i.e. polybutylene)(e.g. PB, i.e. polybutylene)(-as such [C08L 23/18](#)-)}
- B29K 2023/22
- • {Copolymers of isobutene, e.g. butyl rubber (-as such [C08L 23/22](#)-)}
- B29K 2025/00**
- Use of polymers of vinyl-aromatic compounds {or derivatives thereof}as moulding material{(-as such [C08L 25/00](#)-)}**
- B29K 2025/04
- {Polymers of styrene (-as such [C08L 25/04](#)-)}
- B29K 2025/06
- • {PS, i.e. polystyrene (-as such [C08L 25/06](#)-)}
- B29K 2025/08
- • {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (-as such [C08L 25/08](#) ; **B29K55/02** takes precedence-)}
- B29K 2027/00**
- Use of polyvinylhalogenides {or derivatives thereof}as moulding material{(-as such [C08L 27/00](#)-)}**
- B29K 2027/06
- {PVC, i.e. polyvinylchloride (-as such [C08L 27/06](#)-)}
- B29K 2027/08
- {PVDC, i.e. polyvinylidene chloride (-as such [C08L 27/08](#)-)}
- B29K 2027/12
- containing fluorine{(-as such [C08L 27/12](#)-)}
- B29K 2027/14
- • {PVF, i.e. polyvinyl fluoride (-as such [C08L 27/14](#)-)}
- B29K 2027/16
- • {PVDF, i.e. polyvinylidene fluoride (-as such [C08L 27/16](#)-)}
- B29K 2027/18
- • PTFE, i.e. polytetrafluorethene{(-as such [C08L 27/18](#)-), e.g. ePTFE, i.e. expanded polytetrafluorethene, Gore Tex (R)}
- B29K 2029/00**
- Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof}as moulding material{(-as such [C08L 29/00](#)-)}**
- B29K 2029/04
- {PVOH, i.e. polyvinyl alcohol (-as such [C08L 29/04](#) ; [B29K 2031/04](#) takes precedence-)}
- B29K 2031/00**
- Use of polyvinylesters {or derivatives thereof}as moulding material{(-as such [C08L 31/00](#)-)}**
- B29K 2031/04
- {Polymers of vinyl acetate, e.g. PVAc, i.e. polyvinyl acetate (-as such [C08L 31/04](#)-)}
- B29K 2033/00**
- Use of polymers of unsaturated acids or derivatives thereof as moulding material{(-as such [C08L 33/00](#)-)} (**B29K35/00** takes precedence-)**
- B29K 2033/04
- Polymers of esters{(-as such [C08L 33/04](#)-)}
- B29K 2033/08
- • {Polymers of acrylic acid esters, e.g. PMA, i.e. polymethylacrylate (-as such [C08L 33/08](#)-)}
- B29K 2033/12
- • {Polymers of methacrylic acid esters, e.g. PMMA, i.e. polymethylmethacrylate (-as such [C08L 33/12](#)-)}
- B29K 2033/18
- Polymers of nitriles{(-as such [C08L 33/18](#)-)}
- B29K 2033/20
- • PAN, i.e. polyacrylonitrile{(-as such [C08L 33/20](#)-)}
- B29K 2033/26
- {Polymers of acrylamide or methacrylamide (-as such [C08L 33/26](#)-)}
- B29K 2035/00**
- Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof}as moulding material{(-as such [C08L 35/00](#)-)}**
- B29K 2039/00**
- {Use of polymers with unsaturated aliphatic radicals and with a nitrogen or a heterocyclic ring containing nitrogen in a side chain or derivatives thereof as moulding material (- as such [C08L 39/00](#)-)}**
- B29K 2039/06
- {Polymers of N-vinyl-pyrrolidones (-as such [C08L 39/06](#)-)}

- B29K 2039/08 · {Polymers of vinyl-pyridine (-as such [C08L 39/08](#)-)}
- B29K 2045/00** Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins {or derivatives thereof}, as moulding material{(-as such [C08L 45/00](#)-)}
- B29K 2049/00** {Use of polyacetylene or cyanic ester resins, i.e. polymers having one or more carbon-to carbon triple bonds or derivatives thereof, as moulding material (-as such [C08L 49/00](#)-)}
- B29K 2055/00** Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups **B29K23/00** to { **B29K49/00** , e.g. having a vinyl group }, as moulding material{(-as such [C08L 55/00](#)-)}
- B29K 2055/02 · ABS polymers, i.e. acrylonitrile-butadiene-styrene polymers{(-as such [C08L 55/02](#)-)}
- B29K 2059/00** Use of polyacetals {e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, as moulding material{(-as such [C08L 59/00](#)-)}
- B29K 2061/00** Use of condensation polymers of aldehydes or ketones {or derivatives thereof}as moulding material{(-as such [C08L 61/00](#)-)}
- B29K 2061/04 · Phenoplasts{(-as such [C08L 61/04](#)-)}
- B29K 2061/20 · Aminoplasts{(-as such [C08L 61/20](#)-)}
- B29K 2063/00** Use of {EP, i.e.}epoxy resins {or derivatives thereof}as moulding material{(-as such [C08L 63/00](#)-)}
- B29K 2065/00** {Use of polyphenylenes (-as such [C08L 65/02](#)-)or polyxylylenes (-as such [C08L 65/04](#)-)as moulding material}
- B29K 2067/00** Use of polyesters {or derivatives thereof}as moulding material{(-as such [C08L 67/00](#)-)}
- B29K 2067/04 · {Polyesters derived from hydroxycarboxylic acids (-as such [C08L 67/04](#)-)}
- B29K 2067/06 · {Unsaturated polyesters (-as such [C08L 67/06](#)-)}
- B29K 2069/00** Use of {PC, i.e.}polycarbonates {or derivatives thereof}as moulding material{(-as such [C08L 69/00](#)-)}
- B29K 2071/00** Use of polyethers,{e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}as moulding material{(-as such [C08L 71/00](#)-)}
- B29K 2071/02 · {Polyalkylene oxides, e.g. PEO, i.e. polyethylene oxide or derivatives thereof (-as such [C08L 71/02](#)-)}
- B29K 2071/12 · {PPO, i.e. polyphenylene oxide (-as such [C08L 71/12](#)-); PPE, i.e. polyphenylene ether}
- B29K 2073/00** Use of other polymers having oxygen as the only hetero atom in the main chain as moulding material{(-as such [C08L 73/00](#)-)}
- B29K 2075/00** Use of {PU, i.e.}polyureas or polyurethanes {or derivatives thereof}as moulding material{(-as such [C08L 75/00](#)-)}
- B29K 2075/02 · Polyureas{(-as such [C08L 75/02](#)-)}
- B29K 2077/00** Use of {PA, i.e.}polyamides, e.g. polyesteramides {or derivatives thereof}as moulding material {(-as such [C08L 77/00](#)-)}
- B29K 2077/10 · {Aromatic polyamides (Polyaramides) or derivatives thereof (-such as [C08L 77/10](#)-)}

B29K 2079/00	Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups B29K61/00 to B29K77/00 }, as moulding material{(as such C08L 79/00 -)}
B29K 2079/08	· {PI, i.e. polyimides or derivatives thereof (as such C08L 79/08 -)}
B29K 2081/00	Use of polymers having sulfur, with or without nitrogen, oxygen, or carbon only, in the main chain, as moulding material{(as such C08L 81/00 -)}
B29K 2081/04	· {Polysulfides, e.g. PPS, i.e. polyphenylene sulfide or derivatives thereof (as such C08L 81/04 -)}
B29K 2081/06	· {PSU, i.e. polysulfones; PES, i.e. polyethersulfones or derivatives thereof (as such C08L 81/06 -)}
B29K 2083/00	Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as moulding material{(as such C08L 83/00 -)}
B29K 2085/00	Use of polymers having other elements {than silicon, sulfur, nitrogen, oxygen, and carbon}in the main chain, as moulding material{(as such C08L 85/00 -)}
B29K 2086/00	Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups B29K59/00 to B29K85/00 , as moulding material
B29K 2089/00	{Use of proteins, e.g. casein, gelatine or derivatives thereof, as moulding material (as such C08L 89/00 -)}
B29K 2091/00	Use of waxes as moulding material{(as such C08L 91/06 -)}
B29K 2093/00	{Use of natural resins (as such C08L 93/00 -), e.g. shellac (as such C08L 93/02 -)or derivatives thereof, as moulding material (- B29K1/00 , B29K 2003/00 , B29K 2005/00 , B29K7/00 and B29K 2089/00 take precedence-)}
B29K 2095/00	Use of bituminous materials as moulding material{(as such C08L 95/00 -)}
B29K 2096/00	Use of specified macromolecular materials not provided for in a single one of main groups B29K1/00 - B29K95/00 , as moulding material
B29K 2096/02	· Graft polymers (- B29K55/02 takes precedence-)
B29K 2096/04	· Block polymers (- B29K55/02 takes precedence-)
B29K 2101/00	Use of unspecified macromolecular compounds as moulding material (unspecified rubbers B29K21/00){ as such C08L 101/00 }
B29K 2105/00	Condition, form or state of moulded material {or of the material to be shaped}
B29K 2105/0005	· {containing compounding ingredients (-releasing, lubricating or separating agents B29C 33/56 , fibers B29K105/08 , B29K105/12 ; fillers B29K105/16 , recycled material B29K105/26 -)}
U B29K 2105/06	· containing reinforcements, fillers or inserts
U B29K 2105/08	· · of continuous length, e.g. cords, rovings, mats, fabrics, strands, yarns
B29K 2105/10	· · · {Cords, strands or rovings, e.g.}oriented {cords, strands or rovings}
U B29K 2105/101	· · · · oriented
B29K 2105/108	· · · · · {arranged in parallel planes and crossing at substantial angles (- B29K 2105/206 takes precedence-)}
U B29K 2105/25	· {Solid}
B29K 2105/251	· · {Particles, powder, granules (-expandable particles B29K 2105/046 -)}

- B29K 2105/26 · Scrap {recycled material}
- B29K 2201/00 Use of cellulose, modified cellulose or cellulose derivatives, e.g. viscose, as reinforcement**{(-as such [C08L 1/00](#)-)}
- NOTE
Copolymers are indexed with the same indexing code as the majority polymers
- B29K 2201/08 · {Cellulose derivatives}{(-as such [C08L 1/08](#)-)}
- B29K 2201/12 · · {Cellulose acetate}{(-as such [C08L 1/12](#)-)}
- B29K 2201/14 · · {Cellulose acetate-butyrate}{(-as such [C08L 1/14](#)-)}
- B29K 2201/18 · · {Cellulose nitrate}{(-as such [C08L 1/18](#)-)}
- B29K 2203/00 Use of {starch or derivatives as reinforcement** (-as such [C08L 3/00](#)-)}
- B29K 2205/00 {Polysaccharides or derivatives}{(-as such [C08L 5/00](#)-)}**
- B29K 2207/00 Use of natural rubber as reinforcement**{(-as such [C08L 7/00](#)-)}
- B29K 2209/00 Use of rubber derived from conjugated dienes as reinforcement**{(-as such [C08L 9/00](#)-)}
- B29K 2209/06 · {SBR}, i.e. butadiene-styrene {rubbers}{(-as such [C08L 9/06](#)-)}
- B29K 2211/00 Use of {rubber derived from chloroprene as reinforcement** (-as such [C08L 11/00](#)-)}
- B29K 2219/00 Use of rubber not provided for in a single one of main groups [B29K207/00](#) to { [B29K 2211/00](#) }, as reinforcement**
- B29K 2221/00 Use of {unspecified rubbers as reinforcement** (-as such [C08L 21/00](#)-)}
- B29K 2223/00 Use of polyalkenes {or derivatives thereof}as reinforcement**{(-as such [C08L 23/00](#)-)}
- B29K 2223/04 · {Polymers of ethylene (-as such [C08L 23/04](#)-)}
- B29K 2223/06 · · {PE, i.e. polyethylene}{(-as such [C08L 23/06](#)-)}
- B29K 2223/08 · · {Use of copolymers of ethylene as reinforcement (-as such [C08L 23/08](#) ; [B29K 2223/16](#) takes precedence-)}
- B29K 2223/10 · {Polymers of propylene (-as such [C08L 23/10](#)-)}
- B29K 2223/12 · · {PP, i.e. polypropylene}{(-as such [C08L 23/12](#)-)}
- B29K 2223/14 · · {Copolymers of polypropylene}{(-as such [C08L 23/14](#) ; [B29K 2023/16](#) takes precedence-)}
- B29K 2223/16 · {EPM, i.e. ethylene-propylene copolymers; EPDM, i.e. ethylene-propylene-diene copolymers; EPT, i.e. ethylene-propylene terpolymers (-as such [C08L 23/16](#)-)}
- B29K 2223/18 · {Polymers of hydrocarbons having four or more carbon atoms, e.g. polymers of butylene (*e.g. PB, i.e. polybutylene*)(*e.g. PB, i.e. polybutylene*)}(-as such [C08L 23/18](#)-)}
- B29K 2223/22 · · {Copolymers of isobutene, e.g. butyl rubber}{(-as such [C08L 23/22](#)-)}
- B29K 2225/00 Use of polymers of vinyl-aromatic compounds {or derivatives thereof}as reinforcement**{(-as such [C08L 25/00](#)-)}
- B29K 2225/04 · {Polymers of styrene (-as such [C08L 25/04](#)-)}
- B29K 2225/06 · · {PS, i.e. polystyrene (-as such [C08L 25/06](#)-)}
- B29K 2225/08 · · {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene}{(-as such [C08L 25/08](#) ; [B29K255/02](#) takes precedence-)}

- B29K 2227/00** Use of polyvinylhalogenides {or derivatives thereof} as reinforcement {(-as such [C08L 27/00](#)-)}
- B29K 2227/06 · {PVC, i.e. polyvinylchloride (-as such [C08L 27/06](#)-)}
- B29K 2227/08 · {PVDC, i.e. polyvinylidene chloride (-as such [C08L 27/08](#)-)}
- B29K 2227/12 · containing fluorine {(-as such [C08L 27/12](#)-)}
- B29K 2227/14 · · {PVF, i.e. polyvinyl fluoride (-as such [C08L 27/14](#)-)}
- B29K 2227/16 · · {PVDF, i.e. polyvinylidene fluoride (-as such [C08L 27/16](#)-)}
- B29K 2227/18 · · PTFE, i.e. polytetrafluorethene {(-as such [C08L 27/18](#)-), e.g. ePTFE, i.e. expanded polytetrafluorethene, Gore Tex (R)}
- B29K 2229/00** Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof}, as reinforcement {(-as such [C08L 29/00](#)-)}
- B29K 2229/04 · {PVOH, i.e. polyvinyl alcohol (-as such [C08L 29/04](#) ; [B29K 2231/04](#) takes precedence-)}
- B29K 2231/00** Use of polyvinylesters {or derivatives thereof} as reinforcement {(-as such [C08L 31/00](#)-)}
- B29K 2231/04 · {Polymers of vinyl acetate, e.g. PVAc, i.e. polyvinyl acetate (-as such [C08L 31/04](#)-)}
- B29K 2233/00** Use of polymers of unsaturated acids or derivatives thereof as reinforcement {(-as such [C08L 33/00](#)-)} ([B29K35/00](#) takes precedence)
- B29K 2233/04 · Polymers of esters {(-as such [C08L 33/04](#)-)}
- B29K 2233/08 · · {Polymers of acrylic acid esters, e.g. PMA, i.e. polymethylacrylate (-as such [C08L 33/08](#)-)}
- B29K 2233/12 · · {Polymers of methacrylic acid esters, e.g. PMMA, i.e. polymethylmethacrylate (-as such [C08L 33/12](#)-)}
- B29K 2233/18 · Polymers of nitriles {(-as such [C08L 33/18](#)-)}
- B29K 2233/20 · · PAN, i.e. polyacrylonitrile {(-as such [C08L 33/20](#)-)}
- B29K 2233/26 · {Polymers of acrylamide or methacrylamide (-as such [C08L 33/26](#)-)}
- B29K 2235/00** Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof} as reinforcement {(-as such [C08L 35/00](#)-)}
- B29K 2239/00** {Use of polymers with unsaturated aliphatic radicals and with a nitrogen or a heterocyclic ring containing nitrogen in a side chain or derivatives thereof, as reinforcement (-as such [C08L 39/00](#)-)}
- B29K 2239/06 · {Polymers of N-vinyl-pyrrolidones (-as such [C08L 39/06](#)-)}
- B29K 2239/08 · {Polymers of vinyl-pyridine (-as such [C08L 39/08](#)-)}
- B29K 2245/00** Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins {or derivatives thereof}, as reinforcement {(-as such [C08L 45/00](#)-)}
- B29K 2249/00** {Use of polyacetylene or cyanic ester resins, i.e. polymers having one or more carbon-to carbon triple bonds or derivatives thereof, as reinforcement (-as such [C08L 49/00](#)-)}
- B29K 2255/00** Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups [B29K223/00](#) to { [B29K 2249/00](#) , e.g. having a vinyl group }, as reinforcement {(-as such [C08L 55/00](#)-)}
- B29K 2255/02 · ABS polymers, i.e. acrylonitrile-butadiene-styrene polymers {(-as such [C08L 55/02](#)-)}

- B29K 2259/00** Use of polyacetals {e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, as reinforcement{{(-as such [C08L 59/00](#)-)}}
- B29K 2261/00** Use of condensation polymers of aldehydes or ketones {or derivatives thereof}, as reinforcement{{(-as such [C08L 61/00](#)-)}}
- B29K 2261/04 · Phenoplasts{{(-as such [C08L 61/04](#)-)}}
- B29K 2261/20 · Aminoplasts{{(-as such [C08L 61/20](#)-)}}
- B29K 2263/00** Use of {EP, i.e.}epoxy resins {or derivatives thereof}as reinforcement{{(-as such [C08L 63/00](#)-)}}
- B29K 2265/00** {Use of polyphenylenes (-as such [C08L 65/02](#)-)or polyxylylenes (-as such [C08L 65/04](#)-), as reinforcement}
- B29K 2267/00** Use of polyesters {or derivatives thereof}as reinforcement{{(-as such [C08L 67/00](#)-)}}
- B29K 2267/04 · {Polyesters derived from hydroxycarboxylic acids (-as such [C08L 67/04](#)-)}
- B29K 2267/06 · {Unsaturated polyesters (-as such [C08L 67/06](#)-)}
- B29K 2269/00** Use of {PC, i.e.}polycarbonates {or derivatives thereof}as reinforcement{{(-as such [C08L 69/00](#)-)}}
- B29K 2271/00** Use of polyethers,{e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}, as reinforcement{{(-as such [C08L 71/00](#)-)}}
- B29K 2271/02 · {Polyalkylene oxides, e.g. PEO, i.e. polyethylene oxide or derivatives thereof (-as such [C08L 71/02](#)-)}
- B29K 2271/12 · {PPO, i.e. polyphenylene oxide (-as such [C08L 71/12](#)-); PPE, i.e. polyphenylene ether}
- B29K 2273/00** Use of other polymers having oxygen as the only hetero atom in the main chain, as reinforcement{{(-as such [C08L 73/00](#)-)}}
- B29K 2275/00** Use of {PU, i.e.}polyureas or polyurethanes {or derivatives thereof}, as reinforcement{{(-as such [C08L 75/00](#)-)}}
- B29K 2275/02 · Polyureas{{(-as such [C08L 75/02](#)-)}}
- B29K 2277/00** Use of {PA, i.e.}polyamides, e.g. polyesteramides {or derivatives thereof}, as reinforcement {{(-as such [C08L 77/00](#)-)}}
- B29K 2277/10 · {Aromatic polyamides (Polyaramides) or derivatives thereof (-as such [C08L 77/10](#)-)}
- B29K 2279/00** Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups **B29K261/00** to **B29K277/00** }, as reinforcement{{(-as such [C08L 79/00](#)-)}}
- B29K 2279/08 · {PI, i.e. polyimides or derivatives thereof (-as such [C08L 79/08](#)-)}
- B29K 2281/00** Use of polymers having sulfur, with or without nitrogen, oxygen, or carbon only, in the main chain, as reinforcement{{(-as such [C08L 81/00](#)-)}}
- B29K 2281/04 · {Polysulfides, e.g. PPS, i.e. polyphenylene sulfide or derivatives thereof (-as such [C08L 81/04](#)-)}
- B29K 2281/06 · {PSU, i.e. polysulfones; PES, i.e. polyethersulfones or derivatives thereof (-as such [C08L 81/06](#)-)}
- B29K 2283/00** Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as reinforcement{{(-as such [C08L 83/00](#)-)}}

- B29K 2285/00** Use of polymers having other elements {than silicon, sulfur, nitrogen, oxygen, and carbon} in the main chain, as reinforcement {(-as such [C08L 85/00](#)-)}
- B29K 2286/00** Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups **B29K259/00** to **B29K285/00** , as reinforcement
- B29K 2289/00** {Use of proteins, e.g. casein, gelatine or derivatives thereof, as reinforcement {(-as such [C08L 89/00](#)-)}
- B29K 2291/00** Use of waxes as reinforcement {(-as such [C08L 91/06](#)-)}
- B29K 2293/00** {Use of natural resins (-as such [C08L 93/00](#)-), e.g. shellac (-as such [C08L 93/02](#)-) or derivatives thereof, as reinforcement (-**B29K201/00** , [B29K 2203/00](#) , [B29K 2205/00](#) , **B29K207/00** and [B29K 2289/00](#) take precedence-)}
- B29K 2295/00** Use of bituminous materials, as reinforcement {(-as such [C08L 95/00](#)-)}
- B29K 2296/00** Use of specified macromolecular materials not provided for in a single one of main groups **B29K201/00** - **B29K295/00** , as reinforcement
- B29K 2296/02 · Graft polymers (-**B29K255/02** takes precedence-)
- B29K 2296/04 · Block polymers (-**B29K255/02** takes precedence-)
- B29K 2301/00** Use of unspecified macromolecular compounds as reinforcement {(-unspecified rubbers **B29K221/00**-){(-as such [C08L 101/00](#)-)}
- B29K 2309/00** Use of inorganic materials not provided for in groups **B29K303/00** - **B29K307/00** , as reinforcement
- B29K 2311/00** Use of natural products or their composites, not provided for in groups **B29K201/00** - **B29K309/00** , as reinforcement
- B29K 2313/00** {Textile products, fabrics (-**B29K105/06** takes precedence-)}
- B29K 2401/00** Use of cellulose, modified cellulose or cellulose derivatives, e.g. viscose, as filler {(-as such [C08L 1/00](#)-)}
- NOTE
Copolymers are indexed with the same indexing code as the majority polymers
- B29K 2401/08 · {Cellulose derivatives (-as such [C08L 1/08](#)-)}
- B29K 2401/12 · · {Cellulose acetate (-as such [C08L 1/12](#)-)}
- B29K 2401/14 · · {Cellulose acetate-butyrate (-as such [C08L 1/14](#)-)}
- B29K 2401/18 · · {Cellulose nitrate (-as such [C08L 1/18](#)-)}
- B29K 2403/00** Use of {starch or derivatives as filler (-as such [C08L 3/00](#)-)}
- B29K 2405/00** {Polysaccharides or derivatives (-as such [C08L 5/00](#)-)}
- B29K 2407/00** Use of natural rubber as filler {(-as such [C08L 7/00](#)-)}
- B29K 2409/00** Use of rubber derived from conjugated dienes as filler {(-as such [C08L 9/00](#)-)}
- B29K 2409/06 · {SBR}, i.e. butadiene-styrene {rubbers (-as such [C08L 9/06](#)-)}
- B29K 2411/00** Use of {rubber derived from chloroprene as filler (-as such [C08L 11/00](#)-)}
- B29K 2419/00** Use of rubber not provided for in a single one of main groups **B29K407/00** to { [B29K 2411/00](#) }, as filler

- B29K 2421/00** Use of **{unspecified rubbers as filler (-as such C08L 21/00)}**
- B29K 2423/00** Use of **polyalkenes {or derivatives thereof} as filler (-as such C08L 23/00)}**
- B29K 2423/04 • {Polymers of ethylene (-as such C08L 23/04)}
- B29K 2423/06 • • {PE, i.e. polyethylene (-as such C08L 23/06)}
- B29K 2423/08 • • {Use of copolymers of ethylene as filler (-as such C08L 23/08 ; B29K 2423/16 takes precedence)}
- B29K 2423/10 • {Polymers of propylene (-as such C08L 23/10)}
- B29K 2423/12 • • {PP, i.e. polypropylene (-as such C08L 23/12)}
- B29K 2423/14 • • {Copolymers of polypropylene (-as such C08L 23/14 ; B29K 2423/16 takes precedence)}
- B29K 2423/16 • {EPM, i.e. ethylene-propylene copolymers; EPDM, i.e. ethylene-propylene-diene copolymers; EPT, i.e. ethylene-propylene terpolymers (-as such C08L 23/16)}
- B29K 2423/18 • {Polymers of hydrocarbons having four or more carbon atoms, e.g. polymers of butylene (e.g. PB, i.e. polybutylene)(e.g. PB, i.e. polybutylene)(-as such C08L 23/18)}
- B29K 2423/22 • • {Copolymers of isobutene, e.g. butyl rubber (-as such C08L 23/22)}
- B29K 2425/00** Use of **polymers of vinyl-aromatic compounds {or derivatives thereof} as filler (-as such C08L 25/00)}**
- B29K 2425/04 • {Polymers of styrene (-as such C08L 25/04)}
- B29K 2425/06 • • {PS, i.e. polystyrene (-as such C08L 25/06)}
- B29K 2425/08 • • {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (-as such C08L 25/08 ; B29K455/02 takes precedence)}
- B29K 2427/00** Use of **polyvinylhalogenides {or derivatives thereof} as filler (-as such C08L 27/00)}**
- B29K 2427/06 • {PVC, i.e. polyvinylchloride (-as such C08L 27/06)}
- B29K 2427/08 • {PVDC, i.e. polyvinylidene chloride (-as such C08L 27/08)}
- B29K 2427/12 • containing fluorine (-as such C08L 27/12)}
- B29K 2427/14 • • {PVF, i.e. polyvinyl fluoride (-as such C08L 27/14)}
- B29K 2427/16 • • {PVDF, i.e. polyvinylidene fluoride (-as such C08L 27/16)}
- B29K 2427/18 • • PTFE, i.e. polytetrafluorethene (-as such C08L 27/18), e.g. ePTFE, i.e. expanded polytetrafluorethene, Gore Tex (R)}
- B29K 2429/00** Use of **polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof}, as filler (-as such C08L 29/00)}**
- B29K 2429/04 • {PVOH, i.e. polyvinyl alcohol (-as such C08L 29/04 ; B29K 2431/04 takes precedence)}
- B29K 2431/00** Use of **polyvinylesters {or derivatives thereof} as filler (-as such C08L 31/00)}**
- B29K 2431/04 • {Polymers of vinyl acetate, e.g. PVAc, i.e. polyvinyl acetate (-as such C08L 31/04)}
- B29K 2433/00** Use of **polymers of unsaturated acids or derivatives thereof as filler (-as such C08L 33/00)}** (-B29K435/00 takes precedence)
- B29K 2433/04 • Polymers of esters (-as such C08L 33/04)}
- B29K 2433/08 • • {Polymers of acrylic acid esters, e.g. PMA, i.e. polymethylacrylate (-as such C08L 33/08)}

- B29K 2433/12
- {Polymers of methacrylic acid esters, e.g. PMMA, i.e. polymethylmethacrylate (-as such [C08L 33/12-](#))}
- B29K 2433/18
- Polymers of nitriles{(-as such [C08L 33/18-](#))}
- B29K 2433/20
- PAN, i.e. polyacrylonitrile{(-as such [C08L 33/20-](#))}
- B29K 2435/00** Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof}as filler{(-as such [C08L 35/00-](#))}
- B29K 2439/00** {Use of polymers with unsaturated aliphatic radicals and with a nitrogen or a heterocyclic ring containing nitrogen in a side chain or derivatives thereof, as filler (-as such [C08L 39/00-](#))}
- B29K 2439/06
- {Polymers of N-vinyl-pyrrolidones (-as such [C08L 39/06-](#))}
- B29K 2439/08
- {Polymers of vinyl-pyridine (-as such [C08L 39/08-](#))}
- B29K 2445/00** Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins {or derivatives thereof}, as filler{(-as such [C08L 45/00-](#))}
- B29K 2449/00** {Use of polyacetylene or cyanic ester resins, i.e. polymers having one or more carbon-to carbon triple bonds or derivatives thereof, as filler (-as such [C08L 49/00-](#))}
- B29K 2455/00** Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups **B29K23/00** to { **B29K49/00** , e.g. having a vinyl group }, as filler{(-as such [C08L 55/00-](#))}
- B29K 2455/02
- ABS polymers, i.e. acrylonitrile-butadiene-styrene polymers{(-as such [C08L 55/02-](#))}
- B29K 2459/00** Use of polyacetals {e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, as filler{(-as such [C08L 59/00-](#))}
- B29K 2461/00** Use of condensation polymers of aldehydes or ketones {or derivatives thereof}, as filler{(-as such [C08L 61/00-](#))}
- B29K 2461/04
- Phenoplasts{(-as such [C08L 61/04-](#))}
- B29K 2461/20
- Aminoplasts{(-as such [C08L 61/20-](#))}
- B29K 2463/00** Use of {EP, i.e.}epoxy resins {or derivatives thereof}as filler{(-as such [C08L 63/00-](#))}
- B29K 2465/00** {Use of polyphenylenes (-as such [C08L 65/02-](#))or polyxylylenes (-as such [C08L 65/04-](#)), as filler}
- B29K 2467/00** Use of polyesters {or derivatives thereof}as filler{(-as such [C08L 67/00-](#))}
- B29K 2467/04
- {Polyesters derived from hydroxycarboxylic acids (-as such [C08L 67/04-](#))}
- B29K 2467/06
- {Unsaturated polyesters (-as such [C08L 67/06-](#))}
- B29K 2469/00** Use of {PC, i.e.}polycarbonates {or derivatives thereof}as filler{(-as such [C08L 69/00-](#))}
- B29K 2471/00** Use of polyethers,{e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}, as filler{(-as such [C08L 71/00-](#))}
- B29K 2471/02
- {Polyalkylene oxides, e.g. PEO, i.e. polyethylene oxide or derivatives thereof (-as such [C08L 71/02-](#))}
- B29K 2471/12
- {PPO, i.e. polyphenylene oxide (-as such [C08L 71/12-](#)); PPE, i.e. polyphenylene ether}

- B29K 2473/00** Use of other polymers having oxygen as the only hetero atom in the main chain, as filler{(-as such [C08L 73/00](#)-)}
- B29K 2475/00** Use of {PU, i.e.}polyureas or polyurethanes {or derivatives thereof}, as filler{(-as such [C08L 75/00](#)-)}
- B29K 2475/02 · Polyureas{(-as such [C08L 75/02](#)-)}
- B29K 2477/00** Use of {PA, i.e.}polyamides, e.g. polyesteramides {or derivatives thereof}, as filler {(-as such [C08L 77/00](#)-)}
- B29K 2477/10 · {Aromatic polyamides (Polyaramides) or derivatives thereof (-as such [C08L 77/10](#)-)}
- B29K 2479/00** Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups **B29K461/00** to **B29K477/00** }, as filler{(-as such [C08L 79/00](#)-)}
- B29K 2479/08 · {PI, i.e. polyimides or derivatives thereof (-as such [C08L 79/08](#)-)}
- B29K 2481/00** Use of polymers having sulfur, with or without nitrogen, oxygen, or carbon only, in the main chain, as filler{(-as such [C08L 81/00](#)-)}
- B29K 2481/04 · {Polysulfides, e.g. PPS, i.e. polyphenylene sulfide or derivatives thereof (-as such [C08L 81/04](#)-)}
- B29K 2481/06 · {PSU, i.e. polysulfones; PES, i.e. polyethersulfones or derivatives thereof (-as such [C08L 81/06](#)-)}
- B29K 2483/00** Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as filler{(-as such [C08L 83/00](#)-)}
- B29K 2485/00** Use of polymers having other elements {than silicon, sulfur, nitrogen, oxygen, and carbon}in the main chain, as filler{(-as such [C08L 85/00](#)-)}
- B29K 2486/00** Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups **B29K459/00** to **B29K485/00** , as filler
- B29K 2489/00** {Use of proteins, e.g. casein, gelatine or derivatives thereof, as filler (-as such [C08L 89/00](#)-)}
- B29K 2491/00** Use of waxes as filler{(-as such [C08L 91/06](#)-)}
- B29K 2493/00** {Use of natural resins (-as such [C08L 93/00](#)-), e.g. shellac (-as such [C08L 93/02](#)-)or derivatives thereof, as filler (-**B29K401/00** , [B29K 2403/00](#) , [B29K 2405/00](#) , **B29K407/00** and [B29K 2489/00](#) take precedence-)}
- B29K 2495/00** Use of bituminous materials, as filler{(-as such [C08L 95/00](#)-)}
- B29K 2496/00** Use of specified macromolecular materials not provided for in a single one of main groups **B29K401/00** - **B29K495/00** , as filler
- B29K 2496/02 · Graft polymers (-**B29K455/02** takes precedence-)
- B29K 2496/04 · Block polymers (-**B29K455/02** takes precedence-)
- B29K 2501/00** Use of unspecified macromolecular compounds as filler (-unspecified rubbers **B29K421/00**-){(-as such [C08L 101/00](#)-)}
- B29K 2509/00** Use of inorganic materials not provided for in groups **B29K503/00** - **B29K507/00** , as filler
- B29K 2511/00** Use of natural products or their composites, not provided for in groups **B29K401/00** - **B29K509/00** , as filler

- B29K 2601/00** Use of cellulose, modified cellulose or cellulose derivatives, e.g. viscose, for preformed parts, e.g. inserts{(-as such [C08L 1/00](#)-)}
- NOTE
Copolymers are indexed with the same indexing code as the majority polymers
- B29K 2601/08 · {Cellulose derivatives (-as such [C08L 1/08](#)-)}
- B29K 2601/12 · {Cellulose acetate (-as such [C08L 1/12](#)-)}
- B29K 2601/14 · {Cellulose acetate-butyrate (-as such [C08L 1/14](#)-)}
- B29K 2601/18 · {Cellulose nitrate (-as such [C08L 1/18](#)-)}
- B29K 2603/00** Use of {starch or derivatives for preformed parts, e.g. inserts (-as such [C08L 3/00](#)-)}
- B29K 2605/00** {Polysaccharides or derivatives (-as such [C08L 5/00](#)-)}
- B29K 2607/00** Use of natural rubber for preformed parts, e.g. inserts{(-as such [C08L 7/00](#)-)}
- B29K 2609/00** Use of rubber derived from conjugated dienes for preformed parts, e.g. inserts{(-as such [C08L 9/00](#)-)}
- B29K 2609/06 · {SBR}, i.e. butadiene-styrene {rubbers (-as such [C08L 9/06](#)-)}
- B29K 2611/00** Use of {rubber derived from chloroprene for preformed parts, e.g. inserts (-as such [C08L 11/00](#)-)}
- B29K 2619/00** Use of rubber not provided for in a single one of main groups **B29K607/00** to { [B29K 2611/00](#) }, for preformed parts, e.g. inserts
- B29K 2621/00** Use of {unspecified rubbers for preformed parts, e.g. inserts (-as such [C08L 21/00](#)-)}
- B29K 2623/00** Use of polyalkenes {or derivatives thereof}for preformed parts, e.g. inserts{(-as such [C08L 23/00](#)-)}
- B29K 2623/04 · {Polymers of ethylene (-as such [C08L 23/04](#)-)}
- B29K 2623/06 · {PE, i.e. polyethylene (-as such [C08L 23/06](#)-)}
- B29K 2623/08 · {Use of copolymers of ethylene for preformed parts, e.g. inserts (-as such [C08L 23/08](#) ; [B29K 2623/16](#) takes precedence-)}
- B29K 2623/10 · {Polymers of propylene (-as such [C08L 23/10](#)-)}
- B29K 2623/12 · {PP, i.e. polypropylene (-as such [C08L 23/12](#)-)}
- B29K 2623/14 · {Copolymers of polypropylene (-as such [C08L 23/14](#) ; [B29K 2623/16](#) takes precedence-)}
- B29K 2623/16 · {EPM, i.e. ethylene-propylene copolymers; EPDM, i.e. ethylene-propylene-diene copolymers; EPT, i.e. ethylene-propylene terpolymers (-as such [C08L 23/16](#)-)}
- B29K 2623/18 · {Polymers of hydrocarbons having four or more carbon atoms, e.g. polymers of butylene (e.g. *PB*, i.e. *polybutylene*)(e.g. *PB*, i.e. *polybutylene*)(-as such [C08L 23/18](#)-)}
- B29K 2623/22 · {Copolymers of isobutene, e.g. butyl rubber (-as such [C08L 23/22](#)-)}
- B29K 2625/00** Use of polymers of vinyl-aromatic compounds {or derivatives thereof}for preformed parts, e.g. inserts{(-as such [C08L 25/00](#)-)}
- B29K 2625/04 · {Polymers of styrene (-as such [C08L 25/04](#)-)}
- B29K 2625/06 · {PS, i.e. polystyrene (-as such [C08L 25/06](#)-)}
- B29K 2625/08 · {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (-as such [C08L 25/08](#) ; [B29K655/02](#) takes precedence-)}

- B29K 2627/00** Use of polyvinylhalogenides {or derivatives thereof}for preformed parts, e.g. inserts{(-as such [C08L 27/00](#)-)}
- B29K 2627/06 · {PVC, i.e. polyvinylchloride (-as such [C08L 27/06](#)-)}
- B29K 2627/08 · {PVDC, i.e. polyvinylidene chloride (-as such [C08L 27/08](#)-)}
- B29K 2627/12 · containing fluorine{(-as such [C08L 27/12](#)-)}
- B29K 2627/14 · · {PVF, i.e. polyvinyl fluoride (-as such [C08L 27/14](#)-)}
- B29K 2627/16 · · {PVDF, i.e. polyvinylidene fluoride (-as such [C08L 27/16](#)-)}
- B29K 2627/18 · · PTFE, i.e. polytetrafluorethene{(-as such [C08L 27/18](#)-), e.g. ePTFE, i.e. expanded polytetrafluorethene, Gore Tex (R)}
- B29K 2629/00** Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof}, for preformed parts, e.g. inserts{(-as such [C08L 29/00](#)-)}
- B29K 2629/04 · {PVOH, i.e. polyvinyl alcohol (-as such [C08L 29/04](#) ; [B29K 2631/04](#) takes precedence-)}
- B29K 2631/00** Use of polyvinylesters {or derivatives thereof}for preformed parts, e.g. inserts{(-as such [C08L 31/00](#)-)}
- B29K 2631/04 · {Polymers of vinyl acetate, e.g. PVAc, i.e. polyvinyl acetate (-as such [C08L 31/04](#)-)}
- B29K 2633/00** Use of polymers of unsaturated acids or derivatives thereof for preformed parts, e.g. inserts{(-as such [C08L 33/00](#)-)} (-[B29K635/00](#) takes precedence-)
- B29K 2633/04 · Polymers of esters{(-as such [C08L 33/04](#)-)}
- B29K 2633/08 · · {Polymers of acrylic acid esters, e.g. PMA, i.e. polymethylacrylate (-as such [C08L 33/08](#)-)}
- B29K 2633/12 · · {Polymers of methacrylic acid esters, e.g. PMMA, i.e. polymethylmethacrylate (-as such [C08L 33/12](#)-)}
- B29K 2633/18 · Polymers of nitriles{(-as such [C08L 33/18](#)-)}
- B29K 2633/20 · · PAN, i.e. polyacrylonitrile{(-as such [C08L 33/20](#)-)}
- B29K 2633/26 · {Polymers of acrylamide or methacrylamide (-as such [C08L 33/26](#)-)}
- B29K 2635/00** Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof}for preformed parts, e.g. inserts{(-as such [C08L 35/00](#)-)}
- B29K 2639/00** {Use of polymers with unsaturated aliphatic radicals and with a nitrogen or a heterocyclic ring containing nitrogen in a side chain or derivatives thereof, for preformed parts, e.g. inserts (-as such [C08L 39/00](#)-)}
- B29K 2639/06 · {Polymers of N-vinyl-pyrrolidones (-as such [C08L 39/06](#)-)}
- B29K 2639/08 · {Polymers of vinyl-pyridine (-as such [C08L 39/08](#)-)}
- B29K 2645/00** Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins {or derivatives thereof}, for preformed parts, e.g. inserts{(-as such [C08L 45/00](#)-)}
- B29K 2649/00** {Use of polyacetylene or cyanic ester resins, i.e. polymers having one or more carbon-to carbon triple bonds or derivatives thereof, for preformed parts, e.g. inserts (-as such [C08L 49/00](#)-)}
- B29K 2655/00** Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups [B29K623/00](#) to { [B29K 2649/00](#) , e.g. having a vinyl group }, for preformed parts, e.g. inserts{(-as such [C08L 55/00](#)-)}

- B29K 2655/02 · ABS polymers, i.e. acrylonitrile-butadiene-styrene polymers{(–as such [C08L 55/02](#)–)}
- B29K 2659/00 Use of polyacetals {e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, for preformed parts, e.g. inserts{(–as such [C08L 59/00](#)–)}**
- B29K 2661/00 Use of condensation polymers of aldehydes or ketones {or derivatives thereof}, for preformed parts, e.g. inserts{(–as such [C08L 61/00](#)–)}**
- B29K 2661/04 · Phenoplasts{(–as such [C08L 61/04](#)–)}
- B29K 2661/20 · Aminoplasts{(–as such [C08L 61/20](#)–)}
- B29K 2663/00 Use of {EP, i.e.}epoxy resins {or derivatives thereof}for preformed parts, e.g. inserts{(–as such [C08L 63/00](#)–)}**
- B29K 2665/00 {Use of polyphenylenes (–as such [C08L 65/02](#)–)or polyxylylenes (–as such [C08L 65/04](#)–), for preformed parts, e.g. inserts}**
- B29K 2667/00 Use of polyesters {or derivatives thereof}for preformed parts, e.g. inserts{(–as such [C08L 67/00](#)–)}**
- B29K 2667/04 · {Polyesters derived from hydroxycarboxylic acids (–as such [C08L 67/04](#)–)}
- B29K 2667/06 · {Unsaturated polyesters (–as such [C08L 67/06](#)–)}
- B29K 2669/00 Use of {PC, i.e.}polycarbonates {or derivatives thereof}for preformed parts, e.g. inserts{(–as such [C08L 69/00](#)–)}**
- B29K 2671/00 Use of polyethers,{e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}, for preformed parts, e.g. inserts{(–as such [C08L 71/00](#)–)}**
- B29K 2671/02 · {Polyalkylene oxides, e.g. PEO, i.e. polyethylene oxide or derivatives thereof (–as such [C08L 71/02](#)–)}
- B29K 2671/12 · {PPO, i.e. polyphenylene oxide (–as such [C08L 71/12](#)–); PPE, i.e. polyphenylene ether}
- B29K 2673/00 Use of other polymers having oxygen as the only hetero atom in the main chain, for preformed parts, e.g. inserts{(–as such [C08L 73/00](#)–)}**
- B29K 2675/00 Use of {PU, i.e.}polyureas or polyurethanes {or derivatives thereof}, for preformed parts, e.g. inserts{(–as such [C08L 75/00](#)–)}**
- B29K 2675/02 · Polyureas{(–as such [C08L 75/02](#)–)}
- B29K 2677/00 Use of {PA, i.e.}polyamides, e.g. polyesteramides {or derivatives thereof}, for preformed parts, e.g. inserts {(–as such [C08L 77/00](#)–)}**
- B29K 2677/10 · {Aromatic polyamides (Polyaramides) or derivatives thereof (–as such [C08L 77/10](#)–)}
- B29K 2679/00 Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups **B29K661/00** to **B29K677/00** }, for preformed parts, e.g. inserts{(–as such [C08L 79/00](#)–)}**
- B29K 2679/08 · {PI, i.e. polyimides or derivatives thereof (–as such [C08L 79/08](#)–)}
- B29K 2681/00 Use of polymers having sulfur, with or without nitrogen, oxygen, or carbon only, in the main chain, for preformed parts, e.g. inserts{(–as such [C08L 81/00](#)–)}**
- B29K 2681/04 · {Polysulfides, e.g. PPS, i.e. polyphenylene sulfide or derivatives thereof (–as such [C08L 81/04](#)–)}
- B29K 2681/06 · {PSU, i.e. polysulfones; PES, i.e. polyethersulfones or derivatives thereof (–as such [C08L 81/06](#)–)}

- B29K 2683/00** Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, for preformed parts, e.g. inserts ~~(-as such [C08L 83/00](#)-)~~
- B29K 2685/00** Use of polymers having other elements ~~{~~than silicon, sulfur, nitrogen, oxygen, and carbon~~}~~ in the main chain, for preformed parts, e.g. inserts ~~(-as such [C08L 85/00](#)-)~~
- B29K 2686/00** Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups **B29K659/00** to **B29K685/00** , for preformed parts, e.g. inserts
- B29K 2689/00** ~~{~~Use of proteins, e.g. casein, gelatine or derivatives thereof, for preformed parts, e.g. inserts ~~(-as such [C08L 89/00](#)-)~~
- B29K 2691/00** Use of waxes for preformed parts, e.g. inserts ~~(-as such [C08L 91/06](#)-)~~
- B29K 2693/00** ~~{~~Use of natural resins ~~(-as such [C08L 93/00](#)-)~~, e.g. shellac ~~(-as such [C08L 93/02](#)-)~~ or derivatives thereof, for preformed parts, e.g. inserts ~~(-**B29K601/00** , **B29K 2603/00** , **B29K 2605/00** , **B29K607/00** and **B29K 2689/00** take precedence-)~~
- B29K 2695/00** Use of bituminous materials, for preformed parts, e.g. inserts ~~(-as such [C08L 95/00](#)-)~~
- B29K 2696/00** Use of specified macromolecular materials not provided for in a single one of main groups **B29K601/00** - **B29K695/00** , for preformed parts, e.g. inserts
- B29K 2696/02** • Graft polymers ~~(-**B29K655/02** takes precedence-)~~
- B29K 2696/04** • Block polymers ~~(-**B29K655/02** takes precedence-)~~
- B29K 2701/00** Use of unspecified macromolecular compounds for preformed parts, e.g. inserts ~~(-unspecified rubbers **B29K621/00**-)~~ ~~(-as such [C08L 101/00](#)-)~~
- B29K 2709/00** Use of inorganic materials not provided for in groups **B29K 2603/00** - **B29K607/00** , for preformed parts, e.g. for inserts
- B29K 2711/00** Use of natural products or their composites, not provided for in groups **B29K601/00** - **B29K709/00** , for preformed parts, e.g. for inserts
- B29K 2713/00** ~~{~~Textile products, fabrics ~~(-**B29K105/06** takes precedence-)~~
- B29K 2801/00** ~~{~~Use of cellulose, modified cellulose or cellulose derivatives, e.g. viscose, as mould material ~~(-as such [C08L 1/00](#)-)~~
- B29K 2801/08** • {Cellulose derivatives ~~(-as such [C08L 1/08](#)-)~~}
- B29K 2801/12** • • {Cellulose acetate ~~(-as such [C08L 1/12](#)-)~~}
- B29K 2801/14** • • {Cellulose acetate-butyrate ~~(-as such [C08L 1/14](#)-)~~}
- B29K 2801/18** • • {Cellulose nitrate ~~(-as such [C08L 1/18](#)-)~~}
- B29K 2803/00** ~~{~~Use of starch or derivatives as mould material ~~(-as such [C08L 3/00](#)-)~~
- B29K 2805/00** ~~{~~Polysaccharides or derivatives ~~(-as such [C08L 5/00](#)-)~~
- B29K 2807/00** ~~{~~Use of natural rubber as mould material ~~(-as such [C08L 7/00](#)-)~~
- B29K 2809/00** ~~{~~Use of rubber derived from conjugated dienes as mould material ~~(-as such [C08L 9/00](#)-)~~
- B29K 2809/06** • {SBR}, i.e. butadiene-styrene ~~{~~rubbers ~~(-as such [C08L 9/06](#)-)~~
- B29K 2811/00** ~~{~~Use of rubber derived from chloroprene as mould material ~~(-as such [C08L 11/00](#)-)~~

- B29K 2819/00** {Use of rubber not provided for in a single one of main groups [B29K 2807/00](#) to [B29K 2811/00](#) , as mould material }
- B29K 2821/00** {Use of unspecified rubbers as mould material (-as such [C08L 21/00](#)-)}
- B29K 2823/00** {Use of polyalkenes or derivatives thereof as mould material (-as such [C08L 23/00](#)-)}
- B29K 2823/04 • {Polymers of ethylene (-as such [C08L 23/04](#)-)}
- B29K 2823/06 • • {PE, i.e. polyethylene (-as such [C08L 23/06](#)-)}
- B29K 2823/08 • • {Use of copolymers of ethylene as mould material (-as such [C08L 23/08](#) ; [B29K 2823/16](#) takes precedence-)}
- B29K 2823/10 • {Polymers of propylene (-as such [C08L 23/10](#)-)}
- B29K 2823/12 • • {PP, i.e. polypropylene (-as such [C08L 23/12](#)-)}
- B29K 2823/14 • • {Copolymers of polypropylene (-as such [C08L 23/14](#) ; [B29K 2823/16](#) takes precedence-)}
- B29K 2823/16 • {EPM, i.e. ethylene-propylene copolymers; EPDM, i.e. ethylene-propylene-diene copolymers; EPT, i.e. ethylene-propylene terpolymers (-as such [C08L 23/16](#)-)}
- B29K 2823/18 • {Polymers of hydrocarbons having four or more carbon atoms, e.g. polymers of butylene (e.g. PB, i.e. polybutylene)(e.g. PB, i.e. polybutylene)(-as such [C08L 23/18](#)-)}
- B29K 2823/22 • • {Copolymers of isobutene, e.g. butyl rubber (-as such [C08L 23/22](#)-)}
- B29K 2825/00** {Use of polymers of vinyl-aromatic compounds or derivatives thereof as mould material (-as such [C08L 25/00](#)-)}
- B29K 2825/04 • {Polymers of styrene (-as such [C08L 25/04](#)-)}
- B29K 2825/06 • • {PS, i.e. polystyrene (-as such [C08L 25/06](#)-)}
- B29K 2825/08 • • {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (-as such [C08L 25/08](#) ; [B29K 2855/02](#) takes precedence-)}
- B29K 2827/00** {Use of polyvinylhalogenides or derivatives thereof as mould material (as such [C08L 27/00](#)-)}
- B29K 2827/06 • {PVC, i.e. polyvinylchloride (-as such [C08L 27/06](#)-)}
- B29K 2827/08 • {PVDC, i.e. polyvinylidene chloride (-as such [C08L 27/08](#)-)}
- B29K 2827/12 • {containing fluorine (-as such [C08L 27/12](#)-)}
- B29K 2827/14 • • {PVF, i.e. polyvinyl fluoride (-as such [C08L 27/14](#)-)}
- B29K 2827/16 • • {PVDF, i.e. polyvinylidene fluoride (-as such [C08L 27/16](#)-)}
- B29K 2827/18 • • {PTFE, i.e. polytetrafluorethene (-as such [C08L 27/18](#)-), e.g. ePTFE, i.e. expanded polytetrafluorethene, Gore Tex (R)}
- U B29K 2829/00** {Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals or derivatives thereof, as mould material (as such [C08L 29/00](#)-)}
- B29K 2829/04 • {PVOH, i.e. polyvinyl alcohol (-as such [C08L 29/04](#) ; [B29K 2831/04](#) takes precedence-)}
- B29K 2831/00** {Use of polyvinylesters{or derivatives thereof}as mould material (-as such [C08L 31/00](#)-)}
- B29K 2831/04 • {Polymers of vinyl acetate, e.g. PVAc, i.e. polyvinyl acetate (-as such [C08L 31/04](#)-)}
- B29K 2833/00** {Use of polymers of unsaturated acids or derivatives thereof as mould material (-as such [C08L 33/00](#)-)([B29K 2835/00](#) takes precedence-)}

- B29K 2833/04 · {Polymers of esters (-as such [C08L 33/04](#)-)}
- B29K 2833/08 · · {Polymers of acrylic acid esters, e.g. PMA, i.e. polymethylacrylate (-as such [C08L 33/08](#)-)}
- B29K 2833/12 · · {Polymers of methacrylic acid esters, e.g. PMMA, i.e. polymethylmethacrylate (-as such [C08L 33/12](#)-)}
- B29K 2833/18 · {Polymers of nitriles (-as such [C08L 33/18](#)-)}
- B29K 2833/20 · · {PAN, i.e. polyacrylonitrile (-as such [C08L 33/20](#)-)}
- B29K 2833/26 · {Polymers of acrylamide or methacrylamide (-as such [C08L 33/26](#)-)}
- B29K 2835/00** {use of polymers of unsaturated polycarboxylic acids or derivatives thereof, as mould material (-as such [C08L 35/00](#)-)}
- B29K 2839/00** {Use of polymers with unsaturated aliphatic radicals and with a nitrogen or a heterocyclic ring containing nitrogen in a side chain or derivatives thereof, as mould material (-as such [C08L 39/00](#)-)}
- B29K 2839/06 · {Polymers of N-vinyl-pyrrolidones (-as such [C08L 39/06](#)-)}
- B29K 2839/08 · {Polymers of vinyl-pyridine (-as such [C08L 39/08](#)-)}
- B29K 2845/00** {Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins or derivatives thereof, as mould material (-as such [C08L 45/00](#)-)}
- B29K 2849/00** {Use of polyacetylene or cyanic ester resins, i.e. polymers having one or more carbon-to carbon triple bonds or derivatives thereof, as mould material (-as such [C08L 49/00](#)-)}
- B29K 2855/00** {Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups [B29K 2823/00](#) to [B29K 2849/00](#), e.g. having a vinyl group }, as mould material(-as such [C08L 55/00](#)-)}
- B29K 2855/02 · {ABS polymers, i.e. acrylonitrile-butadiene-styrene polymers (-as such [C08L 55/02](#)-)}
- B29K 2859/00** {Use of polyacetals e.g. POM, i.e. polyoxymethylene; or derivatives thereof, as mould material (-as such [C08L 59/00](#)-)}
- B29K 2861/00** {Use of condensation polymers of aldehydes or ketones or derivatives thereof, as mould material (-as such [C08L 61/00](#)-)}
- B29K 2861/04 · {Phenoplasts (-as such [C08L 61/04](#)-)}
- B29K 2861/20 · {Aminoplasts (-as such [C08L 61/20](#)-)}
- B29K 2863/00** {Use of EP, i.e. epoxy resins or derivatives thereof as mould material (-as such [C08L 63/00](#)-)}
- B29K 2865/00** {Use of polyphenylenes (-as such [C08L 65/02](#)-) or polyxylylenes (-as such [C08L 65/04](#)-), as mould material}
- B29K 2867/00** {Use of polyesters or derivatives thereof as mould material (-as such [C08L 67/00](#)-)}
- B29K 2867/04 · {Polyesters derived from hydroxycarboxylic acids (-as such [C08L 67/04](#)-)}
- B29K 2867/06 · {Unsaturated polyesters (-as such [C08L 67/06](#)-)}
- B29K 2869/00** {Use of PC, i.e. polycarbonates or derivatives thereof as mould material (-as such [C08L 69/00](#)-)}
- B29K 2871/00** {Use of polyethers, e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}, as mould material (-as such [C08L 71/00](#)-)}

- B29K 2871/02 · {Polyalkylene oxides, e.g. PEO, i.e. polyethylene oxide or derivatives thereof (-as such [C08L 71/02](#)-)}
- B29K 2871/12 · {PPO, i.e. polyphenylene oxide (-as such [C08L 71/12](#)-); PPE, i.e. polyphenylene ether}
- B29K 2873/00** {use of other polymers having oxygen as the only hetero atom in the main chain, as mould material (-as such [C08L 73/00](#)-)}
- B29K 2875/00** {Use of PU, i.e. polyureas or polyurethanes or derivatives thereof, as mould material (-as such [C08L 75/00](#)-)}
- B29K 2875/02 · {Polyureas (-as such [C08L 75/02](#)-)}
- B29K 2877/00** {Use of PA, i.e. polyamides, e.g. polyesteramides or derivatives thereof, as mould material [(as such [C08L 77/00](#)-)]}
- B29K 2877/10 · {Aromatic polyamides (Polyaramides) or derivatives thereof (-as such [C08L 77/10](#)-)}
- B29K 2879/00** {-Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain not provided for in groups [B29K 2861/00](#) to [B29K 2877/00](#) }, as mould material{(as such [C08L 79/00](#)-)}
- B29K 2879/08 · {PI, i.e. polyimides or derivatives thereof (-as such [C08L 79/08](#)-)}
- B29K 2881/00** {Use of polymers having sulfur, with or without nitrogen, oxygen, or carbon only, in the main chain, as mould material (-as such [C08L 81/00](#)-)}
- B29K 2881/04 · {Polysulfides, e.g. PPS, i.e. polyphenylene sulfide or derivatives thereof (-as such [C08L 81/04](#)-)}
- B29K 2881/06 · {PSU, i.e. polysulfones; PES, i.e. polyethersulfones or derivatives thereof (-as such [C08L 81/06](#)-)}
- B29K 2883/00** {Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as mould material (-as such [C08L 83/00](#)-)}
- B29K 2885/00** {Use of polymers having other elements{than silicon, sulfur, nitrogen, oxygen, and carbon}in the main chain, as mould material (-as such [C08L 85/00](#)-)}
- B29K 2886/00** {-Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups [B29K 2859/00](#) to [B29K 2885/00](#) , as mould material-}
- B29K 2889/00** {Use of proteins, e.g. casein, gelatine or derivatives thereof, as mould material (-as such [C08L 89/00](#)-)}
- B29K 2891/00** {Use of waxes as mould material (-as such [C08L 91/06](#)-)}
- B29K 2893/00** {Use of natural resins (-as such [C08L 93/00](#)-), e.g. shellac (-as such [C08L 93/02](#)-)or derivatives thereof, as mould material (-[B29K 2801/00](#) , [B29K 2803/00](#) , [B29K 2805/00](#) , [B29K 2807/00](#) and [B29K 2889/00](#) take precedence-)}
- B29K 2896/00** {-Use of specified macromolecular materials not provided for in a single one of main groups [B29K 2801/00](#) - [B29K 2895/00](#) , as mould material-}
- B29K 2896/02 · {Graft polymers (-[B29K 2855/02](#) takes precedence-)}
- B29K 2896/04 · {Block polymers (-[B29K 2855/02](#) takes precedence-)}
- B29K 2901/00** {Use of unspecified macromolecular compounds as mould material (-unspecified rubbers [B29K 2821/00](#)-)(as such [C08L 101/00](#)-)}
- B29K 2909/00** {-Use of inorganic materials not provided for in groups [B29K 2803/00](#) - [B29K 2807/00](#) , as mould material-}

B29K 2911/00 **{-Use of natural products or their composites, not provided for in groups [B29K 2801/00](#) - [B29K 2809/00](#) , as mould material-}**

U B29K 2995/00 **{Properties of moulding materials, reinforcements, fillers, preformed parts or moulds}**

- U B29K 2995/0037 · {-Other properties}
- B29K 2995/0056 · · {-Biocompatible, e.g. biopolymers, bioelastomers (-bio-degradable [B29K 2995/006-](#))}

Project: N/A (B29L)

U B29L 2001/00 **Articles provided with screw threads**

- B29L 2001/002 · {-Bolts}
- B29L 2001/005 · {-Nuts}
- B29L 2001/007 · {-Screws}

U B29L 2007/00 **Flat articles, e.g. films or sheets ([B29L24/00](#) takes precedence)**

- B29L 2007/001 · {-having irregular or rough surfaces (treads for tyres [B29L 2030/002](#))}
- B29L 2007/002 · {-Panels; Plates; Sheets}
- B29L 2007/004 · {-Tags; Tickets (labels [B29L 2031/744](#))}
- B29L 2007/005 · {-Tarpaulins}
- B29L 2007/007 · {-Narrow strips, e.g. ribbons, tapes, bands (belts [B29L29/00](#); tapes as carrier of sound or information [B29L 2017/008](#))}
- B29L 2007/008 · {-Wide strips, e.g. films, webs}

U B29L 2009/00 **Layered products**

- B29L 2009/001 · {-the layers being loose}
- B29L 2009/003 · {-comprising a metal layer}
- B29L 2009/005 · {-coated}
- B29L 2009/006 · · {-painted}
- B29L 2009/008 · · {-metalized, galvanized}

U B29L 2011/00 **Optical elements, e.g. lenses, prisms**

- B29L 2011/0008 · {-Artificial eyes}
- B29L 2011/0016 · {-Lenses}
- B29L 2011/0025 · · {-Toric lenses}
- B29L 2011/0033 · · {-Multifocal lenses}
- B29L 2011/0041 · · {-Contact lenses}
- B29L 2011/005 · · {-Fresnel lenses}
- B29L 2011/0058 · {-Mirrors}
- B29L 2011/0066 · {-Optical filters }
- B29L 2011/0075 · {-Light guides, optical cables }
- B29L 2011/0083 · {-Reflectors}
- B29L 2011/0091 · · {-Reflex reflectors}

U B29L 2015/00 **Gear wheels or similar articles with grooves or projections, e.g. control knobs**

- B29L 2015/003 · {-Gears}
- B29L 2015/006 · {-Pinions, sprocket-wheels}

- B29L 2017/00** **{-Carriers for sound or information}**
- B29L 2017/001 • {-Carriers of records containing fine grooves or impressions, e.g. disc records for needle playback, cylinder records}
- B29L 2017/003 • • {-Records or discs}
- B29L 2017/005 • • • {-CD"s, DVD"s}
- B29L 2017/006 • {-Memory cards, chip cards}
- B29L 2017/008 • {-Tapes } (tapes in general [B29L 2007/007](#))**}}**
- U B29L 2021/00** **Hair combs or similar toothed or slotted articles**
- B29L 2021/005 • {-Hair combs}
- U B29L 2022/00** **Hollow articles (tubular articles [B29L23/00](#); pneumatic tyres [B29L30/00](#))**
- B29L 2022/002 • {-Globes}
- B29L 2022/005 • {-having dividing walls, e.g. additional elements placed between object parts}
- B29L 2022/007 • • {-integrally moulded or formed}
- U B29L 2022/02** • Inflatable articles (balls [B29L31/54](#); { inner tyres [B29L 2023/245](#)})
- B29L 2022/022 • • {-Balloons}
- B29L 2022/025 • • {-Bladders}
- B29L 2022/027 • • {-Air bags}
- U B29L 2023/00** **Tubular articles ([B29L24/00](#) takes precedence; { catheters [B29L 2031/7542](#)})**
- B29L 2023/001 • {-Tubular films, sleeves}
- B29L 2023/002 • • {-Sausage casings }
- B29L 2023/004 • {-Bent tubes (for use as pipe couplings [B29L31/24](#))}
- B29L 2023/005 • {-Hoses, i.e. flexible }
- B29L 2023/006 • • {-Flexible liners}
- B29L 2023/007 • • {-Medical tubes other than catheters (catheters [B29L 2031/7542](#))}
- U B29L 2023/18** • Pleated {or corrugated} hoses
- B29L 2023/183 • • {-partially}
- B29L 2023/186 • • {-having a smooth internal wall }
- B29L 2023/22 • {-Tubes or pipes, i.e. rigid (bent tubes not for use as pipe couplings [B29L 2023/004](#))}
- B29L 2023/225 • • {-Insulated}
- U B29L 2023/24** • Endless tubes, e.g. inner tubes for pneumatic tyres
- B29L 2023/245 • • {-Inner tubes}
- U B29L 2024/00** **Articles with hollow walls**
- B29L 2024/003 • {-comprising corrugated cores }
- B29L 2024/006 • {-multi-channelled }
- U B29L 2030/00** **Pneumatic or solid tyres or parts thereof {(conveyor belts [B29L 2031/7092](#); drive belts [B29L 2031/7094](#); fourdrinier belts [B29L 2031/733](#))}**
- B29L 2030/001 • {-Beads}
- B29L 2030/002 • {-Treads}
- B29L 2030/003 • {-Plies; Breakers}
- B29L 2030/004 • • {-Carcasses}
- B29L 2030/005 • • {-Belts}
- B29L 2030/006 • {-Solid tyres}

- B29L 2030/007 · {-Sidewalls}
- B29L 2030/008 · {-Innerliners}

U B29L 2031/00 Other particular articles

WARNING

Groups [B29L 2031/70](#) - [B29L 2031/7782](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: [B29L 2031/70](#) - [B29L 2031/7782](#): [B29L 31/00](#)

- U B29L 2031/001 · {Profiled members, e.g. beams, sections}
- B29L 2031/003 · · {-having a profiled transverse cross-section }
- B29L 2031/005 · · · {-for making window frames (windows [B29L 2031/778](#))}
- B29L 2031/006 · · · · {-and provided with a sealing element}
- B29L 2031/008 · · {-having a longitudinal cross-section}
- U B29L 2031/04 · Bearings
- B29L 2031/045 · · {-Bushes therefor }
- U B29L 2031/08 · Blades for rotors, stators, fans, turbines or the like, e.g. screw propellers
- B29L 2031/082 · · {-Blades, e.g. for helicopters}
- B29L 2031/085 · · · {-Wind turbine blades}
- B29L 2031/087 · · {-Propellers }
- U B29L 2031/10 · Building elements, e.g. bricks, blocks, tiles, panels, posts, beams {{frameless domes [B29L25/00](#), doors [B29L 2031/724](#)}}
- B29L 2031/102 · · {-Bricks}
- B29L 2031/104 · · {-Tiles}
- B29L 2031/106 · · {-Igloos}
- B29L 2031/108 · · {-Roofs}
- U B29L 2031/24 · Pipe joints or couplings ([B29L31/26](#) takes precedence)
- B29L 2031/243 · · {-Elbows}
- B29L 2031/246 · · {-T-joints}
- U B29L 2031/26 · Sealing devices, e.g. packaging for pistons or pipe joints
- B29L 2031/265 · · {-Packings, Gaskets}
- U B29L 2031/28 · Tools, e.g. cutlery
- B29L 2031/283 · · {-Hand tools}
- B29L 2031/286 · · {-Cutlery}
- U B29L 2031/30 · Vehicles, e.g. ships or aircraft, or body parts thereof {{(vanes or blades [B29L31/08](#), air bags [B29L 2022/027](#))}}
- B29L 2031/3002 · · {-Superstructures characterized by combining metal and plastics, i.e. hybrid parts}
- B29L 2031/3005 · · {-Body finishings}
- B29L 2031/3008 · · · {-Instrument panels}
- B29L 2031/3011 · · · {-Roof linings}
- B29L 2031/3014 · · · {-Door linings}
- B29L 2031/3017 · · · {-Floor coverings}
- B29L 2031/302 · · · {-Trim strips}
- B29L 2031/3023 · · · {-Head-rests}
- B29L 2031/3026 · · · {-Arm-rests}
- B29L 2031/3029 · · · {-Handgrips (grips in general [B29L 2031/463](#))}

- B29L 2031/3032 . . . {-Air inlets}
- B29L 2031/3035 . . . {-Sun visors}
- B29L 2031/3038 . . . {-Air bag covers}
- B29L 2031/3041 . . . {-Trim panels}
- B29L 2031/3044 . . {-Bumpers}
- B29L 2031/3047 . . {-Steering wheels}
- B29L 2031/305 . . {-Wipers}
- B29L 2031/3052 . . {-Windscreens}
- B29L 2031/3055 . . {-Cars}
- B29L 2031/3058 . . . {-Spoilers}
- B29L 2031/3061 . . . {-Number plates}
- B29L 2031/3064 . . {-Trains}
- B29L 2031/3067 . . {-Ships}
- B29L 2031/307 . . . {-Hulls}
- B29L 2031/3073 . . {-Submarines}
- B29L 2031/3076 . . {-Aircrafts (blades, propellers **B29L31/08**)}
- B29L 2031/3079 . . . {-Cockpits, canopies}
- B29L 2031/3082 . . . {-Fuselages}
- B29L 2031/3085 . . . {-Wings}
- B29L 2031/3088 . . . {-Helicopters}
- B29L 2031/3091 . . {-Bicycles}
- B29L 2031/3094 . . . {-Saddles}
- B29L 2031/3097 . . {-Cosmonautical vehicles; Rockets}
- U B29L 2031/34 . . Electrical apparatus, e.g. sparking plugs or parts thereof
- B29L 2031/3406 . . . {-Components, e.g. resistors}
- U B29L 2031/3431 . . {-Telephones, Earphones}
- B29L 2031/3437 . . . {-Cellular phones}
- B29L 2031/3481 . . {-Housings or casings incorporating or embedding electric or electronic elements }
- B29L 2031/3487 . . {-Resistors}
- B29L 2031/3493 . . {-Moulded interconnect devices, i.e. moulded articles provided with integrated circuit traces}
- U B29L 2031/42 . . Brushes
- B29L 2031/425 . . . {-Tootbrushes}
- U B29L 2031/44 . . Furniture or parts thereof
- B29L 2031/443 . . . {-Chairs}
- B29L 2031/445 . . . {-Cabinets}
- B29L 2031/446 . . . {-Drawers}
- B29L 2031/448 . . . {-Tables}
- U B29L 2031/46 . . Knobs or handles, { push-buttons, grips (buttons for haberdashery **B29L19/00**, press-buttons as fastening element [B29L 2031/7282](#))}
- B29L 2031/463 . . . {-Grips, handles (handgrips as part of the body finishing of the vehicles [B29L 2031/3029](#))}
- B29L 2031/466 . . . {-Keypads, keytops}
- U B29L 2031/48 . . Wearing apparel

- B29L 2031/4807 . . {-Headwear}
- B29L 2031/4814 . . . {-Hats}
- B29L 2031/4821 {-Helmets}
- B29L 2031/4828 {-Bathing-caps}
- B29L 2031/4835 . . . {-Masks}
- B29L 2031/4842 . . {-Outerwear}
- B29L 2031/485 . . . {-Jackets}
- B29L 2031/4857 . . . {-Trousers}
- B29L 2031/4864 . . . {-Gloves}
- B29L 2031/4871 . . {-Underwear}
- B29L 2031/4878 . . . {-Diapers, napkins}
- B29L 2031/4885 . . . {-Brassieres}
- B29L 2031/4892 . . . {-Garters; Suspenders}
- U B29L 2031/50 . . Footwear, e.g. shoes or parts thereof
- B29L 2031/501 . . . {-Boots}
- B29L 2031/502 . . . {-Heels}
- B29L 2031/504 . . . {-Soles}
- B29L 2031/505 . . . {-Uppers}
- B29L 2031/507 . . . {-Insoles}
- B29L 2031/508 . . . {-Laces}
- U B29L 2031/52 . Sports equipment; { Games; Articles for amusement}; Toys (**B29L31/54** takes precedence)
- B29L 2031/5209 . . {-Toys}
- B29L 2031/5218 . . . {-Dolls, puppets}
- B29L 2031/5227 . . {-Clubs}
- B29L 2031/5236 . . {-Bows}
- B29L 2031/5245 . . {-Rackets}
- B29L 2031/5254 . . {-Swimming or diving equipment (bathing caps [B29L 2031/4828](#))}
- B29L 2031/5263 . . {-Skis}
- B29L 2031/5272 . . {-Surf boards}
- B29L 2031/5281 . . {-Articles for amusement}
- B29L 2031/529 . . . {-Toys}
- U B29L 2031/54 . Balls
- B29L 2031/541 . . {-Marbles, pearls}
- B29L 2031/542 . . {-Christmas balls}
- B29L 2031/543 . . {-Billiard balls}
- B29L 2031/545 . . {-Football balls}
- B29L 2031/546 . . {-Golf balls}
- B29L 2031/547 . . {-Table tennis balls}
- B29L 2031/548 . . {-Tennis balls}
- U B29L 2031/56 . Stoppers or lids for bottles, jars, or the like { e.g. closures}
- B29L 2031/565 . . {-for containers}
- U B29L 2031/60 . Multitubular or multicompartmented articles, e.g. honeycomb
- B29L 2031/601 . . {-Multi-tubular articles, i.e. composed of a plurality of tubes (hollow-walled **B29L24/00**)}

- B29L 2031/602 • • • {-composed of several elementary tubular elements }
- B29L 2031/603 • • • • {-one placed inside the other, e.g. dual wall tubes }
- B29L 2031/605 • • • • • {-concentrically}
- B29L 2031/606 • • • {-one placed inside the other, e.g. dual wall tubes }
- B29L 2031/607 • • • {-concentrically}
- B29L 2031/608 • • {-Honeycomb structures}
- B29L 2031/70 • {-Agricultural usage or equipment}
- B29L 2031/7002 • • {-for fishing}
- B29L 2031/7004 • • {-for plants or flowers}
- B29L 2031/7006 • • {-for greenhouses}
- B29L 2031/702 • {-Imitation articles, e.g. statues, mannequins (medical equipment [B29L 2031/753](#); models **B29L31/40**)}
- B29L 2031/7022 • • {-Flowers}
- B29L 2031/7024 • • {-Feathers}
- B29L 2031/7026 • • {-Trees}
- B29L 2031/7028 • • {-Statues, mannequins, taxidermic articles }
- B29L 2031/703 • {-Bellows}
- B29L 2031/704 • {-Bobbins, spools}
- B29L 2031/705 • {-Books, albums}
- B29L 2031/7052 • • {-Book covers}
- B29L 2031/706 • {-Buoys}
- B29L 2031/707 • {-Cables, i.e. two or more filaments combined together, e.g. ropes, cords, strings, yarns (filamentary material [B29L 2031/731](#), electric cables [B29L 2031/3462](#), optical cables [B29L 2011/0075](#))}
- B29L 2031/708 • {-Candles}
- B29L 2031/709 • {-Articles shaped in a closed loop, e.g. conveyor belts }
- B29L 2031/7092 • • {-Conveyor belts}
- B29L 2031/7094 • • {-Driving belts}
- B29L 2031/7096 • • {-Rings or ring-like articles}
- B29L 2031/7098 • • • {-Washers}
- B29L 2031/71 • • • {-Eyelets}
- B29L 2031/7102 • • • {-Toroidal articles (tyres **B29L30/00**; inner tubes [B29L 2023/245](#))}
- B29L 2031/711 • {-Coils}
- B29L 2031/712 • {-Containers; Packaging elements or accessories, Packages (closures therefor **B29L31/56**; ink or toner cartridges [B29L 2031/7678](#); squeeze tubes **B29L23/20**; suitcases [B29L 2031/7418](#))}
- B29L 2031/7122 • • {-Tea bags}
- B29L 2031/7126 • • {-large, e.g. for bulk storage}
- B29L 2031/7128 • • {-Bags, sacks, sachets (tea bags [B29L 2031/7122](#); medical bags [B29L 2031/7148](#))}
- B29L 2031/7129 • • • {-open}
- B29L 2031/713 • • {-Baskets}
- B29L 2031/7132 • • {-Bowls, Cups, Glasses}
- B29L 2031/7134 • • {-Crates, e.g. for bottles}
- B29L 2031/7136 • • {-Vases, pots, e.g. for flowers}
- B29L 2031/7138 • • {-Shock absorbing}

- B29L 2031/714 . . . {-for use in loose form}
- B29L 2031/7142 . . {-Aerosol containers}
- B29L 2031/7146 . . {-Battery-cases}
- B29L 2031/7148 . . {-Blood bags, medical bags}
- B29L 2031/715 . . {-Caulking cartridges}
- B29L 2031/7152 . . {-Hot water bottles}
- B29L 2031/7154 . . {-Barrels, drums, tuns, vats}
- B29L 2031/7156 . . . {-Pressure vessels}
- B29L 2031/7158 . . {-Bottles}
- B29L 2031/716 . . . {-of the wide mouth type, i.e. the diameters of the bottle opening and its body are substantially identical}
- B29L 2031/7162 . . {-Boxes, cartons, cases}
- B29L 2031/7164 . . . {-Blister packages}
- B29L 2031/7166 . . . {-Cartons of the fruit juice or milk type, i.e. containers of polygonal cross sections formed by folding blanks into a tubular body with end-closing or contents-supporting elements, e.g. gable type containers (in general [B65D 5/06](#))}
- B29L 2031/7168 . . . {-Egg-cartons}
- B29L 2031/717 . . {-Cans, tins}
- B29L 2031/7172 . . {-Fuel tanks, jerry cans}
- B29L 2031/7174 . . {-Capsules}
- B29L 2031/7176 . . {-Letters}
- B29L 2031/7178 . . {-Pallets}
- B29L 2031/718 . . {-Cosmetic equipment, e.g. hair dressing, shaving equipment (brushes **B29L31/42**, combs [B29L 2021/005](#))}
- B29L 2031/7182 . . {-Curlers}
- B29L 2031/7184 . . {-Lipstick holders}
- B29L 2031/7186 . . {-Shaving equipment}
- B29L 2031/719 . . {-Curtains; Blinds; Shades}
- B29L 2031/7192 . . {-Venetian blinds}
- B29L 2031/72 . . {-Cutting equipment, e.g. punches (sawing equipment [B29L 2031/77](#); grinding equipment [B29L 2031/736](#))}
- B29L 2031/7202 . . {-Knives}
- B29L 2031/721 . . {-Vibration dampening equipment, e.g. shock absorbers (bumpers [B29L 2031/3044](#), springs [B29L 2031/774](#))}
- B29L 2031/722 . . {-Decorative or ornamental articles}
- B29L 2031/7222 . . {-Mosaic-like}
- B29L 2031/7224 . . {-Holograms}
- B29L 2031/723 . . {-Articles for displaying or advertising (labels, badges [B29L 2031/744](#))}
- B29L 2031/7232 . . . {-Signs, symbols, plates, panels, boards (number plates [B29L 2031/3061](#))}
- B29L 2031/724 . . {-Doors}
- B29L 2031/725 . . {-Drawing or writing equipment}
- B29L 2031/7252 . . . {-Pens, ball-point pens}
- B29L 2031/7254 . . . {-Pencils}
- B29L 2031/726 . . {-Fabrics (nets **B29L28/00**)}

- B29L 2031/727 · {-Fastening elements (bolts [B29L 2001/002](#); nuts [B29L 2001/005](#); screws [B29L 2001/007](#); slide fasteners **B29L5/00**; buttons for haberdashery **B29L19/00**)}
- B29L 2031/7272 · · {-for haberdashery}
- B29L 2031/7274 · · · {-Buckles}
- B29L 2031/7276 · · {-Straps or the like}
- B29L 2031/7278 · · {-Couplings, connectors, nipples ([B29L 2031/7274](#) takes precedence; for pipes or tubes **B29L31/24**; electrical **B29L31/34**)}
- B29L 2031/728 · · {-Locks}
- B29L 2031/7282 · · {-Snap fasteners, clips, press-buttons}
- B29L 2031/7284 · · {-Dowels}
- B29L 2031/7286 · · {-Nails}
- B29L 2031/7288 · · {-Rivets}
- B29L 2031/729 · · {-Hook and loop-type fasteners}
- B29L 2031/73 · {-Fences}
- B29L 2031/731 · {-Filamentary material, i.e. comprised of a single element, e.g. filaments, strands, threads, fibres (cables [B29L 2031/707](#))}
- B29L 2031/732 · {-Floor coverings (piles carpets [B29L 2031/7652](#); for vehicles [B29L 2031/3017](#))}
- B29L 2031/7322 · · {-Carpets}
- B29L 2031/7324 · · {-Mats}
- B29L 2031/733 · {-Fourdrinier belts}
- B29L 2031/734 · {-Garlands}
- B29L 2031/735 · {-Garment hangers}
- B29L 2031/736 · {-Grinding or polishing equipment}
- B29L 2031/737 · {-Articles provided with holes, e.g. grids, sieves (nets **B29L28/00**)}
- B29L 2031/7374 · · {-Slotted}
- B29L 2031/738 · {-Hooks}
- B29L 2031/739 · {-Horology; Equipment therefor}
- B29L 2031/74 · {-Domestic articles (cutlery [B29L 2031/286](#))}
- B29L 2031/7402 · · {-Casseroles}
- B29L 2031/7404 · · {-Dishes}
- B29L 2031/7406 · · {-Sponges; Cleaning equipment}
- B29L 2031/7412 · {-Dummy teats, pacifiers}
- B29L 2031/7414 · {-Smokers" requisites, e.g. pipe cleaners (cigar holders **B29L23/14**)}
- B29L 2031/7416 · · {-for cigars or cigarettes}
- B29L 2031/7418 · {-Suitcases}
- B29L 2031/742 · {-Etuis, purses, wallets}
- B29L 2031/7422 · {-Umbrellas; Parasols; Walking sticks}
- B29L 2031/743 · {-Jewellery}
- B29L 2031/7432 · · {-Gems}
- B29L 2031/7434 · · {-Medals}
- B29L 2031/744 · {-Labels, badges, e.g. marker sleeves}
- B29L 2031/745 · {-Ladders}
- B29L 2031/747 · {-Lightning equipment}
- B29L 2031/7472 · · {-Lampshades}

- B29L 2031/7474 • • {-Chinese lanterns}
- B29L 2031/748 • {-Machines or parts thereof not otherwise provided for (conveyor belts [B29L 2031/7092](#); driving belts [B29L 2031/7094](#); bearings **B29L31/04**)}
- B29L 2031/7482 • • {-Brakes}
- B29L 2031/7484 • • {-Cams}
- B29L 2031/7486 • • {-Clutches}
- B29L 2031/7488 • • {-Crankes}
- B29L 2031/749 • • {-Motors}
- B29L 2031/7492 • • • {-Intake manifold}
- B29L 2031/7494 • • {-Pistons}
- B29L 2031/7496 • • {-Pumps}
- B29L 2031/7498 • • {-Rotors (with blades **B29L31/08**)}
- B29L 2031/75 • • {-Shafts}
- B29L 2031/7502 • • {-Supports, machine frames or beds, worktables}
- B29L 2031/7504 • • {-Turbines}
- B29L 2031/7506 • • {-Valves}
- B29L 2031/751 • {-Mattresses, cushions (upholstery **B29L31/58**)}
- B29L 2031/752 • {-Measuring equipment}
- B29L 2031/753 • {-Medical equipment; Accessories therefor (bloodbags, medical bags [B29L 2031/7148](#); artificial eyes [B29L 2011/0008](#))}
- B29L 2031/7532 • • {-Artificial members, prostheses}
- B29L 2031/7534 • • • {-Cardiovascular prostheses}
- B29L 2031/7536 • • • {-Artificial teeth}
- B29L 2031/7538 • • {-Condoms}
- B29L 2031/754 • • {-Pessaries}
- B29L 2031/7542 • • {-Catheters}
- B29L 2031/7543 • • • {-Balloon catheters}
- B29L 2031/7544 • • {-Injection needles, syringes}
- B29L 2031/7546 • • {-Surgical equipment}
- B29L 2031/7548 • • • {-Cannulas}
- B29L 2031/755 • {-Membranes, diaphragms}
- B29L 2031/756 • {-Micro-articles, nano-articles}
- B29L 2031/7562 • • {-Nano-articles}
- B29L 2031/757 • {-Moulds, cores, dies}
- B29L 2031/758 • {-Musical equipment}
- B29L 2031/759 • {-Needles (medical needles [B29L 2031/7544](#))}
- B29L 2031/76 • {-Office equipment or accessories}
- B29L 2031/7602 • • {-Maps}
- B29L 2031/762 • {-Household appliances}
- B29L 2031/7622 • • {-Refrigerators}
- B29L 2031/763 • {-Parachutes}
- B29L 2031/764 • {-Photographic equipment or accessories (memory cards [B29L 2017/006](#))}
- B29L 2031/7642 • • {-Slides}
- B29L 2031/7644 • • {-Films}
- B29L 2031/765 • {-Articles provided with piles, e g. nap on cloth }

- B29L 2031/7652 • • {-Pile carpets}
- B29L 2031/7654 • • {-Brushes; Brooms}
- B29L 2031/766 • {-Poles, masts, posts}
- B29L 2031/767 • {-Printing equipment or accessories therefor}
- B29L 2031/7672 • • {-Type-writer}
- B29L 2031/7674 • • {-Ink ribbons}
- B29L 2031/7676 • • {-Keyboards (keypads, keytops [B29L 2031/466](#))}
- B29L 2031/768 • {-Protective equipment ([B29L 2031/4821](#) takes precedence)}
- B29L 2031/769 • {-Sanitary equipment (diapers [B29L 2031/4878](#))}
- B29L 2031/7692 • • {-Baths}
- B29L 2031/7694 • • {-Closets, toilets}
- B29L 2031/7696 • • {-Showers}
- B29L 2031/7698 • • {-Sinks}
- B29L 2031/77 • {-Sawing equipment}
- B29L 2031/771 • {-Seats}
- B29L 2031/772 • {-Articles characterised by their shape and not otherwise provided for (closed loop [B29L 2031/709](#); ring-like [B29L 2031/7096](#); corrugated **B29L16/00**, flat **B29L7/00**; hollow **B29L22/00**; screw-threaded **B29L1/00**; toothed [B29L 2031/775](#); corrugated tubes **B29L23/18**)}
- B29L 2031/7722 • • {-Block-shaped (building bricks [B29L 2031/102](#))}
- B29L 2031/7724 • • {-Conical}
- B29L 2031/7726 • • • {-Diabolo-shaped, i.e. formed by two cones joined at their peaks}
- B29L 2031/7728 • • {-Disc-shaped (records [B29L 2017/003](#))}
- B29L 2031/773 • • {-Dome-shaped (igloos [B29L 2031/106](#), frameless domes **B29L25/00**)}
- B29L 2031/7732 • • {-Helical (springs [B29L 2031/774](#))}
- B29L 2031/7734 • • {-Spherical (balls **B29L31/54**; globes [B29L 2022/002](#))}
- B29L 2031/7736 • • {-Sinusoidal}
- B29L 2031/7738 • • {-Wedge shaped}
- B29L 2031/7739 • • {-Curved shaped}
- B29L 2031/774 • {-Springs}
- B29L 2031/7742 • • {-helical springs}
- B29L 2031/775 • {-Toothed articles (corrugated **B29L16/00**; screw-threaded **B29L1/00**; corrugated tubes **B29L23/18**; comb-like **B29L21/00**; gears, pinions, sprocket-wheels **B29L15/00**)}
- B29L 2031/7752 • • {-Racks}
- B29L 2031/7754 • • {-Worms}
- B29L 2031/776 • {-Walls, e.g. building panels}
- B29L 2031/777 • {-Weapons}
- B29L 2031/7772 • • {-Cartridges}
- B29L 2031/778 • {-Windows (profiled elements for making window frames [B29L 2031/005](#), windscreens [B29L 2031/3052](#))}
- B29L 2031/7782 • • {-Glazing}
- B29L 2031/779 • {-Heating equipment}

Project: N/A (B30B)

B30B PRESSES IN GENERAL (-producing ultra-high pressure or ultra-high pressure and high temperature to effect modifications of a substance, e.g. for making artificial diamonds [B01J 3/00](#)){(-compressing means for refuse receptacles [B65F 1/1405](#)-)}

NOTE

This subclass provides for presses in general and also for those presses, for particular purposes, which are not provided for elsewhere.

- U B30B 1/00** **Presses, using a press ram, characterised by the features of the drive therefor, pressure being transmitted directly, or through simple thrust or tension members only, to the press ram or platen**
- B30B 1/02 · by lever mechanism (by toggle mechanism [B30B 1/10](#)-)
 - B30B 1/18 · by screw means{(-[B30B 9/3064](#) takes precedence-)}
 - B30B 1/24 · by rack-and-pinion means{(-[B30B 9/3067](#) takes precedence-)}
 - B30B 1/30 · by the pull of chains or ropes{(-[B30B 9/3071](#) takes precedence-)}
 - U B30B 1/32** · by plungers under fluid pressure
 - B30B 1/34 · · involving a plurality of plungers acting on the platen (gas operated [B30B 1/38](#))
 - B30B 1/36 · · having telescoping plungers (-gas operated [B30B 1/38](#)-)
- U B30B 9/00** **Presses specially adapted for particular purposes**
- B30B 9/02 · for squeezing-out liquid from liquid-containing material, e.g. juice from fruits, oil from oil-containing material (kitchen equipment [A47J](#); filtering, e.g. straining solids from liquids, using presses in combination with filtering elements [B01D](#); expelling water from textile fabrics or laundry [D06C](#), [D06F](#); drying [F26](#)){ clothes presses [D06F 69/00](#) , [D06F 71/00](#)-}
 - B30B 9/28 · for forming shaped articles (from material in powder, granular, or paste form, e.g. briquetting presses [B30B 11/00](#)-)
 - B30B 9/30 · for baling; Compression boxes therefor (-baling hay, straw, or the like [A01F](#)-)
- B30B 11/00** **Presses specially adapted for forming shaped articles from material in particulate or plastic state, e.g. briquetting presses, tableting presses (for clay or mixtures containing cement [B28B](#) ; for plastics materials [B29](#)-)**
- B30B 11/004 · {involving the use of very high pressures,(-for the formation of artificial diamonds or boronitrides [B01J 3/065](#)-)}
 - B30B 11/22 · Extrusion presses; Dies therefor (-extruding by the use of roller-and-ring machines [B30B 11/20](#)-)
- B30B 12/00** **Presses not provided for in groups [B30B 1/00](#) to [B30B 11/00](#)**
- B30B 15/00** **Details of, or accessories for, presses; Auxiliary measures in connection with pressing (-safety devices [F16P](#)-)**
- B30B 15/0088 · {Lubricating means (-[B30B 15/0011](#) takes precedence-)}
 - B30B 15/0094 · {Press load monitoring means (-[B30B 15/281](#) takes precedence-)}
 - B30B 15/02 · Dies; Inserts therefor; Mounting thereof; Moulds (-extrusion dies [B30B 11/22](#)-)
 - U B30B 15/04** · Frames; Guides
 - B30B 15/047 · · {C-shaped frames (-with means for preventing deflection [B30B 15/044](#)-)}
 - B30B 15/10 · Brakes specially adapted for presses (-brakes in general [F16D](#)-)
 - B30B 15/12 · Clutches specially adapted for presses (-clutches in general [F16D](#)-)
 - B30B 15/16 · Control arrangements for fluid-driven presses (-pumps per se [F04](#) ; hydraulic accumulators per se [F15B](#) ; valves per se [F16K](#) ; control devices in general [G05](#)-)

- B30B 15/168
 - U B30B 15/28
 - B30B 15/281
- • {for pneumatically driven presses (-[B30B 15/165](#) takes precedence-)}
 - Arrangements for preventing distortion of, or damage to, presses or parts thereof
 - • {overload limiting devices (-in general [F16H 35/10-](#))}

Project: N/A (B31B)

- U B31B 1/00
- Box, carton, envelope or bag making machinery characterised by performing specific operations (machinery for performing operations of general application, see the appropriate subclasses)**
- NOTE
Envelope or bag making machinery characterised by performing specific operations is classified in the respective subgroups of group [B31B 19/00](#) (or of groups [B31B 23/00](#) to [B31B 29/00](#), [B31B 37/00](#) to [B31B 41/00](#))
- U B31B 1/14
 - B31B 1/20
 - U B31B 5/00
 - U B31B 5/74
 - U B31B 5/76
 - B31B 5/80
 - B31B 29/00
- Cutting, e.g. perforating, punching, slitting, trimming {(means for removing cut-out material or waste [B26D 7/18](#))}
 - • Cutting sheets or blanks {e.g. cutting corners, or involving scoring or printing or embossing-(surface scoring per se [B31B 1/25](#); printing or embossing per se [B31B 1/88](#))}
 - Machinery characterised by making boxes or cartons by folding single-piece sheets which can be set-up from a collapsed condition, including setting-up and recollapsing to break creases**
 - and having means for effecting auxiliary operations
 - • Opening or distending flattened articles {e.g. collapsed blanks, including arrangements therefor; Setting-up of boxes}
 - • • pneumatically {i.e. with suction cups for totally or partially opening the collapsed blanks or by introducing a jet of gas into the collapsed blanks, e.g. with means for recollapsing or breaking creases}
 - Machinery characterised by making envelopes or bags with structural provision at the base for thickness or contents ([B31B31/00](#) to [B31B 37/00](#) take precedence; {[B31B31/00](#) ,[B31B33/00](#) ,[B31B35/00](#) takes precedence})**

Project: N/A (B31D)

- U B31D 1/00
 - B31D 1/0006
 - B31D 1/0018
 - U B31D 1/0043
 - B31D 1/005
 - U B31D 1/02
 - B31D 1/021
 - B31D 1/028
- Multiple-step processes for making flat articles; {Making flat articles}**
- {-the articles being coffee filters}
 - {-the articles being pull-tap closure discs for bottles, jars or like containers}
 - {the articles being box parts not otherwise provided for}
 - • {-making bottoms or caps}
 - the articles being labels or tags (means and processes for attaching threads [D05](#))
- NOTE
Attaching threads to labels or tags is classified in group [B31D 1/02](#), e.g. [B31D 1/023](#)
- • {-Making adhesive labels having a multilayered structure, e.g. provided on carrier webs}
 - • {-Applying RFID chips}

U B31D 5/00 **Multiple-step processes for making three-dimensional articles; { Making three-dimensional articles}(assembly { or manufacture} of garlands [A41G 1/04](#); making receptacles or containers [B31B](#); making tubes [B31B](#), [B31C](#))**

NOTE

Making drinking straws is classified in group [B31D 5/00](#), e.g. [B31D 5/0095](#)

- B31D 5/0004 . {-for making inserts, e.g. partitions, for boxes}
- B31D 5/0008 . . {-the inserts having recesses for holding ampoules}
- B31D 5/0013 . . {-the inserts having interengaged slotted panels}
- B31D 5/0017 . . . {-involving folding one of the panels into an U-shape}
- B31D 5/0021 . . {-the inserts having the form of a tray}
- B31D 5/0026 . . {-involving collapsing or stacking the inserts}
- B31D 5/003 . . {-the inserts being egg carton fillers}
- B31D 5/0034 . {-for making valve inserts for bags}
- B31D 5/0039 . {-for making dunnage or cushion pads}
- B31D 5/0043 . . {-including crumpling flat material}
- B31D 5/0047 . . . {-involving toothed wheels}
- B31D 5/0052 . . . {-involving rollers}
- B31D 5/0056 . . . {-involving belts}
- B31D 5/006 . . {-including controlled deformation of flat material, e.g. pleating, corrugating or embossing (including crumpling flat material [B31D 5/0043](#))}
- B31D 5/0065 . . {-including slitting and expanding flat material}
- B31D 5/0069 . . {-including forming or transforming three-dimensional material, e.g. corrugated webs or material of cellular structure (making articles of cellular structure [B31D 3/00](#), corrugating paper or cardboard [B31F 1/20](#))}
- B31D 5/0073 . . {-including pillow forming}
- B31D 5/0078 . . . {-and filling with a material other than air or gas}

Project: N/A (B31F)

- U B31F 1/00** **Mechanical deformation of paper or cardboard without removing material including combined deformation and laminating (embossing combined with application of ink, type marking presses, selective embossing machines [B41F](#), [B41J](#), [B41K](#), [B41M](#); machines or apparatus for embossing decorations or marks [B44B 5/00](#); artists hand tools for embossing [B44B 11/04](#); producing decorative effects by processes for stamping ornamental designs on surfaces [B44C 1/24](#); mechanical deformation during paper or board making, kinds of paper or board [D21](#))**
- U B31F 1/20 . Corrugating; Corrugating combined with laminating to other paper or cardboard layers ({corrugating sheet metal [B21D 13/00](#); corrugating plastics material [B29C 53/22](#);} corrugating veneer [B27D](#))
 - U B31F 1/24 . . Making webs in which the channel of each corrugation is transverse to the web feed
 - B31F 1/26 . . . by interengaging toothed cylinders {cylinder constructions-[\(B31F 1/242](#) takes precedence)}
 - B31F 1/29 . . . by making use of rods, e.g. co-operating with a toothed cylinder {combined with uniting the corrugated web to flat webs-[\(B31F 1/30](#) takes precedence)}
 - B31F 1/36 . Moistening and heating webs to facilitate mechanical deformation and drying deformed webs{-during corrugating [B31F 1/28](#)}

B31F 5/00 Attaching together paper or cardboard sheets, strips, or webs; {or other preformed paper articles joining by rim-rolling [B31F 1/0041](#), [B31F 1/009](#); closing tube ends by inserting an element [B31F 1/008](#), making boxes [B31B](#)} Reinforcing edges of paper or cardboard {means for applying adhesive or glue [B05C](#); stapling in box or like making [B31B](#); attaching the replacement web to the expiring web during web-roll changing [B65H 19/18](#); apparatus for splicing webs during handling [B65H 21/00](#)}

Project: N/A (B32B)

B32B 3/00 Layered products comprising a layer with external or internal discontinuities or unevennesses, or a layer of non-planar form {(-fibrous or filamentary layers [B32B 5/02](#) ; particulate layers [B32B 5/16](#) ; foamed layers [B32B 5/18](#)-)} Layered products having particular features of form (-receptacles or tubular products [B32B 1/00](#)-)}

B32B 3/02 • characterised by features of form at particular places, e.g. in edge regions {(-non-uniform thickness [B32B 3/263](#)-)}

B32B 3/04 • • characterised by {at least one} layer folded at the edge, e.g. over another layer {; characterised by at least one layer enveloping or enclosing a material}

B32B 3/08 • • characterised by added members at particular parts {(-layer formed of separate pieces of material which are juxtaposed side-by-side [B32B 3/14](#) , [B32B 3/18](#)-)}

U B32B 3/10 • characterised by a discontinuous layer, i.e. formed of separate pieces of material

NOTE

In this group, a series of spaced separate elements forming in effect a broken surface should be regarded as a layer.

B32B 3/14 • • characterised by a face layer formed of separate pieces of material {which are juxtaposed side-by-side {(-[B32B 5/02](#) takes precedence-)}

B32B 3/18 • • characterised by an internal layer formed of separate pieces of material {which are juxtaposed side-by-side {(-[B32B 5/02](#) takes precedence-)}

B32B 3/26 • characterised by a particular shape of the outline of the cross-section of a continuous layer; characterised by a layer with cavities or internal voids {(-[B32B 27/205](#) takes precedence; foam layer [B32B 15/08](#)-)}; {characterised by an apertured layer}

B32B 3/266 • • {characterised by an apertured layer, the apertures going through the whole thickness of the layer, e.g. expanded metal, perforated layer, slit layer regular cells [B32B 3/12](#)}

B32B 3/28 • • characterised by a layer comprising a deformed thin sheet {, i.e. the layer having its entire thickness deformed out of the plane}, e.g. corrugated, crumpled {(-[B32B 29/08](#) takes precedence-)}

B32B 3/30 • • characterised by a layer formed with recesses or projections, e.g. {hollows, grooves, protuberances, ribs {(-apertured layer [B32B 3/266](#) ; layer with cavities or internal voids [B32B 3/26](#)-)}

U **B32B 5/00** Layered products characterised by the non-homogeneity or physical structure {, i.e. comprising a fibrous, filamentary, particulate or foam layer; Layered products characterised by having a layer differing constitutionally or physically in different parts}

NOTE

In this group, fibres, filaments, granules, or powder forming or included in a layer may be impregnated, bonded together, or embedded in a substance such as synthetic resin. If the substance of the fibres, or the like, or the impregnating,

bonding, or embedding substance, is important it is classified in the relevant group for the substance.

- B32B 5/02
- characterised by structural features of a {fibrous or filamentary layer (-B32B 15/02 , B32B 21/02 take precedence; layer formed of particles B32B 5/16 ; layers formed of natural mineral fibres B32B 19/00 ; coated or impregnated fibrous or filamentary layers B32B 2255/02 or B32B 2260/021-)}
- B32B 5/06
- • characterised by a fibrous {or filamentary}layer {mechanically connected, e.g. by needling, sewing, stitching, hydroentangling, hook and loop-type fasteners}to another layer, e.g. of fibres, of paper
- B32B 5/10
- • characterised by a fibrous {or filamentary}layer reinforced with filaments
- B32B 5/12
- • characterised by the relative arrangement of fibres or filaments of {different layers, e.g. the fibres or filaments being parallel or perpendicular to each other}
- B32B 5/16
- characterised by features of a layer formed of particles, e.g. chips, powder{, granules (-B32B 21/02 takes precedence; layers formed of natural mineral particles B32B 19/00 ; coated or impregnated particulate layers B32B 2255/04 or B32B 2260/025-)}
- B32B 5/18
- characterised by features of a layer {of}foamed material
- B32B 5/22
- characterised by the presence of two or more layers which {are next to each other and are fibrous, filamentary, formed of particles or foamed (-B32B 19/06 , B32B 19/048 B32B 19/047 , B32B 29/005 to B32B 29/04 take precedence-)}
- U B32B 5/24
- • one layer being a fibrous or filamentary layer
- B32B 5/26
- • • another layer {next to it also being fibrous or filamentary (-relative arrangement of fibres or filaments of different layers B32B 5/12 ; all layers being fibrous or filamentary B32B 2250/20 ; two or more impregnated fibrous or filamentary layers B32B 2260/023-)}
- B32B 5/30
- • one layer {being formed of particles, e.g. chips,}granules, powder
- U B32B 7/00**
- Layered products characterised by the relation between layers, i.e. products comprising layers having different physical properties and products characterised by the interconnection of layers**
- B32B 7/005
- {in respect of orientation of features (-B32B 5/12 takes precedence-)}
- U B32B 7/04
- characterised by the connection of layers
- B32B 7/045
- • {the layers being not connected over the whole surface, e.g. discontinuous connection, patterned connection (-B32B 7/14 takes precedence-)}
- B32B 7/08
- • by mechanical connection, e.g. stitching{(-B32B 5/06 takes precedence-)}
- U B32B 7/12
- • using an adhesive{, i.e. any interposed material having adhesive or bonding properties}
- B32B 7/14
- • • applied in strips or other spaced arrangement
- B32B 9/00**
- Layered products comprising a particular substance not covered by groups B32B 11/00 to B32B 29/00**
- B32B 9/005
- {comprising one layer of ceramic material, e.g. porcelain, ceramic tile (-layered products with at least two ceramic layers composed mainly of ceramic B32B 18/00-)}
- B32B 9/04
- comprising such {particular substance as the main or only constituent of a layer, which is next to another layer of the same or of a different material (-B32B 17/06 takes precedence; layered products with at least two ceramic layers composed mainly of ceramic B32B 18/00-)}
- B32B 11/00**
- Layered products comprising {a layer of}bituminous or tarry substances**
- B32B 11/02
- with fibres or particles {being present as additives in the layer}

- B32B 11/04
- comprising such {bituminous or tarry substance as the main or only constituent of a layer, which is next to another layer of the same or of a different material} (-B32B 17/06 takes precedence-)
- B32B 13/00 Layered products comprising a {a layer of}water-setting substance, e.g. concrete, plaster, asbestos cement, or like builders` material**
- B32B 13/02
- with fibres or particles {being present as additives in the layer}
- B32B 13/04
- comprising such {water setting substance as the main or only constituent of a layer, which is next to another layer of the same or of a different material} (-B32B 17/06 takes precedence-)
- B32B 15/00 Layered products comprising {a layer of}metal**
- B32B 15/01
- all layers being exclusively metallic{ making layered metal workpieces by pressure cladding B23K 20/22 ; making coatings with a metallic material characterised by its composition C23C 30/00-}
- B32B 15/04
- comprising metal as the main or only constituent of a layer,{which is next to another layer of the same or of a different material} (-B32B 17/061 and B32B 23/042 take precedence; next to a bituminous or tarry layer B32B 11/08 ; next to a water-setting substance layer B32B 13/06-)}
- B32B 15/043
- • {of metal} (-B32B 15/01 takes precedence-)
- B32B 15/06
- • {of {natural rubber or synthetic}rubber
- B32B 15/18
- comprising iron or steel{(-B32B 15/011 , B32B 15/012 and B32B 15/013 take precedence-)}
- B32B 15/20
- comprising aluminium or copper{(-B32B 15/016 and B32B 15/017 take precedence-)}
- U B32B 17/00 Layered products essentially comprising sheet glass, or glass, slag, or like fibres**
- B32B 17/06
- comprising glass as the main or only constituent of a layer, next to another layer of a specific {material} (-coating on glass C03C 17/00 ; safety glazings B32B 17/08 or B32B 17/10 ; fire protective glazing with intumescent layers B32B 17/069-)}
- B32B 17/064
- • {synthetic resin} (-B32B 17/10 takes precedence-)}
- B32B 17/069
- • {intumescent layers} (-B32B 17/10311 takes precedence-)}
- B32B 17/08
- • of cellulosic plastic substance {or gelatin}
- B32B 17/10
- • of synthetic resin{(-producing optical elements from plastics B29D 11/00 ; constructional form of optical elements G02B-)}
- NOTE**
1. In this group a layer of organic glass is not considered as a glass layer but as a synthetic resin layer];
 2. [N: Inventions related to safety glazings (laminated glazings) are classified in all appropriate subgroups B32B 17/10009 to B32B 17/10807, whereby transparent polymeric layers other than the interlayer (B32B 17/1055) are classified using indexing codes
- U B32B 17/10009
- • • {characterized by the number, the constitution or treatment of glass sheets}
- U B32B 17/10036
- • • • {comprising two outer glass sheet}
- U B32B 17/10045
- • • • • {at least one intermediate layer consisting of a glass sheet}
- B32B 17/10055
- • • • • • {at least one intermediate air space (-IG window units comprising two or more parallel glass panes E06B 3/66-)}
- B32B 17/10091
- • • • {thermally hardened} (-chemical strengthening B32B 17/10137-)}
- B32B 17/101
- • • • {having a predetermined coefficient of thermal expansion [CTE]}

- B32B 17/10128 {Treatment of at least one glass sheet (-cutting of laminated glass [C03B 33/076-](#))}
- U B32B 17/10165 . . . {particular functional features of the laminated glazing}
- B32B 17/10247 {-containing decorations or patterns for aesthetic reasons; metal wires for this purpose [B32B 17/10422-](#)}
- B32B 17/10339 {Specific parts of the laminated glazing being colored or tinted (-tinted glass [B32B 17/1011](#) ; tinted interlayer [B32B 17/10651-](#))}
- B32B 17/10366 {-Reinforcements of the laminated glazing against impact or intrusion; metal wires for this purpose [B32B 17/10412-](#)}
- U B32B 17/10376 {containing metal wires}
- B32B 17/10385 {for Ohmic resistance heating (-Ohmic resistance heating in general [H05B 3/84-](#))}
- B32B 17/10394 {Alarm wires (-burglar alarms by breaking glass [G08B 13/04-](#))}
- B32B 17/10403 {for radiation shielding (-radiation shielding in general [H05K 9/00-](#))}
- B32B 17/10431 {Devices for the modulation of light incorporated into the laminated glazing (-metallic or dielectric coatings [B32B 17/10174](#) ; coating on glass in general [C03C 17/00-](#))}
- U B32B 17/1044 {Invariable transmission}
- B32B 17/10449 {Wavelength selective transmission (-filters per se [G02B 5/20-](#))}
- B32B 17/10458 {Polarization selective transmission (-polarizing elements per se [G02B 5/30-](#))}
- U B32B 17/10467 {Variable transmission}
- B32B 17/10504 {liquid crystal layer (-devices for the control of the intensity of the light based on liquid crystals [G02F 1/13-](#))}
- B32B 17/10513 {electrochromic layer (-devices for the control of the intensity of the light based on electrochromic elements [G02F 1/15-](#))}
- B32B 17/10522 {electrophoretic layer (-devices for the control of the intensity of the light based on electrophoresis [G02F 1/167-](#))}
- B32B 17/10532 {suspended particle layer (-devices for the control of the intensity of the light based on suspension of oriented dipolar particles [G02F 1/172-](#))}
- B32B 17/10541 {The laminated glazing acting as an illumination device , i.e. comprising a light source or a light guide (-light guides in general [G02B 6/00](#) ; structural combinations of lighting devices with other articles [F21V 33/00](#) ; lighting devices for vehicle interior [B60Q 3/02-](#))}
- U B32B 17/1055 . . . {characterized by the resin layer , i.e. interlayer}
- U B32B 17/10651 {comprising colorants, e.g. dyes or pigments}
- B32B 17/10669 {Luminescent agents (-luminescent materials [C09K 11/00](#) , optical brightening agents [C08K 5/0041-](#))}
- U B32B 17/10807 . . . {Making layered products containing glass and synthetic resin layers; apparatus therefor}
- U B32B 17/10816 {by pressing}
- B32B 17/10825 {isostatic pressing, i.e. using non rigid pressure-exerting members against rigid parts (-isostatic presses in general [B30B 11/001-](#))}
- B32B 17/10889 {shaping the sheets, e.g. by using a mould (-[B32B 17/10816](#) takes precedence-)}
- U B32B 17/10899 {by introducing interlayers of synthetic resin}
- U B32B 17/10908 {in liquid form}

- B32B 17/10917 {between two pre-positioned glass layers (~~between preformed layers in general [B29C 39/126](#) ; spacing elements for window units comprising two or more parallel panes [E06B 3/663](#)-)}~~
- B32B 17/10926 {by spraying (~~spraying in general [B05](#)-)}~~
- B32B 17/10972 {Degassing during the lamination (~~[B32B 17/10816](#) takes precedence; during molding [B29C 37/006](#)-)}~~
- B32B 18/00** **Laminated products composed mainly of ceramics, e.g. refractory materials** ({ semi-permeable membranes made of inorganic material [B01D 71/02](#) ; ceramic coatings on glass [C03C 17/00](#) ; joining of ceramic layers [C04B 37/00](#) ; coating of ceramics [C04B 41/45](#) ; applying ceramic coatings on metallic materials [C23](#); applying ceramic coatings on silicon for semi-conductor purposes [H01L](#))}
- NOTE
In group [B32B 18/00](#) , from 01-10-2008 onwards, features relating to interlayers, additional compositional information or further processing are indexed with codes chosen from [C04B 2237/00](#) to **[C04B2237/70R](#)**
- B32B 19/00** **Layered products comprising {a layer of}natural mineral fibres or particles, e.g. asbestos, mica**
- B32B 19/04 {next to another layer {of the same or of a different material (~~[B32B 17/067](#) takes precedence-)}~~
- B32B 21/00** **Layered products comprising {a layer of}wood, e.g. wood board, veneer, wood particle board**
- B32B 21/04 {comprising wood as the main or only constituent of a layer, which is next to another layer of the same or of a different material} (~~[B32B 17/062](#) and [B32B 23/044](#) take precedence; next to a layer of a particular substance [B32B 9/042](#) ; next to a bituminous or tarry layer [B32B 11/042](#) ; next to a water setting substance layer [B32B 13/10](#) ; next to a metal layer [B32B 15/10](#) ; next to a layer formed of natural mineral fibres or particles [B32B 19/042](#)-}~~
- B32B 21/042 {of wood (~~[B32B 21/13](#) takes precedence-)}~~
- B32B 23/00** **Layered products comprising {a layer of}cellulosic plastic substances, i.e. substances obtained by chemical modification of cellulose, e.g. cellulose ethers, cellulose esters, viscose}**
- B32B 23/04 {comprising such {cellulosic plastic substance as the main or only constituent of a layer, which is next to another layer of the same or of a different material (~~[B32B 17/08](#) takes precedence-)}~~
- B32B 23/046 {of natural rubber or synthetic rubber (~~all layers being polymeric [B32B 2250/24](#)-)}~~
- B32B 23/08 {of synthetic resin(~~all layers being polymeric [B32B 2250/24](#)-)}~~
- B32B 25/00** **Layered products comprising {a layer of}natural or synthetic rubber**{(~~[B32B 5/02](#) , [B32B 5/16](#) , [B32B 5/18](#) take precedence; thermoplastic elastomer [B32B 2274/00](#)-)}~~
- B32B 25/02 {with fibres or particles {being present as additives in the layer}
- B32B 25/04 {comprising rubber as the main or only constituent of a layer, {which is next to another layer of the same or of a different material (~~[B32B 17/063](#) takes precedence; next to a layer of a particular substance [B32B 9/043](#) ; next to a bituminous or tarry layer [B32B 11/044](#) ; next to a water setting substance layer [B32B 13/042](#) ; next to a metal layer [B32B 15/06](#) ; next to a layer formed of natural mineral fibres or particles [B32B 19/043](#) ; next to a wood layer [B32B 21/045](#) ; next to a cellulosic plastic layer [B32B 23/046](#)-)}~~

- B32B 25/042
- {of natural rubber or synthetic rubber (-all layers being made of natural or synthetic rubber [B32B 2250/248](#)-)}
- B32B 25/08
- • of synthetic resin{(-all layers being polymeric [B32B 2250/24](#)-)}
- B32B 25/14
- comprising {synthetic rubber copolymers (-[B32B 25/18](#) and [B32B 25/20](#) take precedence-)}
- B32B 25/16
- comprising polydienes {homopolymers}or poly-halodienes {homopolymers (-[B32B 25/12](#) takes precedence-)}
- B32B 27/00**
- Layered products comprising {a layer of}synthetic resin{(-[B32B 5/02](#) , [B32B 5/16](#) , [B32B 5/18](#) take precedence; thermoplastic elastomer [B32B 2274/00](#)-)}**
- NOTE
- This group covers all synthetic resins except those covered by [B32B 25/00](#) or [B32B 23/00](#)
- B32B 27/06
- as the main or only constituent of a layer,{which is next to another layer of the same or of a different material (-[B32B 17/064](#) takes precedence; next to a layer of a particular substance [B32B 9/045](#) ; next to a bituminous or tarry layer [B32B 11/046](#) ; next to a water setting substance layer [B32B 13/12](#) ; next to a metal layer [B32B 15/08](#) ; next to a layer formed of natural mineral fibres or particles [B32B 19/045](#) ; next to a wood layer [B32B 21/08](#) ; next to a cellulosic plastic layer [B32B 23/08](#) ; next to a natural or synthetic rubber layer [B32B 25/08](#)-)}
- B32B 27/08
- • of synthetic resin{(-all layers being polymeric, made of polymers belonging to those covered by [B32B 27/32](#) , by [B32B 27/36](#) , or by [B32B 27/30](#) and [B32B 27/32](#) , [B32B 2250/24](#) to [B32B 2250/246](#)-)}
- B32B 27/16
- specially treated, e.g. irradiated{(-[B32B 2255/10](#) takes precedence-)}
- B32B 27/28
- comprising synthetic resins not wholly covered by any one of the sub-groups{[B32B 27/30](#) to [B32B 27/42](#)-}
- B32B 27/32
- comprising polyolefins{(-[B32B 27/30](#) takes precedence-)}
- B32B 29/00**
- Layered products comprising {a layer of}paper or cardboard**
- B32B 29/002
- {as the main or only constituent of a layer, which is next to another layer of the same or of a different material (-[B32B 17/065](#) takes precedence; next to a layer of a particular substance [B32B 9/06](#) ; next to a bituminous or tarry layer [B32B 11/06](#) ; next to a water-setting substance layer [B32B 13/08](#) ; next to a metal layer [B32B 15/12](#) ; next to a layer formed of natural mineral fibres or particles [B32B 19/046](#) ; next to a wood layer [B32B 21/06](#) ; next to a cellulosic plastic layer [B32B 23/06](#) ; next to a natural or synthetic rubber layer [B32B 25/06](#) ; next to a synthetic resin layer [B32B 27/10](#)-)}
- B32B 29/005
- • {next to another layer of paper or cardboard layer (-all layers being made of paper or paperboard [B32B 2250/26](#)-)}
- B32B 29/06
- specially treated, e.g. surfaced, parchmentised{(-[B32B 2255/12](#) , [B32B 2260/028](#) take precedence-)}
- B32B 29/08
- Corrugated paper, corrugated cardboard
- B32B 33/00**
- Layered products characterised by particular properties or particular surface features, e.g. particular surface coatings (-surface unevennesses or non-uniformities [B32B 3/00](#)-); Layered products designed for particular purposes not covered by another single class**

- B32B 37/00** **Methods or apparatus for laminating, e.g. by curing or by ultrasonic bonding**{(-making non-planar products [B32B 1/00](#) ; making products characterised by particular features of structure or of composition, see the relevant groups for such products, e.g. making layered products containing glass and synthetic resin layers [B32B 17/10807](#) ; coating of single webs or the like [B05](#)-)}
- B32B 37/0038 · {involving application of liquid to the layers prior to lamination, e.g. wet laminating }(-[B32B 37/12](#) takes precedence-){(-applying liquids in general [B05](#)-)}
- U B32B 37/06 · characterised by the heating method
- B32B 37/065 · · {-resulting in the laminate being partially bonded [B32B 37/0076](#) takes precedence-}
- U B32B 37/10 · characterised by the pressing technique, e.g. using action of vacuum or fluid pressure
- B32B 37/1027 · · {Pressing using at least one press band }(-pressing means with cooperating endless bands in general [B30B 5/06](#)-)}
- B32B 37/1045 · · {Intermittent pressing, e.g. by oscillating or reciprocating motion of the pressing means }(-[B32B 37/0076](#) takes precedence-)}
- U B32B 37/12 · characterised by using adhesive
- B32B 37/1207 · · {Heat-activated adhesive }(-laminating by the partial melting of layers to form the bond [B32B 37/04](#) takes precedence-)}
- B32B 2037/1246 · · {Other adhesives (not used)}
- U B32B 37/1284 · · {Application of adhesive}
- B32B 37/1292 · · · {selectively, e.g. in stripes, in patterns }(-[B32B 37/0076](#) takes precedence-)}
- U B32B 37/14 · characterised by the properties of the layers
- B32B 37/144 · · {using layers with different mechanical or chemical conditions or properties, e.g. layers with different thermal shrinkage, layers under tension during bonding }(-constructional features for tensioning [B32B 38/1825](#) takes precedence-)}
- B32B 37/24 · · with at least one layer not being coherent before laminating, e.g. made up from granular material sprinkled onto a substrate }(-[B32B 37/15](#) takes precedence-)
- NOTE**
When classifying in group [B32B 37/24](#) , the technique can be further indexed by using the indexing codes chosen from [B32B 37/24](#) and subgroups
- U B32B 38/00** **Ancillary operations in connection with laminating processes**
- B32B 38/0004 · {Cutting, tearing or severing, e.g. bursting; Cutter details }(-cutting in general [B26D](#) ; laminating combined with punching or perforating [B32B 38/04](#) ; removing all or part of the layers [B32B 38/10](#) ; cutting in combination with laying up and registration [B32B 38/185](#) takes precedence-)}
- B32B 38/0008 · {Electrical discharge treatment, e.g. corona, plasma treatment; wave energy or particle radiation }(-[B32B 38/0036](#) and [B29C 59/00](#) take precedence-)}
- NOTE**
Laminate treatment is further indexed in group [B32B 2310/00](#)
- B32B 38/0032 · {increasing porosity }(-[B32B 38/04](#) takes precedence-)}

- B32B 38/0036
- {Heat treatment (-for heating or cooling of layers during lamination [B32B 37/06](#) , [B32B 37/08](#)-)}
- NOTE**
When classifying in group [B32B 38/0036](#) , the heat treatment can be further indexed by using the indexing codes chosen from [B32B 38/0036](#) and subgroups
- B32B 38/10
- Removing layers, or parts of layers, mechanically or chemically (-punching, slitting or perforating [B32B 38/04](#)-)
- U B32B 2250/00** **Layers arrangement**
- U B32B 2250/24
- All layers being polymeric
- B32B 2250/242
- • All polymers belonging to those covered by group [B32B 27/32](#)
- B32B 2250/244
- • All polymers belonging to those covered by group [B32B 27/36](#)
- B32B 2250/246
- • All polymers belonging to those covered by groups [B32B 27/32](#) and [B32B 27/30](#)
- B32B 2250/248
- • All polymers belonging to those covered by group [B32B 25/00](#)
- U B32B 2260/00** **Impregnation or embedding of a layer; Bonding a fibrous, filamentary or particulate layer by using a binder**
- U B32B 2260/02
- Composition of the impregnated, bonded or embedded layer
- B32B 2260/021
- • Fibrous or filamentary layer (-layers of natural mineral fibres or particles being impregnated in a plastic substance [B32B 19/02](#)-)
- B32B 2260/025
- • Particulate layer (-layers of natural mineral fibres or particles being impregnated in a plastic substance [B32B 19/02](#)-)
- U B32B 2262/00** **Composition of fibres which form a fibrous or filamentary layer or are present as additives**
- U B32B 2262/02
- Synthetic macromolecular fibres
- B32B 2262/0253
- • Polyolefin fibres (-vinyl or acrylic copolymers [B32B 2262/0223](#) or [B32B 2262/0246](#)-)
- B32B 2262/10
- Inorganic fibres (-layered products comprising a layer of natural mineral fibres [B32B 19/00](#)-)
- U B32B 2264/00** **Composition of particles which form a particulate layer or are present as additives**
- U B32B 2264/02
- Synthetic macromolecular particles
- B32B 2264/0207
- • Particles made of materials belonging to [B32B 25/00](#)
- B32B 2264/0214
- • Particles made of materials belonging to [B32B 27/00](#)
- B32B 2264/0257
- • • Polyolefin particles (-vinyl or acrylic copolymers [B32B 2264/0228](#) , [B32B 2264/025](#)-)
- B32B 2264/10
- Inorganic particles (-layered products comprising a layer of natural mineral particles [B32B 19/00](#)-)
- U B32B 2266/00** **Composition of foam**
- U B32B 2266/02
- Organic
- B32B 2266/0207
- • Materials belonging to [B32B 25/00](#)
- B32B 2266/0214
- • Materials belonging to [B32B 27/00](#)
- B32B 2266/025
- • • Polyolefin (-vinyl or acrylic copolymers [B32B 2266/0221](#) , [B32B 2266/0242](#)-)
- B32B 2274/00** **Thermoplastic elastomer material (-thermoplastic elastomer fibres [B32B 2262/0215](#) , thermoplastic elastomer particles [B32B 2264/0221](#) , thermoplastic elastomer foam [B32B 2266/0292](#)-)**

U	B32B 2307/00	Properties of the layers or laminate
U	B32B 2307/30	· having particular thermal properties
	B32B 2307/308	· · Heat stability (-dimensional stability B32B 2307/734-)
	B32B 2307/40	· having particular optical properties (-light or UV resistant B32B 2307/71-)
U	B32B 2310/00	Treatment by energy or chemical effects
U	B32B 2310/02	· Not used
	B32B 2310/021	· · using electrical effects (- B32B 2310/08 and B32B 2310/12 take precedence-)
U	B32B 2310/04	· · using liquids, gas or steam
	B32B 2310/0445	· · · using gas or flames (- B32B 2310/0427 takes precedence-)
	B32B 2315/00	Other materials containing non-metallic inorganic compounds not provided for in groups B32B 2311/00 to B32B 2313/04
	B32B 2315/12	· Asbestos
U	B32B 2317/00	Animal or vegetable based
	B32B 2317/18	· Cellulose, modified cellulose or cellulose derivatives, e.g. viscose (- B32B 2317/10 , B32B 2317/12 , B32B 2317/16 take precedence-)
	B32B 2317/22	· Natural rubber (-synthetic rubber B32B 2319/00-)
	B32B 2317/24	· Oil (- B32B 2318/02 takes precedence-)
	B32B 2318/00 - B32B 2318/00	<u>Other natural products or their composites used for the layers, laminate or apparatus components not provided for in groups B32B 2311/00 to B32B 2315/12 and B32B 2319/00 to B32B 2398/20</u>
	B32B 2319/00	Synthetic rubber (-natural rubber B32B 2317/22-)
	B32B 2355/00	Specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of index codes B32B 2323/00 to B32B 2333/00
	B32B 2386/00	Specific polymers obtained by polycondensation or polyaddition not provided for in a single one of index codes B32B 2363/00 to B32B 2383/00
U	B32B 2398/00	Unspecified macromolecular compounds
	B32B 2398/20	· Thermoplastics
	B32B 2405/00	Adhesive articles, e.g. adhesive tapes (-labels B32B 2519/00-)
	B32B 2413/00	Belts (-conveyer belts B32B 2433/02 ; drive belts B32B 2433/04-)
	B32B 2419/00	Buildings or parts thereof (-walls, panels B32B 2607/00-)
	B32B 2419/04	· Tiles for floors or walls (-tiles for roofs B32B 2419/06-)
	B32B 2432/00	Cleaning articles, e.g. mops, wipes (-personal care B32B 2555/00-)
	B32B 2437/00	Clothing (-anti-ballistic clothing B32B 2571/02-)
	B32B 2439/00	Containers; Receptacles (-closures therefor B32B 2435/00-)
	B32B 2451/00	Decorative or ornamental articles (-wall paper B32B 2607/02-)
	B32B 2471/00	Floor coverings (-B32B 2419/04 takes precedence-)
	B32B 2479/00	Furniture (-upholstery B32B 2601/00-)
	B32B 2535/00	Medical equipment, e.g. bandage, prostheses, catheter (-medical patches B32B 2556/00-)

- U B32B 2571/00** **Protective equipment**
 B32B 2571/02 · defensive, e.g. armour plates, anti-ballistic clothing (~~-camouflage nets~~
[B32B 2459/00-](#))
- U B32B 2605/00** **Vehicles**
 B32B 2605/18 · Aircraft (~~-blades, propellers~~ [B32B 2603/00-](#))

Project: MP0121 (B33)

- M B33** **{ADDITIVE MANUFACTURING TECHNOLOGY}**

Project: MP0121 (B33Y)

- M B33Y** **{ADDITIVE MANUFACTURING, i.e. MANUFACTURING OF THREE-DIMENSIONAL [3D3-D] OBJECTS BY ADDITIVE DEPOSITION, ADDITIVE AGGLOMERATION OR ADDITIVE LAYERING, e.g. BY 3D3-D PRINTING, STEREO LITHOGRAPHY OR SELECTIVE LASER SINTERING}**

NOTES

1. This subclass covers additive manufacturing, irrespective of the process or material used.
2. This subclass is intended to enable a comprehensive search of subject matter related to additive manufacturing by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore this subclass covers aspects of additive manufacturing (e.g. 3D printing) that might also be entirely or partially covered elsewhere in CPC.
3. This subclass is for obligatory supplementary classification of subject matter already classified as such in other classification places, when the subject matter contains an aspect of additive manufacturing.
4. The classification symbols of this subclass are not listed first when assigned to patent documents.
5. In this subclass, multi-aspect classification is applied, so that aspects of subject matter that are covered by more than one of its groups should be classified in each of those groups.

- M B33Y 10/00** **{Processes of additive manufacturing}**
- M B33Y 30/00** **{Apparatus for additive manufacturing; ~~-Details thereof or accessories therefor~~}**
- M B33Y 40/00** **{Auxiliary operations or equipment, e.g. for material handling}**
- M B33Y 50/00** **{Data acquisition or data processing for additive manufacturing}**
 M B33Y 50/02 · ~~{for controlling or regulating additive manufacturing processes}~~
- M B33Y 70/00** **{Materials specially adapted for additive manufacturing}**
- M B33Y 80/00** **{Products made by additive manufacturing}**
- M B33Y 99/00** **{Subject matter not provided for in other groups of this subclass}**

Project: N/A (B41C)

- B41C** **PROCESSES FOR THE MANUFACTURE OR REPRODUCTION OF PRINTING SURFACES (photomechanical processes for producing printing surfaces [G03F](#); photoelectrical processes for producing printing surfaces [G03G](#))**
- U B41C 1/00** **Forme preparation**

- B41C 1/02 · Engraving; Heads therefor (-recording on record carriers, heads therefor [G11B](#)-)
- B41C 1/055 · Thermographic processes for producing printing formes {e.g. with a thermal print head}(-[B41C 1/02](#) takes precedence; { fabrication of relief or intaglio plates by ablative recording with a laser beam [B41C 1/05](#) ; production of lithographic forms [B41C 1/10](#) ; producing of screen printing forms or stencils [B41C 1/14](#) })
- B41C 1/06 · Transferring (-[B41C 1/10](#) , [B41C 1/18](#) take precedence-)
- B41C 1/08 · by embossing, e.g. with a typewriter (-typewriters adapted therefor [B41J 3/38](#)-)
- B41C 1/10 · for lithographic printing; Master sheets for transferring a lithographic image to the forme{ chemical or electrical pretreatment [B41N 3/03](#) }(-neutralising or similar differentiation treatments of lithographic printing formes [B41N 3/08](#)-)
- U B41C 1/1008 · · {by removal or destruction of lithographic material on the lithographic support, e.g. by laser or spark ablation; by the use of materials rendered soluble or insoluble by heat exposure, e.g. by heat produced from a light to heat transforming system; by on the press exposure or on the press development, e.g. by the fountain of photolithographic materials}
- B41C 1/1016 · · {characterised by structural details, e.g. protective layers, backcoat layers, several imaging layers (-[B41N 3/036](#) takes precedence-)}
- B41C 1/1075 · · {Mechanical aspects of on-press plate preparation (-[B41C 1/1008](#) to [B41C 1/1066](#) take precedence-)}
- B41C 1/1083 · · {Mechanical aspects of off-press plate preparation (-[B41C 1/1008](#) to [B41C 1/1066](#) take precedence-)}
- B41C 1/18 · Curved printing formes or printing cylinders{(-[B41C 1/10](#) , [B41C 1/14](#) take precedence-)}
- U **B41C 3/00** **Reproduction or duplicating of printing formes**
- B41C 3/02 · Stereotyping (-casting stereotype plates [B41D 3/00](#)-)

Project: N/A (B41F)**B41F**

PRINTING MACHINES OR PRESSES (-machines for manufacturing footwear incorporating printing or embossing apparatus [A43D](#) , e.g. [A43D 8/26](#) , [A43D 95/14](#) ; presses in general [B30B](#) ; making of printing surfaces [B41C](#) , [B41D](#) ; manifolding devices, office printing machines [B41L](#) ; stencilling [B41L](#) , { [B44D](#) } ; printing processes not dependent on the use of special machines [B41M](#) ; duplicating or marking by sublimation or volatilisation of design [B41M 5/035](#) ; thermography [B41M 5/26](#) ; embossing decorations or marks [B44B 5/00](#) ; { applying transfers or decalcomanias [B44C 1/16](#) } ; handling thin or filamentary material [B65H](#) ; electrography, electrophotography, magnetography [G03G](#)-)

NOTE

Attention is drawn to Notes 1 and 2 following the title of subclass [B41L](#) .

- U **B41F 1/00** **Platen presses, i.e. presses in which printing is effected by at least one essentially-flat pressure-applying member co-operating with a flat type-bed**
- U B41F 1/04 · for mono-impression printing, e.g. on sheets
- B41F 1/06 · · with platen maintained parallel to bed during movement (-preparing stereotype matrices using presses [B41D 1/06](#) ; { presses [B30B](#) })
- B41F 1/16 · for offset printing{(-pad printing [B41F 17/001](#)-)}
- U B41F 1/26 · Details
- B41F 1/265 · · {Conveying webs (-in general [B65H](#)-)}
- B41F 1/28 · · Sheet-conveying, -aligning or -clamping devices (in general [B65H](#))

- B41F 1/36
 - • • Clamps for conveying sheets and for holding same on the platens{ clamps in manifolding devices [B41L 3/02-](#)}
- B41F 1/40
 - • Inking units{(for pad printing [B41F 17/001-](#))}
- U B41F 1/56
 - • Auxiliary devices
- B41F 1/565
 - • • {Numbering devices (-stamping numbering devices [B41K-](#))}
- U B41F 3/00**
 - Cylinder presses, i.e. presses essentially comprising at least one cylinder co-operating with at least one flat type-bed**
- U B41F 3/18
 - of special construction or for particular purposes
- B41F 3/30
 - • for lithography (-proof-print presses [B41F 3/28-](#))
- B41F 3/36
 - • for intaglio or heliogravure printing (-proof-print presses [B41F 3/28-](#))
- U B41F 3/46
 - Details
- B41F 3/51
 - • Type-beds; Supports therefor (-[B41F 3/52](#) takes precedence-)
- B41F 3/54
 - • Impression cylinders; Supports therefor (-blankets or like coverings [B41N 10/00-](#))
- U B41F 3/82
 - Auxiliary devices
- B41F 3/84
 - • Arrangements of counting devices (-in printing machines in general [B41F 33/02-](#))
- B41F 3/86
 - • Numbering devices
- B41F 5/00**
 - Rotary letterpress machines{ office printing machines [B41L 15/00](#)}**
- B41F 7/00**
 - Rotary lithographic machines{ such office printing machines [B41L 7/00](#)}**
- U B41F 7/20
 - Details
- U B41F 7/24
 - • Damping devices
- B41F 7/37
 - • • with supercooling for condensation of air moisture (-cooling forme or impression cylinders [B41F 13/22](#) ; { cooling ink or ink rollers [B41F 31/002](#) })
- B41F 7/40
 - • • Devices for tripping or lifting damping rollers; Supporting, adjusting, or removing arrangements therefor (-such arrangements or devices for inking rollers [B41F 31/30-](#))
- U B41F 9/00**
 - Rotary intaglio printing presses**
- B41F 9/002
 - {Sheet printing presses (-[B41F 9/021](#) takes precedence-)}
- B41F 9/003
 - {Web printing presses (-[B41F 9/023](#) takes precedence-)}
- B41F 9/009
 - {Reversible printing presses (-[B41F 9/02](#) takes precedence-)}
- B41F 9/01
 - for indirect printing (-[B41F 9/02](#) takes precedence-)
- U B41F 11/00**
 - Rotary presses or machines having forme cylinder carrying a plurality of printing surfaces, or for performing letterpress, lithographic, or intaglio processes selectively or in combination**
- B41F 11/02
 - for securities (-security printing [B41M 3/14-](#))
- U B41F 13/00**
 - Common details of rotary presses or machines**
- B41F 13/0008
 - {Driving devices (-[B41F 13/004](#) and [B41F 13/008](#) take precedence-)}
- U B41F 13/008
 - Mechanical features of drives, e.g. gears, clutches
- B41F 13/012
 - • Taking-up backlash{(devices for taking-up backlash in general [F16H 55/00](#) , e.g. [F16H 55/18-](#))}
- B41F 13/02
 - Conveying or guiding webs through presses or machines (-web handling in general [B65H](#), e.g. step-by-step advancement [B41F 21/00](#) , turning or reversing [B65H 23/32-](#))
- U B41F 13/08
 - Cylinders

- U B41F 13/10
 - • Forme cylinders
- B41F 13/11
 - • • Gravure cylinders{(attaching cylindrical formes [B41F 27/105](#)-)}
- B41F 13/193
 - • Transfer cylinders; Offset cylinders{(attaching blankets [B41F 30/04](#)-)}
- B41F 13/48
 - Arrangements to enable printing to be effected over selected areas of a single forme cylinder (by inking selected areas [B41F 31/18](#)-)
- B41F 13/54
 - Auxiliary folding, cutting, collecting, or depositing of sheets or webs (in general [B26D](#) , [B65H](#)-)
- B41F 13/64
 - • Collecting (gathering sheets or signatures in bookbinding [B42C 1/00](#)-)
- B41F 15/00**
 - Screen printers (for selective printing [B41J 2/005](#))**
- U B41F 15/14
 - Details
- B41F 15/44
 - • squeegees or doctors (doctors of rotary intaglio printing presses [B41F 9/10](#)-) { for photographic purposes [G03D 15/00](#)-}
- B41F 16/00**
 - Transfer printing apparatus (apparatus or machines for applying decalcomanias [B65C](#))**
- B41F 17/00**
 - Printing apparatus or machines of special types or for particular purposes, not otherwise provided for (hand stamps, plier-like tools for printing or punching tickets or the like [B41K](#); addressographs or other office printing equipment [B41L](#); coding or marking of packaging material or of completed packages in packaging machines [B65B 61/00](#) ; ticket printing and issuing apparatus [G07B](#)-)**
- B41F 17/003
 - {Special types of machines for printing textiles (using the screen printing process [B41F 15/00](#) ; printing on knitted fabrics [B41F 17/38](#)-)}
- B41F 19/00**
 - Apparatus or machines for carrying out printing operations combined with other operations (auxiliary perforating apparatus associated with printing devices [B41G 7/00](#) ; coding or marking in association with packaging [B65B 61/00](#) ; label dispensers having printing equipment [B65C](#)-)**
- B41F 19/02
 - with embossing (printing with a printer's forme combined with embossing [B41M 1/24](#)-)
- B41F 19/08
 - simultaneous moulding and printing
- B41F 21/00**
 - Devices for conveying sheets through printing apparatus or machines (through platen presses [B41F 1/28](#) ; feeding sheets to or from printing apparatus or machines [B65H](#) ; { through manifolding apparatus or the like [B41L 21/00](#) })**
- B41F 21/02
 - Pins (-[B41F 21/12](#) , [B41F 21/14](#) take precedence-)
- B41F 21/04
 - Grippers ({ [B41F 21/08](#) , [B41F 21/10](#) } [B41F 21/12](#) , [B41F 21/14](#) take precedence-)
- B41F 21/05
 - • In-feed grippers (-[B41F 21/06](#) takes precedence-)
- U B41F 21/10
 - Combinations of transfer drums and grippers
- B41F 21/102
 - • {with pneumatic means (-[B41F 21/108](#) takes precedence-)}
- B41F 21/104
 - • {Gripper details (-[B41F 21/102](#) takes precedence-)}
- B41F 22/00**
 - Means preventing smudging of machine parts or printed articles (-[B41F 23/00](#) takes precedence-)**
- B41F 23/00**
 - Devices for treating the surfaces of sheets, webs, or other articles in connection with printing (cleaning in general [B08B](#) ; as a final step in the manufacture of such articles, see appropriate subclasses, e.g. [B29C 71/00](#) , [D21H 23/00](#) or [D21H 25/00](#) ; { in manifolding apparatus or the like [B41L 23/00](#) } ; surface treatment in general [B44D](#) , of metal [C23G](#)-)**

- B41F 23/02
 - by dampening (-in rotary lithographic machines [B41F 7/24](#)){(-[B41F 23/005](#) takes precedence-)}
- B41F 23/04
 - by heat drying, by cooling, by applying powders{(-[B41F 23/005](#) takes precedence-)}
- B41F 23/0403
 - • {Drying webs}{(-[B41F 23/0486](#) takes precedence-)}
- B41F 23/0406
 - • • {by radiation}{(-[B41F 23/0436](#) takes precedence-)}
- B41F 23/0416
 - • • {by conduction}{(-[B41F 23/0436](#) takes precedence-)}
- B41F 23/0423
 - • • {by convection}{(-[B41F 23/0436](#) takes precedence-)}
- B41F 23/044
 - • {Drying sheets, e.g. between two printing stations}{(-[B41F 23/0486](#) takes precedence-)}
- B41F 23/0476
 - • {Cooling}{(-[B41F 23/0483](#) takes precedence-)}
- B41F 23/08
 - Print finishing devices, e.g. for glossing prints{(-[B41F 23/005](#) takes precedence-)}
- B41F 25/00**

Devices for pressing sheets or webs against cylinders, e.g. for smoothing purposes (-apparatus for taking-out curl from webs in general [B65H 23/34](#)-)
- B41F 27/00**

Devices for attaching printing elements or formes to supports}{(-attaching by chemical means [B41N 6/00](#)-)}
- B41F 30/00**

Devices for attaching coverings or make-ready devices; Guiding devices for coverings (-make-ready devices [B41N 6/00](#) ; blankets or like coverings [B41N 10/00](#)-)
- B41F 31/00**

Inking arrangements or devices}{(-inking units for platen presses [B41F 1/40](#) ; for cylinder presses [B41F 3/81](#) ; { for rotary intaglio printing presses [B41F 9/061](#) } ; applying liquids or other fluent materials to surfaces in general [B05](#) ; inking arrangements or devices for typewriters or selective printing mechanisms [B41J](#)-)}
- B41F 31/02
 - Ducts, containers, supply or metering devices}{(-level control in general [G05D 9/00](#)-)}
- B41F 31/10
 - • Applications of feed or duct rollers}{(-messenger or moving transfer rollers [B41F 31/14](#)-)}
- B41F 31/13
 - • Means for driving fountain rollers{(-[B41F 13/12](#) takes precedence-)}
- B41F 31/26
 - Construction of inking rollers (-inking-rollers serving also to apply ink repellent in rotary lithographic machines [B41F 7/36](#)-)
- U B41F 31/30
 - Arrangements for tripping, lifting, adjusting, or removing inking rollers; Supports, bearings, or forks therefor
- B41F 31/304
 - • {Arrangements for inking roller bearings, forks or supports}{(-[B41F 31/301](#) takes precedence-)}
- B41F 31/32
 - • Lifting or adjusting devices (-for damping rollers [B41F 7/40](#)-)
- B41F 33/00**

Indicating, counting, warning, control, or safety devices}{(-ink supply or metering devices [B41F 31/02](#) ; such devices in general, see the relevant subclasses, e.g. counting in general [G06M](#)-)}
- B41F 33/02
 - Arrangements of indicating devices, e.g. counters}{(-arrangements of counting devices in platen presses [B41F 1/00](#) , e.g. [B41F 1/58](#) ; in cylinder presses [B41F 3/84](#) ; in typewriters or selective printing mechanisms [B41J 29/20](#)){ in manifolding apparatus or the like [B41L 39/00](#)-}
- B41F 33/04
 - Tripping devices or stop-motions ({ tripping devices for doctor blades [B41F 9/1027](#) } ; cylinder-tripping devices of rotary presses or machines [B41F 13/24](#) ; arrangements for tripping inking rollers [B41F 31/30](#)-)
- B41F 33/18
 - Web break detection}{(-[B41F 33/04](#) takes precedence-)}

B41F 35/00

Cleaning arrangements or devices{ in manifolding apparatus or the like [B41L 41/00](#)}

B41F 35/001

· {Devices for cleaning parts removed from the printing machines ([B41F 35/003](#) takes precedence)}

Project: N/A (B41J)**U B41J 2/00**

Typewriters or selective printing mechanisms characterised by the printing or marking process for which they are designed (mounting, arrangement, or disposition of types or dies [B41J 1/00](#); marking methods [B41M 5/00](#); structure or manufacture of heads, e.g. inductive, for recording by magnetisation or demagnetisation of a record carrier [G11B 5/127](#); heads for reproducing capacitive information [G11B 9/07](#))

NOTES

This group covers devices reproducing only a discrete number of tones, whereas group [H04N 1/00](#) covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales.

In this group, the following expressions are used with the meanings indicated:

- "ink jet" involves the projection of ink on to the printing material, e.g. paper, through a nozzle as a stream of droplets or particles of colouring matter
- "continuous ink jet" means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle
- "ink spray" means a spray of ink transported by a stream of charged particles or air on to the printing material

U B41J 2/005

· characterised by bringing liquid or particles selectively into contact with a printing material (printing by selective application of impact or pressure on a printing or impression-transfer material [B41J 2/22](#))

U B41J 2/01

· · Ink jet

U B41J 2/015

· · · characterised by the jet generation process ([B41J 2/215](#) takes precedence)

U B41J 2/04

· · · · generating single droplets or particles on demand

U B41J 2/045

· · · · · by pressure, e.g. electromechanical transducers

B41J 2/04501

· · · · · · {-Control methods or devices therefor, e.g. driver circuits, control circuits}

B41J 2/04503

· · · · · · {-aiming at compensating carriage speed}

B41J 2/04505

· · · · · · {-aiming at correcting alignment}

B41J 2/04506

· · · · · · {-aiming at correcting manufacturing tolerances}

B41J 2/04508

· · · · · · {-aiming at correcting other parameters}

B41J 2/0451

· · · · · · {-for detecting failure, e.g. clogging, malfunctioning actuator}

B41J 2/04511

· · · · · · {-for electrostatic discharge protection}

B41J 2/04513

· · · · · · {-for increasing lifetime}

B41J 2/04515

· · · · · · {-preventing overheating}

B41J 2/04516

· · · · · · {-preventing formation of satellite drops}

B41J 2/04518

· · · · · · {-reducing costs}

B41J 2/0452

· · · · · · {-reducing demand in current or voltage}

B41J 2/04521

· · · · · · {-reducing number of signal lines needed}

B41J 2/04523

· · · · · · {-reducing size of the apparatus}

B41J 2/04525

· · · · · · {-reducing occurrence of cross talk}

B41J 2/04526	. . . . . {-controlling trajectory}
B41J 2/04528	. . . . . {-aiming at warming up the head}
B41J 2/0453	. . . . . {-controlling a head having a dummy chamber}
B41J 2/04531	. . . . . {-controlling a head having a heater in the manifold}
B41J 2/04533	. . . . . {-controlling a head having several actuators per chamber}
B41J 2/04535	. . . . . {-involving calculation of drop size, weight or volume}
B41J 2/04536	. . . . . {-using history data}
B41J 2/04538	. . . . . {-involving calculation of heater resistance}
B41J 2/0454	. . . . . {-involving calculation of temperature}
B41J 2/04541	. . . . . {-Specific driving circuit}
B41J 2/04543	. . . . . {-Block driving}
B41J 2/04545	. . . . . {-Dynamic block driving}
B41J 2/04546	. . . . . {-Multiplexing}
B41J 2/04548	. . . . . {-Details of power line section of control circuit}
B41J 2/0455	. . . . . {-Details of switching sections of circuit, e.g. transistors}
B41J 2/04551	. . . . . {-using several operating modes}
B41J 2/04553	. . . . . {-detecting ambient temperature}
B41J 2/04555	. . . . . {-detecting current}
B41J 2/04556	. . . . . {-detecting distance to paper}
B41J 2/04558	. . . . . {-detecting presence or properties of a dot on paper}
B41J 2/0456	. . . . . {-detecting drop size, volume or weight}
B41J 2/04561	. . . . . {-detecting presence or properties of a drop in flight}
B41J 2/04563	. . . . . {-detecting head temperature; Ink temperature}
B41J 2/04565	. . . . . {-detecting heater resistance}
B41J 2/04566	. . . . . {-detecting humidity}
B41J 2/04568	. . . . . {-Control according to number of actuators used simultaneously}
B41J 2/0457	. . . . . {-Power supply level being detected or varied}
B41J 2/04571	. . . . . {-detecting viscosity}
B41J 2/04573	. . . . . {-Timing; Delays}
B41J 2/04575	. . . . . {-controlling heads of acoustic type}
B41J 2/04576	. . . . . {-controlling heads of electrostatic type}
B41J 2/04578	. . . . . {-controlling heads based on electrostatically-actuated membranes}
B41J 2/0458	. . . . . {-controlling heads based on heating elements forming bubbles}
B41J 2/04581	. . . . . {-controlling heads based on piezoelectric elements}
B41J 2/04583	. . . . . {-controlling heads based on discharge by lowering the surface tension of meniscus}
B41J 2/04585	. . . . . {-controlling heads based on thermal bent actuators}
B41J 2/04586	. . . . . {-controlling heads of a type not covered by groups B41J 2/04575 - B41J 2/04585 , or of an undefined type}
B41J 2/04588	. . . . . {-using a specific waveform}
B41J 2/0459	. . . . . {-Height of the driving signal being adjusted}
B41J 2/04591	. . . . . {-Width of the driving signal being adjusted}
B41J 2/04593	. . . . . {-Dot-size modulation by changing the size of the drop}
B41J 2/04595	. . . . . {-Dot-size modulation by changing the number of drops per dot}
B41J 2/04596	. . . . . {-Non-ejecting pulses}

- B41J 2/04598 {-Pre-pulse}
- U B41J 2/135 . . . Nozzles
- U B41J 2/14 Structure thereof {only for on-demand ink jet heads}
- B41J 2/14427 {-Structure of ink jet print heads with thermal bend detached actuators}
- U B41J 2/16 Production of nozzles
- B41J 2/1607 {-Production of print heads with piezoelectric elements ([B41J 2/1606](#), [B41J 2/162](#) take precedence)}
- U B41J 2/1621 {-manufacturing processes}
- U B41J 2/164 {-thin film formation}
- B41J 2/1642 {-thin film formation by CVD [*chemical vapor deposition*]}(~~chemical vapor-deposition~~)}
- B41J 2/1648 {-Production of print heads with thermal bend detached actuators}
- U B41J 2/165 Preventing {or detecting} of nozzle clogging, e.g. cleaning, capping or moistening for nozzles
- B41J 2/16517 {-Cleaning of print head nozzles ([B41J 2/16505](#), [B41J 2/1707](#), [B41J 2/1714](#) take precedence)}
- B41J 2/1652 {-by driving a fluid through the nozzles to the outside thereof, e.g. by applying pressure to the inside or vacuum at the outside of the print head}
- U B41J 2/16535 {-using wiping constructions ([B41J 2/16552](#) takes precedence)}
- B41J 2/16541 {-Means to remove deposits from wipers or scrapers}
- B41J 2/16585 {-for paper-width or non-reciprocating print heads} ~~M1104~~
- B41J 2/16588 {-Print heads movable towards the cleaning unit}
- U B41J 2/17 . . . characterised by ink handling
- U B41J 2/175 Ink supply systems; {Circuit parts therefor}
- U B41J 2/17503 {-Ink cartridges}
- B41J 2/17533 {-Storage or packaging of ink cartridges} ~~0612~~
- U B41J 2/21 . . . for multi-colour printing
- U B41J 2/2107 {-characterised by the ink properties}
- U B41J 2/2114 {-Ejecting transparent or white coloured liquids, e.g. processing liquids ([B41J 2/211](#) takes precedence)}
- B41J 2/2117 {-Ejecting white liquids}
- B41J 2/2132 {-Print quality control characterised by dot disposition, e.g. for reducing white stripes or banding (methods for local corrections by dot omission, image edge enhancement, or multi-pass mask selection [G06K 15/102](#); colour conversion [H04N 1/40](#))}
- B41J 2/2135 {-Alignment of dots (adjustments by bodily moving print heads or carriages [B41J 25/001](#))}
- B41J 2/2139 {-Compensation for malfunctioning nozzles creating dot place or dot size errors}
- B41J 2/2142 {-Detection of malfunctioning nozzles (for cleaning purposes [B41J 2/16579](#); jet deflection sensors [B41J 2/125](#))}
- B41J 2/2146 {-for line print heads}
- U B41J 2/315 . . . characterised by selective application of heat to a heat sensitive printing or impression-transfer material ([B41J 2/385](#), [B41J 2/435](#) take precedence)
- U B41J 2/32 . . . using thermal heads
- U B41J 2/335 Structure of thermal heads
- B41J 2/33505 {-Constructional details}

- B41J 2/3351 {-Electrode layers}
- B41J 2/33515 {-Heater layers}
- B41J 2/3352 {-Integrated circuits}
- B41J 2/33525 {-Passivation layers}
- B41J 2/3353 {-Protective layers}
- B41J 2/33535 {-Substrates}
- B41J 2/3354 {-characterised by geometry}
- B41J 2/33545 {-characterised by dimensions}
- B41J 2/3355 {-characterised by materials}
- B41J 2/33555 {-characterised by type}
- B41J 2/3356 {-Corner type resistors}
- B41J 2/33565 {-Edge type resistors}
- B41J 2/3357 {-Surface type resistors}
- B41J 2/33575 {-Processes for assembling process heads}
- B41J 2/3358 {-Cooling arrangements}
- B41J 2/33585 {-Hollow parts under the heater}
- B41J 2/3359 {-Manufacturing processes}
- B41J 2/33595 {-Conductors through the layered structure}
- U B41J 2/35 providing current or voltage to the thermal head
- U B41J 2/355 Control circuits for heating-element selection
 - B41J 2/3551 {-Block driving}
 - B41J 2/3553 {-Heater resistance determination}
 - B41J 2/3555 {-Historical control}
 - B41J 2/3556 {-Preheating pulses}
 - B41J 2/3558 {-Voltage control or determination}
- U B41J 2/36 Print density control
 - B41J 2/362 {-Correcting density variation}
- U B41J 2/385 characterised by selective supply of electric current or selective application of magnetism to a printing or impression-transfer material ([B41J 2/005](#) takes precedence; electrography, magnetography [G03G](#))
 - B41J 2/3855 {-Electrographic print heads using processes not otherwise provided for, e.g. electrolysis}
- U B41J 2/41 for electrostatic printing ([B41J 2/39](#) takes precedence)
- U B41J 2/415 by passing charged particles through a hole or a slit
 - B41J 2/4155 {-for direct electrostatic printing [DEP]-}
- U B41J 2/435 characterised by selective application of radiation to a printing material or impression-transfer material (optical elements, systems, or apparatus [G02B](#); modulation or deflection of light [G02F](#); electrophotography [G03G](#))
 - B41J 2/44 using single radiation source {per colour}, e.g. lighting beams or shutter arrangements ({[B41J 2/465](#), [B41J 2/47](#)}, [B41J 2/475](#) take precedence)
 - B41J 2/442 {-using lasers (ablative marking methods and sheet materials for use therein [B41M 5/24](#); working material by laser beam in general [B23K 26/00](#))}
- U B41J 2/447 using arrays of radiation sources ([B41J 2/475](#) takes precedence)
 - B41J 2/4473 {-using liquid crystal [LC]} arrays-}
- U B41J 2/47 using the combination of scanning and modulation of light

- B41J 2/471
 - • • {using dot sequential main scanning by means of a light deflector, e.g. a rotating polygonal mirror}
- U B41J 2/485
 - characterised by the process of building-up characters { or image elements} applicable to two or more kinds of printing or marking processes
- U B41J 2/505
 - • from an assembly of identical printing elements {(printers with two or more sets of printing elements [B41J 3/54](#); Arrangements for producing a permanent visual presentation of the digital output data using matrix printers, e.g. individual print element control for printing letters [G06K 15/10](#))}
- B41J 2/5052
 - • • {with special adaptations characterised by the ink properties ([B41J 2/2107](#) takes precedence)}
- B41J 2/5054
 - • • {with special adaptations characterised by dot size ([B41J 2/2121](#) takes precedence)}
- B41J 2/5056
 - • • {using dot arrays providing selective dot disposition modes, e.g. different dot densities for high speed and high quality printing, array line selections for multi-pass printing, or dot shifts for character inclination ([B41J 2/2132](#) takes precedence; providing dot disposition modes by bodily changing the angle of a print head [B41J 25/003](#))}
- B41J 2/5058
 - • • • {locally, i.e. for single dots or for small areas of a character (methods for insertion or deletion of dots, or for character edge smoothing [G06K 15/102](#))}
- U B41J 2/51
 - • • serial printer type
- B41J 2/512
 - • • • {Adjustment of the dot disposition by adjustment of the arrangement of the dot printing elements of a print head, e.g. nozzles, needles}

WARNING

This group is no longer used for the classification of new documents as from January 1, 2010. The backlog of this group is being continuously reclassified to [B41J 25/001](#) and subgroups
- U B41J 3/00
 - **Typewriters or selective printing or marking mechanisms, {e.g. ink-jet printers, thermal printers} characterised by the purpose for which they are constructed (cryptographic typewriters [G09C 3/00](#))**
- U B41J 3/407
 - for marking on special material (printing on special surfaces [B41F 7/00](#); { apparatus or processes for manufacturing printed circuits by printing or dispensing a conductive paste or ink [H05K 3/1241](#))}
- B41J 3/4073
 - • {Printing on three-dimensional objects not being in sheet or web form, e.g. spherical or cubic objects ([B41J 3/283](#), [B41J 3/286](#) take precedence; building up a 3D object using individual droplets from jetting heads [B29C 67/0059](#))}
- B41J 3/4076
 - • {printing on rewritable, bistable "electronic paper" by a focused electric or magnetic field (displays in which the positions of movable elements are controlled by the application of an electric field [G09F 9/372](#), of a magnetic field [G09F 9/375](#))}
- B41J 3/4078
 - • {Printing on textile (ink-jet dyeing or printing processes for textile [D06P 5/30](#); conversion of colour signals for textile printing [H04N 1/54](#))}
- U B41J 3/44
 - Typewriters or selective printing mechanisms having dual functions or combined with, or coupled to, apparatus performing other functions (printing mechanisms coupled to typographical composing machines [B41B 27/41](#))
- B41J 3/445
 - • {Printers integrated in other types of apparatus, e.g. printers integrated in cameras}
- U B41J 3/54
 - with two or more sets of type or printing elements ([B41J 3/60](#) takes precedence)
- B41J 3/543
 - • {with multiple inkjet print heads ([B41J 2/17503](#), [B41J 2/2103](#) take precedence)}

- B41J 3/546
- • {-Combination of different types, e.g. using a thermal transfer head and an inkjet print head}
- B41J 3/62
- for printing on two or more separate sheets or strips of printing material {being conveyed simultaneously to or through the printing zone} (B41J 3/54 takes precedence {; B41J 15/18 , B41J 15/20 , B41J 15/22 and B41J 15/24 take precedence})
- U B41J 11/00** **Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers, thermal printers,} for supporting or handling copy material in sheet or web form ({printing on both faces B41J 3/60;} specially adapted for supporting or handling copy material in short lengths B41J 13/00; in continuous form B41J 15/00; holders for text to be copied B41J 29/00 {; handling sheets or webs in general B65H; apparatus for electrographic processes using a charge pattern, e.g. copying machines, G03G 15/00})**
- B41J 11/004
- {-Platenless printing, i.e. conveying the printing material freely, without support on its back, through the printing zone opposite to the print head}
- B41J 11/009
- {-Detecting type of paper, e.g. by automatic reading of a code that is printed on a paper package or on a paper roll or by sensing the grade of translucency of the paper (selecting type of paper B41J 11/485; investigating or analysing materials by the use of optical means G01N 21/00; investigating moving sheets G01N 21/86)}
- U B41J 11/36
- Blanking or long feeds; Feeding to a particular line, e.g. by rotation of platen or feed roller
- U B41J 11/42
- • Controlling {printing material conveyance for accurate alignment of the printing material with the printhead; Print registering (controlling printhead B41J 11/008; control of the transport of cut sheets B41J 13/0009)}
- B41J 11/425
- • • {-for a variable printing material feed amount}
- U B41J 15/00** **Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers, thermal printers,} specially adapted for supporting or handling copy material in continuous form, e.g. webs {(handlling sheets or webs in general B65H)}**
- B41J 15/005
- {Forming loops or sags in webs, e.g. for slackening a web or for compensating variations of the amount of conveyed web material (*by arranging a "dancing roller" in a sag of the web material*)}(*by arranging a "dancing roller" in a sag of the web material*)}
- U B41J 19/00** **Character- or line-spacing mechanisms ({ paper carriage guides B41J 11/22; superimposed movements for serial printing B41J 25/005;} key actions B41J 25/02)**
- U B41J 19/14
- with means for effecting line or character spacing in either direction
- B41J 19/142
- • {-with a reciprocating print head printing in both directions across the paper width}
- U B41J 25/00** **Actions or mechanisms not otherwise provided for**
- B41J 25/001
- {-Mechanisms for bodily moving print heads or carriages parallel to the paper surface (character- or line-spacing mechanisms B41J 19/00)}
- WARNING
This group and subgroups B41J 25/003 and B41J 25/005 are not complete pending a reorganisation. See also B41J 2/512
- B41J 25/003
- • {-for changing the angle between a print element array axis and the printing line, e.g. for dot density changes (dot arrays providing selective dot disposition modes B41J 2/5056)}
- B41J 25/005
- • {-for serial printing movements superimposed to character- or line-spacing movements}

- B41J 25/006
 - • {for oscillating, e.g. page-width print heads provided with counter-balancing means or shock absorbers}
- U B41J 25/304
 - Bodily-movable mechanisms for print heads or carriages movable towards or from paper surface (type carriers { rotatable for selection and} sliding for impression [B41J 1/36](#); type carriers { rotatable for selection and} swinging for impression [B41J 1/40](#); { line print heads movable towards a cleaning unit [B41J 2/16588](#)})
- U B41J 25/308
 - • with print gap adjustment mechanisms {(by platen movement [B41J 11/20](#))}
- B41J 25/3082
 - • • {with print gap adjustment means on the print head carriage, e.g. for rotation around a guide bar or using a rotatable eccentric bearing}
- B41J 25/3084
 - • • • {by means of a spacer contacting the matter to be printed}
- B41J 25/3086
 - • • {with print gap adjustment means between the print head and its carriage}
- B41J 25/3088
 - • • {with print gap adjustment means on the printer frame, e.g. for rotation of an eccentric carriage guide shaft}

Project: N/A (B41M)**B41M**

PRINTING, DUPLICATING, MARKING, OR COPYING PROCESSES; COLOUR PRINTING, (-correction of typographical errors [B41J](#); processes for applying transfer pictures or the like [B44C 1/16](#) ; fluid media for correction of typographical errors by coating [C09D 10/00](#) ; printing textiles [D06P](#)-)

U B41M 1/00**Inking and printing with a printer`s forme**

- B41M 1/24
 - combined with embossing (-printing machines for carrying out printing operations combined with embossing [B41F 19/02](#)-)
- B41M 1/26
 - Printing on other surfaces than ordinary paper (-[B41M 1/40](#) takes precedence-)
- B41M 1/30
 - • on organic plastics, horn or similar materials{(-recording sheets having a coating to improve ink, dye or pigment receptivity [B41M 5/50](#) ; marking or recording on plastic by irradiation with electromagnetic beams, e.g. laser, [B41M 5/267](#))}
- B41M 1/34
 - • on glass or ceramic surfaces{(-ink-jet printing on glass or ceramic surfaces [B41M 5/00](#)-)}
- B41M 1/36
 - • on pre-treated paper, e.g. parchment, oiled paper, paper for registration purposes{(-[B41M 5/50](#) takes precedence-)}
- B41M 1/38
 - • on wooden surfaces, leather, or linoleum (-printing on matches or match boxes when combined with match manufacture [C06F 1/18](#)-)
- B41M 1/40
 - Printing on bodies of particular shapes, e.g. golf balls, candles, wine corks{(-sublimation or volatilisation of pre-printed design [B41M 5/035](#)-)}
- B41M 1/42
 - Printing without contact between forme and surface to be printed, e.g. by using electrostatic fields{(-using a stencil or screen [B41M 1/125](#)-)}

B41M 3/00

Printing processes to produce particular kinds of printed work, e.g. patterns (special designs or pictures per se [B44F](#) ; { printing apparatus or machines of special type or for particular purposes [B41F 17/00](#) ; manufacturing organic semiconductor devices using printing techniques [H01L 51/0004](#) } ; manufacturing printed circuits using printing techniques [H05K 3/12](#)-)

- B41M 3/003
 - {on optical devices, e.g. lens elements; for the production of optical devices (-production by thermal imaging means [B41M 5/265](#)-)}
- B41M 3/12
 - Transfer pictures or the like, e.g. decalcomanias{(-processes for producing decorative surface effects [B44C 1/00](#) ; [B41M 5/0256](#) takes precedence-)}
- B41M 3/14
 - Security printing {(securities [B42D 25/29](#)-)}

- B41M 3/16
- Braille printing (~~-typewriters or selective printing mechanisms for braille printing [B41J 3/32-](#)~~)
- B41M 5/00**
- Duplicating or marking methods; Sheet materials for use therein (~~-by using light-sensitive materials [G03](#) ; electrography, magnetography [G03G](#) ; { repeatedly usable boards or tablets for writing or drawing [B43L 1/00](#) }~~)**
- B41M 5/0011
- {Pre-treatment or treatment during printing of the recording material, e.g. heating, irradiating (~~-after-treatment of prints [B41M 7/00](#) ; printers for treating or overcoating copy materials before, during or after printing [B41J 11/0015-](#)~~)}
- B41M 5/0023
- {Digital printing methods characterised by the inks used (~~-inks per se [C09D 11/00-](#)~~)}
- B41M 5/0035
- {Uncoated paper (paper making [D21](#))}
- B41M 5/0041
- {Digital printing on surfaces other than ordinary paper (~~-[B41M 5/0082](#) takes precedence; printing on textiles [D06P 5/00-](#)~~)}
- B41M 5/0082
- {Digital printing on bodies of particular shapes (~~-sublimation or volatilisation of pre-printed design [B41M 5/035-](#)~~)}
- U B41M 5/025
- by transferring ink from the master sheet
- B41M 5/0253
- • {using a chemical colour-forming ink, e.g. chemical hectography (~~-[B41M 5/035](#) takes precedence-~~)}
- B41M 5/035
- • by sublimation or volatilisation of {pre-printed}design,{e.g. sublistatic (~~-[B41M 5/0256](#) takes precedence; printing on textiles [D06P 5/00-](#)~~)}
- U B41M 5/124
- using pressure to make a masked colour visible, e.g. to make a coloured support visible, to create an opaque or transparent pattern, or to form colour by uniting colour-forming components
- U B41M 5/132
- • Chemical colour-forming components; Additives or binders therefor
- U B41M 5/136
- • • Organic colour formers, e.g. leuco dyes
- B41M 5/1366
- • • • {characterised solely by tri (*aryl or hetaryl*)methane derivatives (*aryl or hetaryl*)methane derivatives (~~-[B41M 5/1363](#) takes precedence-~~)}
- B41M 5/20
- using electric current (~~-[B41M 5/24](#) takes precedence; { processes in which the current is transformed into a heat pattern for obtaining transfer to a receptor sheet [B41M 5/382](#) ; electro-coagulable or electro-adhesive printing or recording [B41C 1/105](#)}~~)
- B41M 5/24
- Ablative recording, e.g. by burning marks; Spark recording(~~-marking by high energetic means, e.g. by laser otherwise than burning or ablative removal [B41M 5/26](#) ; materials or methods for recording or reproduction by optical means [G11B 7/00-](#)~~)}
- B41M 5/26
- Thermography(~~-[B41M 5/20](#) , [B41M 5/24](#) take precedence-~~); {Marking by high energetic means, e.g. laser otherwise than by burning, and characterised by the material used (~~-[B23K](#) takes precedence; thermographic or photothermographic systems using noble metal compounds [G03C 1/494-](#)~~)}
- B41M 5/262
- • {recording or marking of inorganic surfaces or materials, e.g. glass, metal, or ceramics (~~-marking of plastic artifacts with inorganic additives [B41M 5/267-](#)~~)}
- B41M 5/28
- • using thermochromic compounds or layers containing liquid crystals, microcapsules, bleachable dyes or heat- decomposable compounds, e.g. gas- liberating(~~-[B41M 5/38271](#) takes precedence-~~)}
- B41M 5/288
- • • {using gas liberating compounds, e.g. to obtain vesicular or blow-up images (~~-[B41M 3/16](#) , [B41M 9/04](#) take precedence; thermogravure printing [B41M 7/02-](#)~~)}
- B41M 5/30
- • using chemical colour formers (~~-[B41M 5/34](#) takes precedence-~~)
- B41M 5/337
- • • Additives; Binders(~~-[B41M 5/46](#) takes precedence-~~)}

- B41M 5/36
 - using a polymeric layer, which may be particulate and which is deformed or structurally changed with modification of its' properties, e.g. of its' optical hydrophobic-hydrophilic, solubility or permeability properties{ [B41C 1/10](#) takes precedence-}
- B41M 5/368
 - • {involving the creation of a soluble/insoluble or hydrophilic/hydrophobic permeability pattern; Peel development (-[B41M 5/366](#) takes precedence-)}
- B41M 5/382
 - • Contact thermal transfer or sublimation processes (-sublistatic printing using a pre-formed image [B41M 5/035](#) ; ink-, dye- or pigment-receptive coatings [B41M 5/52-](#))
- B41M 5/38207
 - • • {characterised by aspects not provided for in groups [B41M 5/385](#) to [B41M 5/395](#)}
- B41M 5/38214
 - • • • {Structural details, e.g. multilayer systems (-composition of individual layers [B41M 5/42-](#))}
- B41M 5/385
 - • • characterised by the transferable dyes or pigments{{(-infra-red absorbing dyes [B41M 5/465-](#))}}
- B41M 5/3858
 - • • • {-Mixtures of dyes, at least one being a dye classifiable in one of groups [B41M 5/385](#) to [B41M 5/39](#)-}
- B41M 5/40
 - • characterised by the base {backcoat}, intermediate, or covering layers, {e.g. for thermal transfer dye-donor or dye-receiver sheets}; Heat, radiation filtering or absorbing means or layers; combined with other image registration layers or compositions; Special originals for reproduction by thermography{{(-macromolecular ink- or dye-receptive coatings [B41M 5/52-](#))}}
- B41M 5/405
 - • • {characterised by layers cured by radiation (-layers cured after recording [B41M 7/0072-](#))}
- B41M 5/41
 - • • Base layers {supports or substrates}
- B41M 5/42
 - • • Intermediate,{backcoat}, or covering layers{{(-[B41M 5/405](#) takes precedence; multilayer thermal transfer systems in general [B41M 5/38214-](#))}}

NOTE

When the invention information lies in the combination of features covered by more than one of the subgroups of [B41M 5/42](#) , classification is made in [B41M 5/42](#) , using the corresponding indexing codes of its subgroups to identify the individual features

- B41M 5/50
 - Recording sheets characterised by the coating used to improve ink, dye or pigment receptivity, e.g. for ink-jet or thermal dye transfer recording{{(-printing on organic plastics using a printer's form [B41M 1/30](#) ; printing on pre-treated paper with a printer's form [B41M 1/36-](#))}}
- B41M 5/502
 - • {characterised by structural details, e.g. multilayer materials (-supports, backcoats or intermediate layers for thermal dye transfer donor and receiver sheets [B41M 5/41](#) , [B41M 5/42-](#))}
- B41M 7/00**

After-treatment of prints, e.g. heating, irradiating,{setting of the ink, protection of the printed stock (-pre-treatment or treatment during printing [B41M 5/0011](#) ; printers for treating or overcoating copy materials before, during or after printing [B41J 11/0015-](#))}
- B41M 7/02
 - Dusting {e.g. with an anti-offset powder for obtaining raised printing such as by thermogravure (-[B41M 7/0027](#) , [B41M 7/0036](#) , [B41M 7/0045](#) , [B41M 7/0054](#) , [B41M 7/0072](#) , [B41M 7/0081](#) , [B41M 7/009](#) take precedence-); Varnishing (-devices for treating the surfaces of sheets, webs, or other articles in connection with printing [B41F 23/00](#) , [B41L 23/00-](#))}
- B41M 9/00**

Processes wherein make-ready devices are used (-make-ready devices per se [B41N 6/00](#)-)

U B41M 2205/00 **Printing methods or features related to printing methods; Location or type of the layers**

B41M 2205/40

- Cover layers; Layers separated from substrate by imaging layer; Protective layers; Layers applied before imaging (~~protective layers applied after imaging~~ [B41M 7/00](#))

Project: N/A (B41N)**U B41N 1/00** **Printing plates or foils; Materials therefor**

B41N 1/12

- non-metallic other than stone, {e.g. printing plates or foils comprising inorganic materials in an organic matrix (~~[B41N 1/003](#), [B41N 1/006](#) take precedence~~)}

U B41N 3/00 **Preparing for use and conserving printing surfaces**

B41N 3/08

- Damping; ~~Neutralising or similar differentiation treatments for lithographic printing formes; { Gumming or finishing solutions, fountain solutions, correction or deletion fluids, or on-press development (treatment of materials containing silver salts [G03F 7/063](#); developers per se for processing photosensitive materials [G03F 7/32](#))}~~

Project: N/A (B41P)

B41P 2227/00

Mounting or handling printing plates; ~~Forming printing surfaces in situ~~**Project: N/A (B42D)****U B42D 1/00****Books or other bound products (match books [A24F 27/12](#); picture books with additional toy effects [A63H 33/38](#); indexing features [B42F 21/00](#); educational or demonstration appliances [G09B](#), e.g. textbooks for teaching foreign languages [G09B 19/08](#))**

B42D 1/04

- in which the fillings and the spine portions of the covers are secured integrally, e.g. paper-backs ("*livres brochés*", "*Broschüren*") ("*livres brochés*", "*Broschüren*")

U B42D 17/00**Hanging or securing devices for books, newspapers or the like (suspended filing appliances [B42F 15/00](#))**

B42D 17/005

- ~~{Hand-held holders for facilitating the reading of newspapers or the like}~~

Project: N/A (B42F)**U B42F 7/00****Filing appliances without fastening means ([B42F 17/00](#) takes precedence; suspension files [B42F 15/00](#); wallets, notecases, briefcases [A45C](#), e.g. [A45C 1/00](#); furniture features [A47B](#), [A47F](#); envelopes [B65D](#), e.g. [B65D 27/00](#))**

B42F 7/02

- {Filing appliances comprising only one pocket or compartment, e.g.} single gusseted pockets

B42F 7/06

- ~~{Filing appliances comprising a plurality of pockets or compartments, e.g.} portfolios or cases with a plurality of compartments (indexing features [B42F 21/00](#))~~

U B42F 13/00**Filing appliances with means for engaging perforations or slots ([B42F 17/00](#) takes precedence; indexing features [B42F 21/00](#))**

U B42F 13/0006

- {Covers for loose-leaf binders (book covers [B42D 3/00](#))}

B42F 13/004

- ~~{Devices for protecting or reinforcing covers, e.g. edges or corners (attaching said devices [B42C 7/007](#))}~~

U B42F 13/16

- with claws or rings ([B42F 13/30](#) takes precedence; for permanent binding [B42B 5/08](#))

B42F 13/165

- ~~{with flexible or resilient claws or rings (using comb-like elements for permanent binding [B42B 5/10](#); using coils for permanent binding [B42B 5/12](#))}~~

Project: N/A (B43K)

- U B43K 5/00** Pens with ink reservoirs in holders, e.g. fountain-pens (nibs or writing-points with ink reservoirs [B43K 1/01](#); ball-point pens [B43K 7/00](#); pens with writing-points other than nibs or balls [B43K 8/00](#); multiple-point writing implements [B43K 27/00](#))
- U B43K 5/02
B43K 5/06
- Ink reservoirs
 - · with movable pistons {for withdrawing ink from an ink-receptacle-([B43K 5/1818](#) takes precedence)}
- U B43K 7/00** Ball-point pens ({[B43M 11/085](#) takes precedence}); multiple-point writing implements [B43K 27/00](#))
- B43K 7/005
- {-Pen barrels}
- U B43K 8/00** Pens with writing-points other than nibs or balls (brushes with reservoir for supplying substances [A46B 11/00](#))
- U B43K 8/02
B43K 8/028
- with writing-points comprising fibres, felt, or similar porous or capillary material ([B43K 8/22](#) takes precedence)
 - · {-Movable closure or gate}
- U B43K 27/00** Multiple-point writing implements, e.g. multicolour; Combinations of writing implements ([B43K 29/00](#) takes precedence; mechanisms for selecting, projecting, retracting or locking writing units [B43K 24/00](#); multiple writing devices with pantographic linkages [B43L 13/12](#))
- B43K 27/006
- {-Pen or pencil barrels}

Project: N/A (B43L)

- U B43L 25/00** Ink receptacles (liquid receptacles in general [B65D](#), e.g. [B65D 1/00](#))
- B43L 25/004
- {-Ink receptacles with solid ink; Non reversable receptacles}

Project: N/A (B43M)

- U B43M 99/00** Subject matter not provided for in other groups of this subclass
- B43M 99/001
- {-Desk sets (with ink stand [B43L 27/02](#))}
- B43M 99/002
- · {-Tubular fountain pen holders (holders for writing implements [B43K 23/00](#))}
- B43M 99/003
- · · {-with only one penholder}
- B43M 99/004
- · · · {-with magnetic holding means}
- B43M 99/005
- · · · {-with suction holding means}
- B43M 99/006
- · · {-with more than one penholder}
- B43M 99/007
- · {-Stands for pens with tubular or porous writing-points}
- B43M 99/008
- {-Desk-receptacles for holding writing appliances}
- B43M 99/009
- {-Paperclip dispensers or holders}

Project: N/A (B44B)

- B44B 3/00** Artist's machines or apparatus equipped with tools or work holders moving or able to be controlled substantially two- dimensionally for carving, engraving, or guilloching shallow ornamenting or markings (marking or engraving metal by the action of a high concentration of electric current [B23H 9/06](#); forme engraving [B41C](#), [B41D](#); engraving by photo-mechanical reproduction [G03F](#))

Project: N/A (B44C)

- U B44C 1/00** **Processes, not specifically provided for elsewhere, for producing decorative surface effects (decorating textiles [D06Q](#))**
- U B44C 1/16 · for applying transfer pictures or the like
- U B44C 1/165 · · For decalcomanias; sheet material therefor (apparatus or machines for applying decalcomanias [B65C](#))
- U B44C 1/175 · · · Transfer using solvent
- B44C 1/1754 · · · · {-Decalcomanias provided with a layer being specially adapted to facilitate their release from a temporary carrier ([B44C 1/1756](#), [B44C 1/1758](#) take precedence)}

Project: N/A (B44D)**B44D**

PAINTING OR ARTISTIC DRAWING, NOT OTHERWISE PROVIDED FOR; -PRESERVING PAINTINGS; -SURFACE TREATMENT TO OBTAIN SPECIAL ARTISTIC SURFACE EFFECTS OR FINISHES (surface treatment in general, see the relevant places, e.g. applying liquids or other fluent materials [B05](#))
**
**

- U B44D 3/00** **Accessories or implements for use in connection with painting or artistic drawing, not otherwise provided for (hand tools for applying liquids, e.g. paints, to surfaces [B05C 17/00](#), implements for finishing work on buildings, other than painting, [E04F 21/00](#)); Methods or devices for colour determination, selection, or synthesis, e.g. use of colour tables (colorimetry [G01J 3/00](#))**
- U B44D 3/12 · Paint cans; Brush holders; Containers for storing residual paint {(construction details of containers of general type [B65D](#))}
- B44D 3/127 · · {-Covers or lids for paint cans (covers or lids for containers of general type [B65D](#))}
- U B44D 3/16 · Implements or apparatus for removing dry paint from surfaces, e.g. by scraping, by burning (chemical paint-removers [C09D 9/00](#))
- U B44D 3/166 · · {by heating, e.g. by burning}
- B44D 3/168 · · · {-by electrically heating (air heaters using electric energy supply, the air being in direct contact with the heating medium, [F24H 3/0405](#))}
- B44D 5/00** **{Surface treatment to obtain special artistic surface effects or finishes (pretreatment or after-treatment of surface coated by applying liquids [B05D 3/00](#); obtaining special surface effects by applying liquids or other fluent materials to surfaces [B05D 5/00](#); surface shaping of plastics, e.g. embossing, [B29C 59/00](#))}**

Project: N/A (B44F)

- U B44F 1/00** **Designs or pictures characterised by special or unusual light effects**
- U B44F 1/06 · produced by transmitted light, e.g. transparencies, imitations of glass paintings
- B44F 1/066 · · {comprising at least two transparent elements, e.g. sheets, layers (-layered products of glass and synthetic resin containing decorations or patterns [B32B 17/10247](#) ; window units comprising two or more parallel glass panes [E06B 3/66](#)-)}
- B44F 5/00** **Designs characterised by irregular areas, e.g. mottled patterns (-imitating natural patterns or artistic work [B44F 9/00](#) , [B44F 11/00](#)-)**

Project: N/A (B60B)

- U B60B 1/00 Spoked wheels; Spokes thereof (non-metallic [B60B 5/00](#) {; spoked wheels comprising rail-engaging elements [B60B 17/001](#); making wheel spokes [B21F 39/00](#))**
- B60B 1/003 · {-specially adapted for bicycles ([B60B 1/041](#) takes precedence)}
- B60B 1/006 · {-specially adapted for light-weight wheels, e.g. of strollers or wheel-chairs ([B60B 1/003](#) takes precedence)}
- U B60B 1/02** · Wheels with wire or other tension spokes
- B60B 1/0207 · {-characterised by non-standard number of spokes, i.e. less than 12 or more than 32 spokes}
- B60B 1/0215 · {-characterised by specific grouping of spokes}
- B60B 1/0223 · . . {-the dominant aspect being the spoke arrangement pattern}
- B60B 1/023 · . . . {-multiple exclusively parallel spokes arranged in a group}
- B60B 1/0238 · . . {-the dominant aspect being the number of spokes per group}
- B60B 1/0246 · . {-characterised by cross-section of the spoke, e.g. polygon or elliptic shape}
- B60B 1/0253 · . {-the spoke being hollow}
- B60B 1/0261 · . {-characterised by spoke form}
- B60B 1/0269 · . . {-the spoke being curved or deformed over substantial part of length}
- B60B 1/0276 · . . {-the spoke being crooked in the middle and having double length}
- B60B 1/0284 · . . {-the spoke being threaded at both ends}
- B60B 1/0292 · . . {-the spoke being bent at both ends}
- U B60B 1/04** · Attaching spokes to rim or hub
- B60B 1/041 · . . {-of bicycle wheels (bicycle rims characterised by means for attaching spokes [B60B 21/062](#))}
- B60B 1/042 · . . {-Attaching spokes to hub}
- B60B 1/043 · . . {-Attaching spokes to rim}
- B60B 1/044 · . . . {-by the use of spoke nipples}
- B60B 1/045 · {-characterised by their specific shape}
- B60B 1/046 · {-characterised by adaptations of the nipple for tightening tools}
- B60B 1/047 · {-the nipple comprising sealing means}
- B60B 1/048 · {-by the use of screws}
- U B60B 3/00 Disc wheels, i.e. wheels with load-supporting disc body (non-metallic [B60B 5/00](#); wheel cover discs [B60B 7/00](#) {; disc wheels comprising rail-engaging elements [B60B 17/0006](#))**
- B60B 3/001 · {-Lightweight wheels, e.g. for strollers or toys}
- B60B 3/002 · {-characterised by the shape of the disc}
- B60B 3/004 · . {-in the hub section}
- B60B 3/005 · . {-in the section adjacent to rim}
- B60B 3/007 · . {-in the intermediate section}
- B60B 3/008 · {-by the form of wheel bolt mounting section}
- U B60B 3/04** · with a single disc body not integral with rim, { i.e. disc body and rim being manufactured independently and then permanently attached to each other in a second step, e.g. by welding}
- B60B 3/041 · . {-characterised by the attachment of rim to wheel disc}
- B60B 3/042 · . . {-characterised by circumferential position of attachment means}
- B60B 3/044 · . . {-characterised by cross-sectional details of the attachment, e.g. the profile}

- U B60B 3/08
 - with disc body formed by two or more axially spaced discs {{comprising rail-engaging elements formed by two or more axially spaced discs [B60B 17/0013](#)}}
- B60B 3/085
 - · {-Discs having no mutual contact}
- B60B 3/087
 - · {-Discs having several mutual contact regions}
- U B60B 3/14
 - Attaching disc body to hub (resiliently [B60B 9/00](#); attaching rim to wheel body [B60B 23/00](#)){Wheel adapters}
- B60B 3/142
 - · {-by central locking nut}
- B60B 3/145
 - · {-using washers or distance bushes}
- B60B 3/147
 - · {-using wheel adapters}
- U B60B 3/16
 - · by bolts or the like
- B60B 3/165
 - · · {-with locking devices for the fixing means, e.g. screw or nut covers}
- U B60B 7/00**

Wheel cover discs, rings, or the like, for ornamenting, protecting, {venting,} or obscuring, wholly or in part, the wheel body, rim, hub, or tyre sidewall {e.g. wheel cover discs, wheel cover discs with cooling fins (wheels with cooling fins not provided on the wheel cover disc [B60B 19/10](#); apparatus or tools for removing or attaching cover discs hub caps or the like [B60B 31/06](#))}
- B60B 7/0013
 - {-Hub caps}
- B60B 7/002
 - · {-being of the ventilated type}
- B60B 7/0026
 - {-characterised by the surface}
- B60B 7/0033
 - · {-the dominant aspect being the surface appearance}
- B60B 7/004
 - · · {-the surface being painted}
- B60B 7/0046
 - · · {-the surface being plated or coated}
- B60B 7/0053
 - · · {-the surface being decorated}
- B60B 7/006
 - · · {-the surface being reflective or including lighting}
- B60B 7/0066
 - · {-the dominant aspect being the surface structure}
- B60B 7/0073
 - · · {-being completely closed, i.e. having no cooling openings for the brakes}
- B60B 7/008
 - · · {-having decorative holes or openings, i.e. openings going beyond mere cooling openings}
- B60B 7/0086
 - · · {-having cooling fins}
- B60B 7/0093
 - {-being reinforced against thermal deformation}
- U B60B 7/06
 - Fastening arrangements therefor ([B60B 7/01](#), [B60B 7/20](#) take precedence)
- B60B 7/061
 - · {-characterised by the part of the wheels to which the discs, rings or the like are mounted}
- B60B 7/063
 - · · {-to the rim}
- B60B 7/065
 - · · {-to the disc}
- B60B 7/066
 - · · {-to the hub}
- B60B 7/068
 - · · {-to the wheel bolts or wheel nuts}
- U B60B 15/00**

Wheels or wheel attachments designed for increasing traction (vehicle tires [B60C](#); non-skid devices temporarily attachable to resilient tires or resiliently-tired wheels [B60C](#))
- U B60B 15/02
 - Wheels with spade lugs
- B60B 15/023
 - · {-being of the broad form type}
- B60B 15/025
 - · · {-with non-cylindrical shape}
- B60B 15/026
 - · {-characterised by mud deposit prevention}
- B60B 15/028
 - · {-characterised by active rotation of the lugs}

- U B60B 15/26
- Auxiliary wheels or rings with traction-increasing surface attachable to the main wheel body
- B60B 15/263
- • {Traction increasing surface being located axially beside tire}
- B60B 15/266
- • {Traction increasing surface being located radially outside tire circumferential surface}
- U B60B 17/00** **Wheels characterised by rail-engaging elements ({wheel-axle combinations [B60B 37/00](#);} of model railways [A63H 19/22](#))**
- U B60B 17/0006
- {Construction of wheel bodies, e.g. disc wheels ([B60B 17/0003](#) takes precedence)}
- B60B 17/0024
- • {with noise reducing means ([B60B 17/0017](#) takes precedence)}
- U B60B 17/0027
- {Resilient wheels, e.g. resilient hubs ([B60B 17/02](#) takes precedence)}
- U B60B 17/0031
- • {using springs}
- U B60B 17/0034
- • • {of rubber or other non-metallic material}
- B60B 17/0037
- • • • {of circular or elliptical cross section}
- B60B 17/0041
- • • • {of substantially rectangular cross section}
- B60B 17/0044
- • • • {single element arranged in V-form}
- B60B 17/0048
- • • • {pair of elements arranged in V-form}
- B60B 17/0055
- {with non-elastic tyres (*e.g. of particular profile or composition*)}~~{e.g. of particular profile or composition}~~
- B60B 17/0062
- • {having teeth or protrusions on the circumference of the wheel}
- B60B 17/0065
- {Flange details}
- B60B 17/0068
- • {the flange being provided on a single side}
- B60B 17/0072
- • {the flange being provided on both sides}
- B60B 17/0075
- • {the flange being movable, for adaptation to variable rail or track widths}
- B60B 17/0079
- {the flange having a guide wheel}
- B60B 17/0082
- {Wheels designed to interact with a particular rail profile}
- B60B 17/0086
- • {H-type rail profiles, i.e. the wheels are arranged between upper and lower rail extensions}
- B60B 17/0089
- • {Circular rail profiles}
- B60B 17/0093
- • {Rectangular rail profiles}
- B60B 17/0096
- • {Triangular rail profiles}
- U B60B 19/00** **Wheels not otherwise provided for or having characteristics specified in one of the sub-groups of this group**
- B60B 19/003
- {Multidirectional wheels}
- B60B 19/006
- {Magnetic wheels}
- U B60B 19/12
- Roller-type wheels ([B60B 19/06](#) takes precedence)
- B60B 19/125
- • {with helical projections on radial outer surface translating rotation of wheel into movement along the direction of the wheel axle}
- U B60B 21/00** **Rims (non-metallic [B60B 5/00](#); of high resiliency [B60B 9/00](#); capable of carrying more than one tyre [B60B 11/04](#); multiple rims on a single wheel body [B60B 11/06](#); of multi-part type [B60B 25/00](#); metal tyres [B60C](#))**
- U B60B 21/02
- characterised by transverse section
- B60B 21/023
- • {the transverse section being non-symmetrical}
- B60B 21/025
- • {the transverse section being hollow}
- B60B 21/026
- • {the shape of rim well}
- B60B 21/028
- • {the shape of hump}

- U B60B 21/06 · characterised by means for attaching spokes {, i.e. spoke seats}
- B60B 21/064 · · {-characterised by shape of spoke mounting holes, e.g. elliptical or triangular}
- B60B 21/066 · · {-the spoke mounting means being located on a flange oriented radially and formed on the radially inner side of the rim well}
- B60B 21/068 · · {-the spoke seat comprising sealing means, e.g. for tubeless racing bike tyres}
- U B60B 21/10 · characterised by the form of tyre-seat or flange, e.g. corrugated ([B60B 21/02](#) takes precedence)
- B60B 21/102 · · {-the shape of bead seats}
- B60B 21/104 · · {-the shape of flanges}
- B60B 21/106 · · · {-the shape of flange end-sections}
- B60B 21/108 · · {-the surface of bead seats}
- U B60B 25/00** **Rims built up of several main parts {Locking means for the rim parts}{tools for assembling divided rims [B60B 31/04](#)}**
- B60B 25/002 · {-Rims split in circumferential direction}
- B60B 25/004 · · {-one rim part comprising the wheel disc}
- B60B 25/006 · · {-Rims split symmetrically}
- B60B 25/008 · · {-comprising spacer means}
- U B60B 27/00** **Hubs (non-metallic [B60B 5/00](#); of high resiliency [B60B 9/00](#))**
- B60B 27/0015 · {-for driven wheels}
- B60B 27/0021 · · {-characterised by torque transmission means from drive axle}
- B60B 27/0026 · · · {-of the radial type, e.g. splined key}
- B60B 27/0031 · · · {-of the axial type, e.g. front teeth}
- B60B 27/0036 · · {-comprising homokinetic joints}
- B60B 27/0042 · · · {-characterised by the fixation of the homokinetic joint to the hub}
- B60B 27/0047 · {-characterised by functional integration of other elements}
- B60B 27/0052 · · {-the element being a brake disc}
- B60B 27/0057 · · {-the element being a brake drum}
- B60B 27/0063 · · {-the element being a brake caliper mount}
- B60B 27/0068 · · {-the element being a sensor}
- B60B 27/0073 · {-characterised by sealing means}
- B60B 27/0078 · {-characterised by the fixation of bearings}
- B60B 27/0084 · · {-caulking to fix inner race}
- B60B 27/0089 · · {-caulking to fix outer race}
- B60B 27/0094 · {-one or more of the bearing races are formed by the hub}
- U B60B 27/02 · adapted to be rotatably arranged on axle
- B60B 27/023 · · {-specially adapted for bicycles}
- B60B 27/026 · · · {-comprising quick release devices}
- U B60B 27/04 · · housing driving means, e.g. sprockets
- B60B 27/042 · · · {-comprising a rotational dampers}
- B60B 27/045 · · · {-comprising a spoke protectors}
- B60B 27/047 · · · {-comprising a freewheel mechanisms}
- U B60B 27/06 · adapted to be fixed on axle
- B60B 27/065 · · {-characterised by the fixation of the hub to the axle}

- U B60B 33/00 Castors in general; {Anti-clogging castors}{castors for large containers B65D 90/18}**
- U B60B 33/0002 · {assembling to the object, e.g. furniture}
 - B60B 33/0005 · · {characterised by mounting method}
 - B60B 33/0007 · · · {by screwing}
 - B60B 33/001 · · · {by snapping, clicking or latching in}
 - B60B 33/0013 · · · {by straps, bands or similar}
 - B60B 33/0015 · · {characterised by adaptations made to castor}
 - B60B 33/0018 · · · {in the form of a flat mounting plate}
 - B60B 33/0021 · · · {in the form of a mounting pin}
 - B60B 33/0023 · · · {in the form of specific adaptations to the form of the object}
 - B60B 33/0026 · · {characterised by adaptations made to the object}
 - B60B 33/0036 · {characterised by type of wheels}
 - B60B 33/0039 · · {Single wheels}
 - B60B 33/0042 · · {Double or twin wheels}
 - B60B 33/0044 · · {Roller type wheels, i.e. extra wide wheels}
 - B60B 33/0047 · {characterised by details of the rolling axle}
 - B60B 33/0049 · · {the rolling axle being horizontal}
 - B60B 33/0052 · · {the rolling axle being inclined}
 - B60B 33/0055 · · {the rolling axle intersects swivel axis}
 - B60B 33/0057 · · {the rolling axle being offset from swivel axis}
 - B60B 33/006 · {characterised by details of the swivel mechanism}
 - B60B 33/0063 · · {no swivelling action, i.e. no real caster}
 - B60B 33/0065 · · {characterised by details of the swivel axis}
 - B60B 33/0068 · · · {the swivel axis being vertical}
 - B60B 33/0071 · · · {the swivel axis being inclined}
 - B60B 33/0073 · · · {the swivel axis being symmetrical to wheel or wheels}
 - B60B 33/0076 · · · {the swivel axis being offset laterally from wheel center plane}
 - B60B 33/0078 · {characterised by details of the wheel braking mechanism}
 - B60B 33/0081 · · {acting on tire tread}
 - B60B 33/0084 · · {acting on axle end}
 - B60B 33/0086 · · {acting on rim or side portion of tyre}
 - B60B 33/0089 · · {acting on the floor}
 - B60B 33/0092 · · {actuated remotely, e.g. by cable or electrically}
 - B60B 33/0094 · · {actuated automatically}
 - B60B 33/0097 · · {acting permanently, e.g. for increased security on low friction surfaces}
 - U B60B 33/02 · with disengageable swivel action, { i.e. comprising a swivel locking mechanism}
 - B60B 33/023 · · {by using friction}
 - B60B 33/025 · · {by using form-fit, e.g. front teeth}
 - B60B 33/026 · · {being actuated remotely, e.g. by cable or electrically}
 - B60B 33/028 · · {being actuated automatically}
 - U B60B 33/04 · adjustable {, e.g. in height; linearly shifting castors}
 - U B60B 33/06 · · mounted retractably
 - B60B 33/063 · · · {by linear movement parallel to swivel axis}

- B60B 33/066
 - • • {by use of a hinge and lever mechanism to swing wheel upwards relative to wheel mount}
- U B60B 35/00 Axle units; Parts thereof (steerable vehicle stub axles [B62D](#)){ Arrangements for lubrication of axles}**
- B60B 35/001
 - {Axles of the portal type, i.e. axles designed for higher ground clearance}
- B60B 35/002
 - {Axles of the low floor type, e.g. for low-floor city busses}
- B60B 35/003
 - {Steerable axles}
- B60B 35/004
 - {Mounting arrangements for axles}
- B60B 35/005
 - • {with adaptations at chassis structure}
- B60B 35/006
 - • {with mounting plates or consoles fitted to axles}
- B60B 35/007
 - • • {for mounting suspension elements to axles}
- B60B 35/008
 - • • {for mounting air suspension elements to axles}
- B60B 35/009
 - {adapted for tiltable wheels}
- U B60B 35/02 Dead axles, i.e. not transmitting torque**
- B60B 35/025
 - • {the wheels being removable}
- U B60B 35/10 adjustable for varying track {(tools for axial movement of wheels on axles [B60B 29/008](#))}**
- B60B 35/1009
 - • • {operated manually}
- B60B 35/1018
 - • • • {comprising a locking pin}
- B60B 35/1027
 - • • • {comprising a clamping mechanism}
- B60B 35/1036
 - • • {operated with power assistance}
- B60B 35/1045
 - • • • {electrically}
- B60B 35/1054
 - • • • {hydraulically}
- B60B 35/1063
 - • • • {automatically dependent on operational state of the vehicle}
- B60B 35/1072
 - • • {by transversally movable elements}
- B60B 35/1081
 - • • • {the element is a wheel}
- B60B 35/109
 - • • • {the element is an axle part}
- U B60B 35/12 Torque-transmitting axles (independent suspension aspects [B60G](#))**
- B60B 35/121
 - • {Power-transmission from drive shaft to hub}
- B60B 35/122
 - • • {using gearings}
- B60B 35/124
 - • • • {of the helical or worm type}
- B60B 35/125
 - • • • {of the planetary type}
- B60B 35/127
 - • • {using universal joints}
- B60B 35/128
 - • • • {of the homokinetic or constant velocity type}
- U B60B 35/16 Axle housings**
- B60B 35/163
 - • • {characterised by specific shape of the housing, e.g. adaptations to give space for other vehicle elements like chassis or exhaust system}
- B60B 35/166
 - • • {characterised by reinforcements, e.g. reinforcement ribs}
- U B60B 39/00 Increasing wheel adhesion (wheels, wheel attachments or tyre attachments, designed for increasing traction [B60B 15/00](#), [B60C](#); tyre constructions [B60C](#); road surface conditioning to prevent slipperiness [E01C](#))**
- U B60B 39/003**
 - {Vehicle mounted non-skid chains actuated by centrifugal force (non-skid devices temporarily attachable to resilient tyres [B60C 27/00](#))}
- B60B 39/006
 - • {characterised by a control system for the actuation of the rotating chain wheel}
- U B60B 39/02 Vehicle fittings for scattering or dispensing material in front of its wheels**

- B60B 39/021 · · {-Details of the dispensing device}
- B60B 39/022 · · · {-related to reservoirs}
- B60B 39/023 · · · {-related to metering valves}
- B60B 39/024 · · · {-related to preconditioning of the dispensing materials}
- B60B 39/025 · · · {-related to the control system}
- B60B 39/026 · · {-the material being in gas form}
- B60B 39/027 · · · {-the gas being heated on purpose}
- B60B 39/028 · · · {-the gas being exhaust gas}
- U B60B 39/04 · · the material being granular, e.g. sand (combined control of sanding apparatus and brakes of rail vehicles [B61H](#))
- U B60B 39/08 · · · the dispensing being effected by fluid means
- B60B 39/083 · · · · {-dispensing being effected by liquid}
- B60B 39/086 · · · · {-dispensing being effected by gas}

Project: N/A (B60C)**B60C**

VEHICLE TYRES (-manufacture [B29](#)); **TYRE INFLATION; TYRE CHANGING OR REPAIRING; REPAIRING, OR CONNECTING VALVES TO, INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES** (-testing of tyres [G01M 17/02](#))

NOTES

In this subclass, the term "tyre" is to be understood as a separate ground-engaging, continuous element outside the periphery of the wheel rim and includes the tyre casing, cover, or jacket and any insert, e.g. inner tube. In the groups relating to repair or connection of valves, the term "tyre" is to be understood to include also inflatable elastic bodies other than tyres or inner tubes

Attention is drawn to the note following the title of class [B60](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

B60C 11/113	covered by
B60C 11/0311	
B60C 11/117	covered by
B60C 11/032	

B60C 3/00

Tyres characterised by the transverse section (-characterised by rail-engaging elements [B60B 17/00](#)-)

- B60C 3/04 · characterised by the relative dimensions of the section, e.g. low profile (-[B60C 3/06](#) takes precedence-)
- B60C 3/06 · Asymmetric{(-asymmetric bead seats [B60C 15/0236](#) ; asymmetric bead reinforcement [B60C 2015/0696](#)-)}
- B60C 3/08 · collapsible into storage or non-use condition, e.g. space-saving spare tyres (-run-flat tyres [B60C 17/08](#)-)

B60C 5/00

Inflatable pneumatic tyres or inner tubes (-[B60C 1/00](#) , [B60C 9/00](#) to [B60C 17/00](#) take precedence)

- B60C 5/004 · {filled at least partially with liquid} (-[B60C 19/12](#) takes precedence-)
- B60C 5/02 · having separate inflatable inserts, e.g. with inner tubes; Means for lubricating, venting, preventing relative movement between tyre and inner tube (-[B60C 5/20](#) takes precedence-)

- B60C 5/025
- {separated by a part of the tyre (-inflatable inserts with several inflatable chambers [B60C 5/20](#)-)}
- B60C 5/04
- • Shape or construction of inflatable inserts (-[B60C 5/10](#) takes precedence-)
- B60C 5/12
- without separate inflatable inserts, e.g. tubeless tyres with transverse section open to the rim (-[B60C 5/20](#) takes precedence-)
- B60C 5/14
- • with impervious liner or coating on the inner wall of the tyre (-**B60C21/04** , **B60C21/08** take precedence-)
- B60C 5/20
- having multiple separate inflatable chambers (-with additional tubes which become load supporting in emergency [B60C 17/02](#)-)
- B60C 7/00**
- Non-inflatable or solid tyres (-[B60C 1/00](#) takes precedence; tyres or rims characterised by rail engaging elements [B60B 17/00](#)-)**
- B60C 7/10
- characterised by means for increasing resiliency (-highly resilient wheels [B60B 9/00](#)-)
- B60C 7/12
- • using enclosed chambers, e.g. gas-filled (-inflatable tyres [B60C 5/00](#)-)
- B60C 9/00**
- Reinforcements or ply arrangement of pneumatic tyres (-inserts having reinforcing means [B60C 5/08](#) ; bead structure, e.g. turnout or overlap construction, [B60C 15/00](#) ; tyre cords per se [D02G 3/48](#) ; fabrics per se [D03D](#) , [D04H](#) ; metal ropes or cables per se [D07B 1/06](#)-){B}**
- NOTE
- When classifying in this group, classification is also made in subclass [B32B](#) insofar as any layered product is concerned
- U B60C 9/02
- Carcasses
- B60C 9/0292
- • {Carcass ply curvature (-sidewall curvature [B60C 13/003](#)-)}
- U B60C 9/04
- • the reinforcing cords of each carcass ply arranged in a substantially parallel relationship
- B60C 9/06
- • • the cords extend diagonally from bead to bead and run in opposite directions in each successive carcass ply, i.e. bias angle ply (-[B60C 9/07](#) , [B60C 9/09](#) take precedence-)
- B60C 9/08
- • • the cords extend transversely from bead to bead, i.e. radial ply (-[B60C 9/07](#) takes precedence-)
- U B60C 9/18
- Structure or arrangement of belts or breakers, crown-reinforcing or cushioning layers
- B60C 9/1835
- • {Rubber strips or cushions at the belt edges (-compositions [B60C 2001/0075](#)-)}
- B60C 9/28
- • characterised by the belt or breaker dimensions or curvature relative to carcass (-[B60C 9/30](#) takes precedence-)
- U B60C 11/00**
- Tyre tread bands; Tread patterns; Anti-skid inserts**
- B60C 11/01
- Shape of the shoulders between tread and sidewall, e.g. rounded, stepped, cantilevered (-arrangements of grooves or ribs on the sidewalls [B60C 13/02](#)-)
- U B60C 11/03
- Tread patterns
- B60C 11/04
- • in which the raised area of the pattern consists only of continuous circumferential ribs, e.g. zig-zag (-[B60C 11/12](#) , [B60C 11/13](#) take precedence-)
- B60C 11/11
- • in which the raised area of the pattern consists only of isolated elements, e.g. blocks (-[B60C 11/12](#) , [B60C 11/13](#) take precedence-)
- U B60C 11/14
- Anti-skid inserts, e.g. vulcanised into the tread band
- B60C 11/18
- • of strip form, e.g. metallic combs, rubber strips of different wear resistance (-[B60C 11/20](#) takes precedence-)

- U B60C 11/24 · Wear-indicating arrangements
 B60C 11/246 · · {Tread wear monitoring systems (-tyre pressure monitoring [B60C 23/04-](#))}
- B60C 13/00** **Tyre sidewalls; Protecting, decorating, marking, or the like, thereof (-[B60C 17/08](#) takes precedence; tyre shoulders [B60C 11/01-](#))**
 B60C 13/003 · {characterised by sidewall curvature (-carcass ply curvature [B60C 9/0292-](#))}
- U B60C 15/00** **Tyre beads, e.g. ply turn-up or overlap**
 B60C 15/02 · Seating or securing beads on rims (-sealing means between beads and rims of tubeless tyres [B60C 5/16](#) ; means for securing solid tyres on rims [B60C 7/24](#) ; rims [B60B 21/00-](#))
 B60C 15/0203 · · {using axially extending bead seating, i.e. the bead and the lower sidewall portion extend in the axial direction (-[B60C 15/0206](#) takes precedence-)}
 B60C 15/0236 · · {Asymmetric bead seats, e.g. different bead diameter or inclination angle (-asymmetric transverse section [B60C 3/06](#) ; asymmetric bead reinforcement [B60C 2015/0696-](#))}
 B60C 15/028 · · Spacers between beads (-emergency load supporting means [B60C 17/00-](#))
 B60C 15/04 · Bead cores (-producing bead-rings or bead-cores for tyres [B29D 30/48-](#))
 B60C 15/06 · Flipper strips, fillers, or chafing strips {and reinforcing layers for the construction of the bead}
 B60C 15/0603 · · {characterised by features of the bead filler or apex (-compositions of the apex rubber [B60C 2001/0058-](#))}
- B60C 17/00** **Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor (-having multiple separate inflatable chambers [B60C 5/20](#) ; ~~additional shear belt layers [B60C9/18K](#) ;~~ ~~additional shear belt layers [B60C9/18K](#) ;~~)**
- U B60C 17/04 · utilising additional non-inflatable supports which become load-supporting in emergency
 U B60C 17/06 · · resilient
 B60C 17/065 · · · {made-up of foam inserts (-tyres filled with foam [B60C 5/002-](#))}
 B60C 17/08 · Means facilitating folding of sidewalls, e.g. run-flat sidewalls (-for storage purposes [B60C 3/08-](#))
- U B60C 19/00** **Tyre parts or constructions not otherwise provided for**
 B60C 19/12 · Puncture preventing arrangements (-[B60C 9/00](#) takes precedence; inflatable inserts having reinforcing means [B60C 5/08-](#)); { sealing compositions per se [B29C 73/163](#) ; devices for introducing sealing compositions into the tyre [B29C 73/166-](#)}
- B60C 23/00** **Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles (-measuring in general [G01](#) , e.g. [G01L 17/00](#) ; remote signalling in general [G08-](#)); Arrangement of tyre inflating devices on vehicles, e.g. of pumps, of tanks(-supplying air for tyre inflation [B60S 5/04-](#)); Tyre cooling arrangements**
 B60C 23/02 · Signalling devices actuated by tyre pressure(-hand-held tyre pressure gauges [G01L 17/00-](#))
- U B60C 23/04 · · mounted on the wheel or tyre
 U B60C 23/0401 · · · {characterised by the type of alarm}
 B60C 23/0406 · · · · {Alarms noticeable from outside the vehicle, e.g. indication in side mirror, front light or audible alarms (-[B60C 23/0403](#) , [B60C 23/0405](#) take precedence-)}

- U B60C 23/0408 . . . {transmitting the signals by non-mechanical means from the wheel or tyre to a vehicle body mounted receiver}
- U B60C 23/0422 {characterised by the type of signal transmission means}
- U B60C 23/0433 {Radio signals}
- U B60C 23/0447 {Wheel or tyre mounted circuits}

NOTE**B60C23/04D12** and subgroups only

- B60C 23/0449 {Passive transducers, e.g. using surface acoustic waves, backscatter technology or pressure sensitive resonators (-near field passive transducers [B60C 23/0428](#)-)}
- B60C 23/0452 {Antenna structure, control or arrangement (-vehicle tyre mounted antennas [H01Q 1/2241](#)-)}
- U B60C 23/0491 . . . {Constructional details of means for attaching the control device}
- B60C 23/0498 {for rim attachments (-[B60C 23/0494](#) , [B60C 23/0496](#) take precedence-)}
- U B60C 23/06 . . . Signalling devices actuated by deformation of the tyre,{e.g. tyre mounted deformation sensors or indirect determination of tyre deformation based on wheel speed, wheel-centre to ground distance or inclination of wheel axle}
- B60C 23/061 . . {by monitoring wheel speed (-measuring distance traversed on the ground by vehicles [G01C 22/00](#)-)}
- B60C 23/063 . . {Generating directly an audible signal by deformation of the tyre (-by touching the ground [B60C 23/085](#)-)}
- B60C 23/065 . . {by monitoring vibrations in tyres or suspensions (-[B60C 23/062](#) takes precedence-)}
- B60C 23/10 . . Arrangements of tyre-inflating pumps mounted on vehicles{(-[B60C 23/001](#) takes precedence-)}
- B60C 23/16 . . Arrangements of air tanks mounted on vehicles{(-[B60C 23/001](#) takes precedence-)}
- B60C 23/18 . . Tyre cooling arrangements {e.g. heat shields (-wheels with cooling fins [B60B 19/10](#)-)}
- B60C 23/20 . . Devices for measuring or signalling tyre temperature {only}

B60C 25/00

Apparatus or tools adapted for mounting, removing, repairing or inspecting pneumatic or solid tyres (-apparatus or tools for mounting or dismounting wheels [B60B 29/00](#) ; apparatus or tools characterised by the means for holding wheels or parts thereof [B60B 30/00](#)-)

- U B60C 25/002 . {Inspecting tyres}
- NOTE**
When classifying in this group, classification is also made in the appropriate subgroups of [B60C 25/0548](#)
- B60C 25/007 . . {outside surface (-measuring profile depth [G01B 11/22](#)-)}
 - U B60C 25/01 . . for manually removing tyres from or mounting tyres on wheels
 - B60C 25/02 . . Tyre levers or the like, i.e. hand-held (-machine operated [B60C 25/05](#)-)
 - B60C 25/05 . . Machines,{i.e. motorized devices, e.g. for mounting, demounting (matching of tyres with rims, i.e. conjoint balancing [G01M](#))}
 - B60C 25/132 . . . for removing and mounting tyres (-for only seating the beads [B60C 25/12](#) ; for only breaking the beads [B60C 25/125](#) ; { for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims [B60C 25/145](#) })

- B60C 27/00** **Non-skid devices temporarily attachable to resilient tyres or resiliently-tyred wheels**{(-vehicle mounted non-skid chains [B60B 39/00](#)-)}
- B60C 27/02 · extending over restricted arcuate parts of the circumference of the tread {(-[B60C 27/20](#) takes precedence-)}
- B60C 27/0207 · {involving lugs or rings taking up wear, e.g. chain links, chain connectors}{(-chain couplings for e.g. hoisting [F16G 15/00](#)-)}
- U B60C 27/04 · · the ground-engaging part being rigid
- B60C 27/045 · · · {involving retractable devices}{(-fixing of spade lugs [B60B 15/00](#)-)}
- B60C 27/06 · extending over the complete circumference of the tread, e.g. made of chains {or cables}{(-[B60C 27/20](#) takes precedence-)}
- B60C 27/08 · · involving lugs or rings taking up wear,{e.g. chain links, chain connectors}{(-chain couplings for e.g. hoisting [F16G 15/00](#)-)}
- U B60C 27/10 · · {provided with}tensioning means
- B60C 27/12 · · · resilient {pretension}
- B60C 27/16 · · formed of close material, e.g. leather {or synthetic mats}
- B60C 27/18 · · · the material being fabric, e.g. woven wire {or textile}
- B60C 27/22 · for tandem tyres (endless-track features [B62D](#))
- B60C 29/00** **Arrangements of tyre-inflating valves to tyres or rims; Accessories for tyre-inflating valves, not otherwise provided for** (-tools for mounting or demounting valves [B60C 25/18](#) ; valves per se, valve dust caps [F16K](#)-)
- B60C 29/04 · Connection to tyres {or inner tubes}
- B60C 29/06 · Accessories for tyre-inflating valves, e.g. housings, guards, covers for valve caps, locks, not otherwise provided for{(-[B60C 23/0496](#) takes precedence; tools for screwing and unscrewing valve caps [B25B 27/0057](#) ; pump connectors [F04B 33/005](#)-)}
- B60C 29/062 · · {for filling a tyre with particular materials, e.g. liquids}{(-[B60C 5/004](#) , [B60C 5/005](#) take precedence-)}

Project: N/A (B60D)

- U **B60D 1/00** **Traction couplings; Hitches; Draw-gear; Towing devices (devices specially adapted for connection between tractors and agricultural machines or implements** [A01B 59/00](#); fifth-wheel couplings [B62D](#))
- U B60D 1/01 · Traction couplings or hitches characterised by their type
- B60D 1/015 · · {Fifth wheel couplings}
- U B60D 1/02 · · Bolt or shackle-type couplings
- B60D 1/025 · · · {comprising release or locking lever pins}
- U B60D 1/07 · · Multi-hitch devices, i.e. comprising several hitches of the same or of a different type; Hitch-adaptors, i.e. for converting hitches from one type to another
- B60D 1/075 · · · {Hitch-adaptors}
- U B60D 1/14 · Draw-gear or towing devices characterised by their type
- B60D 1/143 · · {characterised by the mounting of the draw-gear on the towed vehicle ([B60D 1/187](#) takes precedence)}
- U B60D 1/167 · · consisting of articulated or rigidly assembled bars or tubes forming a V-, Y-, or U-shaped draw gear ([B60D 1/173](#) takes precedence)
- B60D 1/1675 · · · {comprising extendable, retractable or foldable members}
- U B60D 1/24 · characterised by arrangements for particular functions
- B60D 1/241 · · {for suppressing noise generation}

- B60D 1/242
 - • {-for supporting braking actions, e.g. braking means integrated with hitches; Braking sensors}
- B60D 1/243
 - • {-for protection in case of crash, collision, impact, or the like}
- B60D 1/244
 - • • {-involving weakened zones in the hitches}
- B60D 1/245
 - • {-for facilitating push back or parking of trailers}
- B60D 1/246
 - • {-for actuating the hitch by powered means}
- B60D 1/247
 - • {-for improving weight distribution}
- B60D 1/248
 - • {-for measuring, indicating or displaying the weight}
- B60D 1/249
 - • {-for damping in the pulling direction and being integrated with the hitch, e.g. resilient dampers integrated with the hitch}
- U B60D 1/30
 - • for sway control, { e.g. stabilising or anti-fishtail devices; Sway alarm means}
- B60D 1/305
 - • • {-Sway alarm means}
- B60D 1/36
 - • for facilitating connection, e.g. hitch catchers {, visual guide means, signalling aids-([B60D 1/465](#) takes precedence; vehicle signalling in general [B60Q](#); optical arrangements specially adapted for viewing trailer-hitches [B60R 1/003](#))}
- U B60D 1/363
 - • • {-Hitch guiding or catching elements, e.g. V-shaped plates partially surrounding a coupling member for guiding the other coupling member}
- B60D 1/366
 - • • • {-comprising braking means}
- U B60D 1/48
 - characterised by the mounting
- B60D 1/481
 - • {-adapted for being mounted to the front and back of trailers, carts, trolleys, or the like to form a train}
- B60D 1/483
 - • {-adapted for being mounted to the side of a vehicle}
- B60D 1/485
 - • {-mounted by means of transversal members attached to the frame of a vehicle}
- B60D 1/486
 - • {-adapted for being mounted to the wheel axle of the vehicle}
- B60D 1/488
 - • {-mounted directly to the chassis of the towing vehicle}
- U B60D 1/56
 - • securing to the vehicle bumper
- B60D 1/565
 - • • {-having an eyelet}
- U B60D 1/58
 - Auxiliary devices
- B60D 1/583
 - • {-Holding down means, e.g. holding down retainers}
- B60D 1/586
 - • {-Lubrication means}
- U B60D 1/60
 - • Covers, caps or guards {e.g. comprising anti-theft devices}
- B60D 1/605
 - • • {-Protection caps}
- U B60D 1/66
 - • Props
- B60D 1/665
 - • • {-comprising supporting wheels, e.g. dollies}
- U **B60D 5/00**
 - Gangways for coupled vehicles, e.g. of concertina type**
- B60D 5/003
 - {-Bellows for interconnecting vehicle parts}

Project: N/A (B60G)

- U **B60G 3/00**
 - Resilient suspension for a single wheel (pivoted suspension arms per se, attachment thereof to sprung part of the vehicle, buffer means for limiting movement of arms [B60G 7/00](#); {rigid axle suspensions [B60G 9/00](#);} characterised by arrangement, location or type of springs [B60G 11/00](#))**
- U B60G 3/18
 - with two or more pivoted arms, e.g. parallelogram
- U B60G 3/20
 - • all arms being rigid

- B60G 3/26
- • • Means for maintaining substantially-constant wheel camber during suspension movement; {Means for controlling the variation of the wheel position during suspension movement-([B60G 3/202](#), [B60G 3/22](#), [B60G 7/003](#), [B60G 7/006](#) take precedence; means for adjusting camber, castor, or toe-in [B62D 17/00](#))}
- U B60G 5/00 Resilient suspensions for a set of tandem wheels or axles having interrelated movement**
- U B60G 5/04
- with two or more pivoted arms, the movements of which are resiliently interrelated, {e.g. the arms being rigid}
- B60G 5/047
- • {-at least one arm being resilient, e.g. a leafspring ([B60G 5/053](#) takes precedence)}
- U B60G 9/00 Resilient suspensions of a rigid axle or axle housing for two or more wheels {(the axle being a part of a set of tandem axles [B60G 5/00-B60G 5/065](#); with leaf springs [B60G 11/02-B60G 11/08](#))}**
- B60G 9/02
- the axle or housing being pivotally mounted on the vehicle, {e.g. the pivotal axis being parallel to the longitudinal axis of the vehicle-([B60G 9/003](#) takes precedence)}
- B60G 9/04
- {-the axle or housing not being pivotally mounted on the vehicle ([B60G 9/003](#) takes precedence)}
- U B60G 15/00 Resilient suspensions characterised by arrangement, location or type of combined spring and vibration damper, e.g. telescopic type (combined spring and vibration-dampers per se [F16F](#))**
- U B60G 15/02
- having mechanical spring
- U B60G 15/06
- • and fluid damper
- U B60G 15/062
- • • {the spring being arranged around the damper ([B60G 15/061](#), [B60G 15/067](#), [B60G 15/07](#) take precedence)}
- B60G 15/065
- • • • {-characterised by the use of a combination of springs}
- U B60G 17/00 Resilient suspensions having means for adjusting the spring or vibration-damper characteristics, for regulating the distance between a supporting surface and a sprung part of vehicle or for locking suspension during use to meet varying vehicular or surface conditions, e.g. due to speed or load {(levelling or stabilising systems for tippers [B60P 1/045](#))}**
- U B60G 17/015
- the regulating means comprising electric or electronic elements ({[B60G 17/002](#)}, [B60G 17/005](#) take precedence)
- B60G 17/0152
- • {-characterised by the action on a particular type of suspension unit ([B60G 17/01941](#) takes precedence)}
- U B60G 17/019
- • characterised by the type of sensor or the arrangement thereof {[B60G 17/01941](#) takes precedence}
- B60G 17/01941
- • • {-characterised by the use of piezo-electric elements, e.g. sensors or actuators}
- U B60G 17/02
- Spring characteristics {e.g. mechanical springs and mechanical adjusting means}([B60G 17/005](#), [B60G 17/015](#) take precedence)
- U B60G 17/04
- • fluid spring characteristics
- B60G 17/0408
- • • {-details, e.g. antifreeze for suspension fluid, pumps, retarding means per se}
- U B60G 99/00 Subject matter not provided for in other groups of this subclass**
- B60G 99/002
- {-Suspension details of the suspension of the vehicle body on the vehicle chassis}
- B60G 99/004
- {-Other suspension arrangements with rubber springs}

- B60G 99/006 · {-Other suspension arrangements with metallic springs}
- B60G 99/008 · {-Other suspension arrangements with fluid springs}
- U B60G 2204/00 Indexing codes related to suspensions per se or to auxiliary parts**
- U B60G 2204/10 · Mounting of suspension elements
- U B60G 2204/20 · · Mounting of accessories, e.g. pump, compressor
- U B60G 2204/202 · · · of cables
- B60G 2204/2022 · · · · ~~using a suspension element (e.g. link, damper or spring)~~ *using a suspension element (e.g. link, damper or spring)* as part of the electrical circuitry
- U B60G 2800/00 Indexing codes relating to the type of movement or to the condition of the vehicle and to the end result to be achieved by the control action**
- U B60G 2800/90 · System Controller type
- B60G 2800/94 · · Electronic Stability Program (*ESP, i.e. ABS+ASC+EMS*)~~(ESP, i.e. ABS+ASC+EMS)~~

Project: N/A (B60H)

- U B60H 1/00 Heating, cooling or ventilating devices (heating, cooling or ventilating devices providing other air treatment, the other treatment being relevant, [B60H 3/00](#); ventilating solely by opening windows, doors, roof parts, or the like [B60J](#); heating or ventilating devices for vehicle seats [B60N 2/56](#); vehicle window or windscreen cleaners using air, e.g. defrosters, [B60S 1/54](#))**
- NOTE
- In this group and its subgroups, as well as in patent documents, the following abbreviation is used: - HVAC Heating, Ventilating and Air Conditioning
- B60H 1/00007 · {-Combined heating, ventilating, or cooling devices (control systems or mechanisms [B60H 1/00642](#))}
- B60H 1/00021 · · {-Air flow details of the heating, ventilating and cooling [HVAC]} devices}
- B60H 1/00028 · · · {-Constructional lay-out of the devices in the vehicle}
- B60H 1/00207 · · {-characterised by the position of the HVAC devices with respect to the passenger compartment ([B60H 1/00021](#) takes precedence)}
- B60H 1/00271 · {-Heating, cooling or ventilating devices specially adapted for particular vehicle parts or components and being connected to the vehicle HVAC unit}
- B60H 1/00285 · · {-for vehicle seats (vehicle seats with heating or ventilation means independent from the HVAC system of the vehicle [B60N 2/56](#))}
- B60H 1/00292 · · {-for steering wheels (steering wheels with heating or ventilation means independent from the HVAC system of the vehicle [B62D 1/065](#))}
- U B60H 1/00321 · {Heat exchangers for air-conditioning devices ([B60H 1/3227](#) takes precedence)}
- B60H 1/00342 · · {-of the liquid-liquid type}
- U B60H 1/00357 · {Air-conditioning arrangements specially adapted for particular vehicles}
- U B60H 1/00385 · · {-for vehicles having an electrical drive, e.g. hybrid or fuel cell}
- B60H 1/00392 · · · {-for electric vehicles having only electric drive means}
- B60H 1/004 · · · {-for vehicles having a combustion engine and electric drive means, e.g. hybrid electric vehicles}
- B60H 1/00407 · · {-for open or convertible vehicles}
- B60H 1/00414 · · {-for military, emergency, safety or security vehicles}

- B60H 1/00478
 - {-Air-conditioning devices using the Peltier effect (for air-conditioning in general [F24F 5/0042](#); for refrigeration [F25B 21/02](#); electric devices exhibiting the Peltier effect [H01L 35/00](#))}
- U B60H 1/00642
 - {Control systems or circuits, control members or indication devices for heating, cooling or ventilating devices ([B60H 1/3201](#) - [B60H 1/3208](#), [B60H 1/3225](#) take precedence; dashboards [B60K 37/00](#); systems for controlling or regulating non-electric variables in general [G05D](#))}
- U B60H 1/0065
 - {Control members, e.g. levers or knobs ([B60H 1/00985](#) takes precedence)}
- B60H 1/00657
 - · · {-Remote control devices}
- U B60H 1/00735
 - · {Control systems or circuits characterised by their input, i.e. by the detection, measurement or calculation of particular conditions, e.g. signal treatment, dynamic models}
- U B60H 1/00764
 - · · {the input being a vehicle driving condition, e.g. speed ([B60H 1/00828](#), [B60H 1/00864](#) take precedence)}
- B60H 1/00771
 - · · · {-the input being a vehicle position or surrounding, e.g. GPS-based position or tunnel}
- B60H 1/00778
 - · · · {-the input being a stationary vehicle position, e.g. parking or stopping}
- B60H 1/008
 - · · {-the input being air quality}
- B60H 1/00807
 - · · {-the input being a specific way of measuring or calculating an air or coolant temperature}
- U B60H 1/02
 - the heat being derived from the propulsion plant {([B60H 1/00492](#) takes precedence)}
- B60H 1/14
 - · otherwise than from cooling liquid of the plant {e.g. heat from the grease oil, the brakes, the transmission unit ([B60H 1/03](#) takes precedence)}
- B60H 1/143
 - · · {-the heat being derived from cooling an electric component, e.g. electric motors, electric circuits, fuel cells or batteries}
- U B60H 1/22
 - the heat being derived otherwise than from the propulsion plant {([B60H 1/0025](#), [B60H 1/00492](#) and [B60H 1/03](#) take precedence)}
- B60H 1/2203
 - · {-the heat being derived from burners (burners in general [F23C](#), [F23D](#), [F24H 9/18](#))}
- B60H 1/2206
 - · · {-controlling the operation of burners (control of burners in general [F23N 5/00](#))}
- B60H 1/2209
 - · · {-arrangements of burners for heating an intermediate liquid ([B60H 1/032](#) takes precedence)}
- B60H 1/2212
 - · · {-arrangements of burners for heating air}
- B60H 1/2215
 - · {-the heat being derived from electric heaters (in general [H05B](#); for electric traction vehicles [B60L 1/02](#))}
- B60H 1/2218
 - · · {-controlling the operation of electric heaters}
- B60H 1/2221
 - · · {-arrangements of electric heaters for heating an intermediate liquid ([B60H 1/034](#) takes precedence)}
- B60H 1/2225
 - · · {-arrangements of electric heaters for heating air}
- U B60H 1/24
 - Devices purely for ventilating or where the heating or cooling is irrelevant (nozzles, air-diffusers [B60H 1/34](#))
- B60H 1/241
 - · {-characterised by the location of ventilation devices in the vehicle}
- B60H 1/242
 - · · {-located in the front area}
- B60H 1/243
 - · · {-located in the lateral area ([e.g. doors, pillars](#))}~~{e.g. doors, pillars}~~
- B60H 1/244
 - · · {-located in the rear area}
- B60H 1/245
 - · · {-located in the roof}
- B60H 1/246
 - · · {-located in the interior of the vehicle or in or below the floor}

- B60H 1/247
 - • {-Disposition of several air-diffusers in a vehicle for ventilation-air circulation in a vehicle cabin}
- U B60H 1/32
 - Cooling devices ({[B60H 1/00478](#), [B60H 1/005](#) take precedence;} vehicles adapted to transport refrigerated goods [B60P 3/20](#))
- U B60H 1/3204
 - • {using compression ([B60H 1/3233](#) takes precedence; in general [F25B](#), [F25D](#))}
- U B60H 1/3205
 - • • {Control means therefor}
- B60H 1/3207
 - • • • {-for minimizing the humidity of the air}
- B60H 1/321
 - • • • {-for preventing the freezing of a heat exchanger}
- B60H 1/3211
 - • • • {-for increasing the efficiency of a vehicle refrigeration cycle}
- B60H 1/3213
 - • • • {-for increasing the efficiency in a vehicle heat pump}
- B60H 1/3214
 - • • • {-for improving the lubrication of a refrigerant compressor in a vehicle}
- B60H 1/3216
 - • • • {-for improving a change in operation duty of a compressor in a vehicle}
- B60H 1/3217
 - • • • {-for high pressure, inflammable or poisonous refrigerants causing danger in case of accidents}
- B60H 1/3219
 - • • • {-for improving the response time of a vehicle refrigeration cycle}
- B60H 1/322
 - • • • {-for improving the stop or idling operation of the engine}
- B60H 1/34
 - Nozzles; {-Air-diffusers }(dispositions of air diffusers in a vehicle [B60H 1/247](#))
- B60H 1/3457
 - • {-Outlets providing a vortex, i.e. a spirally wound air flow}
- U B60H 3/00**
 - Other air-treating devices**
- U B60H 3/0007
 - {Adding substances other than water to the air, e.g. perfume, oxygen}
- B60H 3/0014
 - • {-characterised by the location of the substance adding device}
- B60H 3/0021
 - • • {-in the air-conditioning housing}
- B60H 3/0028
 - • • {-on or near an air outlet}
- B60H 3/0035
 - • {-characterised by the control methods for adding the substance}
- U B60H 3/0085
 - {Smell or pollution preventing arrangements }([B60H 3/0007](#), [B60H 3/0071](#), [B60H 3/02](#), [B60H 3/06](#) take precedence)
- B60H 3/0092
 - • {-in the interior of the HVAC unit, e.g. by spraying substances inside the unit}
- B60H 3/02
 - Moistening; { Devices influencing humidity levels, i.e. humidity control-([B60H 1/3202](#), [B60H 1/3207](#) take precedence)}
- B60H 3/022
 - • {-for only humidifying the air}
- B60H 3/024
 - • {-for only dehumidifying the air}
- U B60H 3/06
 - Filtering {([B60H 3/0078](#) takes precedence)}
- B60H 3/0658
 - • {-Filter elements specially adapted for their arrangement in vehicles ([B60H 3/0608](#) takes precedence)}

Project: N/A (B60J)

- U B60J 1/00**
 - Windows; Windscreens; Accessories therefor ([B60J 10/00](#) takes precedence; air curtains instead of windows [B60J 9/04](#); { sealing strips for windshields [B60J 10/02](#); sealing sash guides for sliding window panes [B60J 10/04](#); glass partitions inside vehicles to protect occupants against personal attack [B60R 21/12](#))}**
- U B60J 1/004
 - {Mounting of windows}
- B60J 1/006
 - • {-characterised by fixation means such as clips, adhesive, etc. (incorporated in seal [B60J 10/02](#))}
- B60J 1/007
 - • {-received in frames to be attached to vehicle}

- B60J 1/02
 - arranged at the vehicle front {e.g. structure of the glazing, mounting of the glazing-(on windscreen mounted antenna wire [H01Q 1/1271](#))}
- U B60J 1/18
 - arranged at the vehicle rear {(optical viewing arrangements integrated in rear windows, e.g. Fresnel lenses [B60R 1/001](#))}
- B60J 1/1807
 - {movable for vehicles with convertible top}
- B60J 1/1815
 - • {non-adjustably mounted in and moving with the soft-top cover}
- B60J 1/1823
 - • • {adjustable relative to hard- or soft-top, e.g. pivotable}
- B60J 1/183
 - • • • {slidable}
- B60J 1/1838
 - • {movable for non-convertible vehicles, including vehicles with versatile load area}
- B60J 1/1846
 - • • {where the window can slide}
- B60J 1/1853
 - • • • {horizontally in direction transverse to vehicle longitudinal axis}
- B60J 1/1861
 - • • • {vertically, e.g. into lower part of rear door before opening rear door}
- B60J 1/1869
 - • • • {to an end position parallel to roof}
- B60J 1/1876
 - • • {where the window is pivotable relative to a stationary axis}
- B60J 1/1884
 - • • • {about a horizontal axis}
- B60J 1/1892
 - • • {where the window is translated by a linkage system}
- U B60J 1/20
 - Accessories, e.g. wind deflectors, blinds (antiglare provisions [B60J 3/00](#); wind deflectors associated with roof openings [B60J 7/22](#); removable external protective coverings for windows or windscreens [B60J 11/08](#); { aerodynamical spoiler for vehicles [B62D 35/00](#);} heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#))
- U B60J 1/2011
 - {Blinds; curtains or screens reducing heat or light intensity (means against intense light blinding the driver or passengers [B60J 3/00](#))}
- B60J 1/2013
 - • • {Roller blinds (for roofs [B60J 7/0015](#); for luggage covering [B60R 5/047](#); for openings in buildings [E06B 9/40](#))}
- B60J 1/2016
 - • • • {Control means for actuating the roller blind, e.g. using electronic control}
- B60J 1/2019
 - • • • {powered, e.g. by electric, hydraulic or pneumatic actuators}
- B60J 1/2022
 - • • • • {with screw rods or extensible rods acting on the draw bar for pushing or push-pulling (pivoting arms [B60J 1/2055](#))}
- B60J 1/2025
 - • • • • {with flexible actuating elements connected to the draw bar for pulling only, e.g. cords, wires or cables}
- B60J 1/2027
 - • • • • {with a buckle-proof guided flexible actuating element acting on the draw bar for pushing or push-pulling, e.g. a Bowden cable}
- B60J 1/203
 - • • • • {Mechanism for actuation by hand, e.g. cranks or curtain cords}
- B60J 1/2033
 - • • • • {characterised by the spring motor}
- B60J 1/2036
 - • • • • {characterised by structural elements}
- B60J 1/2038
 - • • • • • {Storage boxes}
- B60J 1/2041
 - • • • • • {Blind sheets, e.g. shape of sheets, reinforcements in sheets, materials therefor}
- B60J 1/2044
 - • • • • • {Draw bars, including elements attached to it, e.g. sliding shoes, gripping elements or pull cords}
- B60J 1/2047
 - • • • • • {End position holding means, e.g. suction cups, hooks on a vehicle, indentations on guides}
- B60J 1/205
 - • • • • • {Winding tubes, e.g. telescopic tubes or conically shaped tubes}
- B60J 1/2052
 - • • • • • • {Guides}
- B60J 1/2055
 - • • • • • • {Pivoting arms}

- B60J 1/2058 {-Springs for compensating the number of windings of the blind on the tube in case winding tube and draw bar are driven together}
 - B60J 1/2063 {-Mounting arrangements for roller blind or its storage box, e.g. integration into beltline or window frame}
 - B60J 1/2066 {-Arrangement of blinds in vehicles}
 - B60J 1/2069 {-of multiple blinds, e.g. more than one blind per window or per actuation system}
 - B60J 1/2072 {-Blinds with inclined or vertical orientation of the winding axis}
 - B60J 1/2075 {-specially adapted for fixed windows}
 - B60J 1/208 {-for rear windows}
 - B60J 1/2083 {-for side windows, e.g. quarter windows}
 - B60J 1/2086 {-specially adapted for openable windows, e.g. side window}
 - B60J 1/2097 . . {-means to prevent rattling of vehicle windows (anti-rattling means for vehicle doors [E05F 7/02](#))}
- U B60J 3/00 Antiglare equipment associated with windows or windscreens (optical viewing arrangements for vehicles [B60R 1/00](#)); Sun visors for vehicles (sun visors having appliances for storing or holding personal property [B60R 7/05](#))**
- U B60J 3/02 . adjustable in position {[B60J 3/002](#), [B60J 3/005](#) take precedence}
 - U B60J 3/0204 . . {-Sun visors}
 - U B60J 3/0213 . . . {-characterised by the mounting means ([B60J 3/0208](#) takes precedence)}
 - B60J 3/0217 {-Brackets for mounting the sun visor support arm to the vehicle}
 - B60J 3/0221 {-self mounting, i.e. no tools or screws required}
 - B60J 3/0226 {-comprising a ball joint or at least two axes of rotation}
 - B60J 3/023 {-Additional support bracket releasably holding the sun visor}
 - B60J 3/0234 {-Mounted slidably}
 - B60J 3/0239 {-and pivoting on a support arm (bearing members regulating the rotational friction on the support arm [B60J 3/0265](#))}
 - B60J 3/0243 {-sliding out from ceiling}
 - B60J 3/0247 {-using a suction cup}
 - B60J 3/0252 {-Structure of the support arm}
 - B60J 3/0256 {-telescopic}
 - B60J 3/026 {-articulated, e.g. comprising pivot joints or lazy-tong structure}
 - B60J 3/0265 {-Attachments of sun visors to mounting means including details of sun visor bearing member regulating the rotational friction on the support arm}
 - B60J 3/0269 {-in middle region of sun visor}
 - B60J 3/0273 {-on both end regions of sun visor}
- U B60J 5/00 Doors ([B60J 10/00](#) takes precedence; window aspects [B60J 1/00](#); { side board or tailgate structures for open load compartments [B62D 33/023](#))**
- U B60J 5/04 . arranged at the vehicle sides {(panel mounted arm-rests [B60N 2/466](#); wall liners [B60R 13/02](#); door edge guards [B60R 13/043](#); padded linings associated with the side doors [B60R 21/0428](#))}
 - B60J 5/0401 . . {-Upper door structure}
 - B60J 5/0402 . . . {-window frame details, including sash guides and glass runs}
 - B60J 5/0404 . . . {-Outside rear view mirror support}
 - B60J 5/0405 . . . {-Inboard or outboard side of window frame formed integrally with the lower door structure}

- B60J 5/0406 . . . {window frame formed separately as module}
- B60J 5/0408 . . . {fastening window frame or parts of window frame to lower door structure}
- B60J 5/0409 . . . {mechanism preventing outward displacement of window frame at high speeds (ventilation valves [B60H](#))}
- B60J 5/0411 . . {Beltline}
- B60J 5/0412 . . {Lower door structure}
- B60J 5/0413 . . . {Inner panel, e.g. characterised by carrying components}
- B60J 5/0415 . . . {Outer panel}
- B60J 5/0416 . . . {Assembly panels to be installed in doors as a module with components, e.g. lock or window lifter, attached thereto}
- B60J 5/0418 . . . {Water or sound barrier, e.g. watershields or seals between dry/wet compartment, sound or vibration dampers}
- B60J 5/0419 . . . {Windows in lower door structures}
- B60J 5/042 . . {Reinforcement elements}
- B60J 5/0422 . . . {Elongated type elements, e.g. beams, cables, belts or wires}
- B60J 5/0423 {characterised by position in the lower door structure}
- B60J 5/0425 {the elements being arranged essentially horizontal in the centre of the lower door structure ([B60J 5/0426](#) to [B60J 5/0448](#) take precedence)}
- B60J 5/0426 {the elements being arranged at the beltline}
- B60J 5/0427 {the elements being arranged along the lower edge of door}
- B60J 5/0429 {the elements being arranged diagonally}
- B60J 5/043 {the elements being arranged vertically}
- B60J 5/0431 {the elements being arranged at the hinge area}
- B60J 5/0433 {the elements being arranged at the lock area}
- B60J 5/0434 {the elements being arranged at the handle area}
- B60J 5/0436 {the elements being arranged at the mirror area}
- B60J 5/0437 {characterised by the attachment means to the door, e.g. releasable attachment means}
- B60J 5/0438 {characterised by the type of elongated elements}
- B60J 5/044 {the elements being flexible, e.g. belts, cables or wires}
- B60J 5/0441 {the elements having a grid-like structure, i.e. interconnected or interwoven elements}
- B60J 5/0443 {Beams}
- B60J 5/0444 {characterised by a special cross section}
- B60J 5/0445 {formed of several elements arranged in series}
- B60J 5/0447 {formed of several elements arranged in parallel}
- B60J 5/0448 {with branched structures}
- B60J 5/045 . . . {Panel type elements ([B60J 5/0455](#) takes precedence)}
- B60J 5/0451 . . . {Block or short strip-type elements (beams [B60J 5/0443](#), position thereof [B60J 5/0423](#))}
- B60J 5/0452 . . . {including foams or expanded materials}
- B60J 5/0454 {being expanded onto door panel and forming a laminar structure with door panel, e.g. a rib}
- B60J 5/0455 . . . {integrated in door structure or other door elements, e.g. beam-like shapes stamped in inner door panel}
- B60J 5/0456 . . . {Behaviour during impact}

- B60J 5/0458 {Passive coupling of the reinforcement elements to the door or to the vehicle body}
- B60J 5/0459 {Active coupling of the reinforcement elements to the door or to the vehicle body, e.g. through releasing of pressurized gas}
- B60J 5/0461 {characterised by a pre-defined mode of deformation or displacement in order to absorb impact}
- B60J 5/0462 {the impact being a frontal impact}
- B60J 5/0463 . . {Conceptual assembling of door, i.e. how door frame parts should be fitted together to form door}
- B60J 5/0465 . . . {using tailored blanks}
- B60J 5/0466 . . . {using cast parts}
- B60J 5/0468 . . {Fixation or mounting means specific for door components (fasteners in general [F16B 21/00](#))}
- B60J 5/0469 . . . {for door panels, e.g. hemming (hemming equipment [B21D 39/00](#))}
- B60J 5/047 . . . {characterised by the opening or closing movement}
- B60J 5/0472 . . . {the door having a hinge axis in horizontal direction transverse to vehicle longitudinal axis}
- B60J 5/0473 . . . {the door having a hinge axis in the direction of the vehicle longitudinal axis}
- B60J 5/0476 . . . {convertible doors, e.g. window frame is stored in lower door structure}
- B60J 5/0477 . . . {with two doors opening in opposite direction}
- B60J 5/0479 {without B-pillar or releasable B-pillar, i.e. the pillar is moving with door}
- B60J 5/048 . . . {characterised by the material}
- B60J 5/0481 . . . {plastic}
- B60J 5/0483 . . . {lightweight metal, e.g. aluminum, magnesium}
- B60J 5/0484 . . . {hybrid, i.e. plastic moulded onto metal parts}
- B60J 5/0486 . . . {Special type}
- B60J 5/0487 . . . {simplified doors related to cabins of e.g. golf carts, tractors, jeeps, cranes, forklifts, etc.}
- B60J 5/0488 . . . {rectangular of shape, e.g. as found in old fashioned cars and coaches}
- B60J 5/049 . . . {caravan door}
- B60J 5/0491 . . . {lid, e.g. for luggage compartment accessible at vehicle side ([B60J 5/0498](#) takes precedence)}
- B60J 5/0493 . . . {Appurtenances}
- B60J 5/0494 . . . {Rain covers deployed upon opening door}

Project: RP0118 (B60J)

- B60J 5/0495 {Finger guards (for doors in general [E06B 7/36](#), with sensors [E05F 15/0021](#) [E05F 15/42](#))}

Project: N/A (B60J)

- B60J 5/0497 . . . {for load transporting vehicles or public transport, e.g. lorries, trucks, buses}
- B60J 5/0498 {with rigid panels pivoting about a horizontal axis}
- U B60J 5/10 {arranged at the vehicle rear ([B60J 5/04](#) takes precedence { ; bonnets or lids [B62D 25/10](#); tail gates for pick-up trucks [B62D 33/0273](#); counterbalancing [E05F](#); springs, e.g. pneumatic [F16F](#))}
- B60J 5/101 {for non-load transporting vehicles, i.e. family cars including vans}

- B60J 5/102
 - • • {comprising door or part of door being pivotable downwards about horizontal axis to open position}
- B60J 5/103
 - • • • {-where lower door part moves independently from other door structures, e.g. by being hinged on the vehicle body}
- B60J 5/104
 - • • • {-where lower door part optionally moves independently, or follows as component the movement of the entire door structure, e.g. by being hinged in a door frame or releasably connected to upper door part}
- B60J 5/105
 - • • {-comprising door or part of door being pivotable about vertical axis}
- B60J 5/106
 - • • {-comprising door or part of door being moveable by a linkage system to open/close position}
- B60J 5/107
 - • • {-constructional details, e.g. about door frame, panels, materials used, reinforcements}
- B60J 5/108
 - • {-for load transporting vehicles or public transport, e.g. lorries, trucks, buses}
- U B60J 7/00**

Non-fixed roofs; Roofs with movable panels { e.g. rotary sunroofs}
([B60J 10/00](#) takes precedence; window aspects [B60J 1/00](#); fixed roofs [B62D 25/06](#); mechanisms for operating wings [E05F 11/00](#), [E05F 15/00](#))
- B60J 7/0007
 - {-moveable head-liners, screens, curtains or blinds for ceilings}
- B60J 7/0015
 - • {-roller blind}
- B60J 7/0023
 - • {-flexible and foldable}
- B60J 7/003
 - • {-one or more sliding rigid plate or lammellae}
- B60J 7/0038
 - • • {-stored in stacked fashion}
- B60J 7/0046
 - • {-side blind between roof and panel in vent mode}
- B60J 7/0053
 - {-Collapsible lateral roof side beams}
- B60J 7/0061
 - • {-where the beam moves inwardly during folding of roof, e.g. by swiveling, sliding or translation, to disconnect the beam from windshield header}
- B60J 7/0069
 - • {-where the beam itself is folded and moves inwardly, e.g. concertina type}
- B60J 7/0076
 - {-separately collapsible C-pillars, e.g. by folding inwardly or sliding ([B60J 7/126](#) takes precedence)}
- B60J 7/0084
 - {-Water draining for non-fixed roofs or roof panels (for fixed roofs not integral with roof structure [B60R 13/06](#), for fixed roofs integral with roof structure [B62D 25/07](#))}
- B60J 7/0092
 - • {-by inflating the roof (inflatable soft tops [B60J 7/1256](#))}
- U B60J 7/02**
 - of sliding type {e.g. comprising guide shoes}
- B60J 7/024
 - • {-characterised by the height regulating mechanism of the sliding panel ([B60J 7/043](#) to [B60J 7/053](#) take precedence)}
- B60J 7/04
 - • with rigid plate-like element or elements {e.g. open roofs with harmonica-type folding rigid panels-([B60J 7/061](#) takes precedence)}
- B60J 7/041
 - • • {-for utility vehicles, e.g. with slidable and foldable rigid panels}
- B60J 7/042
 - • • • {-with a vertical lifting or folding movement (non-sliding roof panels movable for lifting [B60J 7/1614](#))}
- U B60J 7/08**
 - of non-sliding type, i.e. movable or removable roofs or panels, e.g. let-down tops or roofs capable of being easily detached or of assuming a collapsed or inoperative position
- U B60J 7/12**
 - • foldable; Tensioning mechanisms therefor, e.g. struts ([B60J 7/10](#), {[B60J 7/20](#)} take precedence)
- B60J 7/1204
 - • • {-Control devices, e.g. for compensating tolerances, for defining movement or end position of top, for tensioning the top or for switching to an emergency mode}
- U B60J 7/1226**
 - • • {-Soft tops for convertible vehicles}

- B60J 7/123
 - {characterised by means for fastening the soft top cloth to the arches or vehicle body work}
- B60J 7/1234
 - {characterised by arches, e.g. shape or material}
- B60J 7/1239
 - {-Front bow}
- B60J 7/1243
 - {-Intermediate bows}
- B60J 7/1247
 - {-Tensioning bow at rear of soft top}
- B60J 7/1252
 - {characterised by lateral arches (foldable side roof beams [B60J 7/0053](#); linkage arms [B60J 7/1265](#))}
- B60J 7/1265
 - {characterised by kinematic movements, e.g. using parallelogram linkages ([B60J 7/126](#) takes precedence)}
- U B60J 7/14
 - . . . with a plurality of { rigid} plate-like elements { or rigid non plate-like elements, e.g. with non-slidable, but pivotable or foldable movement}
- B60J 7/141
 - {-for covering load areas, e.g. for pick-up trucks}
- B60J 7/143
 - {-for covering the passenger compartment}
- B60J 7/145
 - {-at least two elements being folded in clamp-shell fashion}
- B60J 7/146
 - {-all elements being folded in same orientation and stacked fashion}
- B60J 7/148
 - {-at least one element being stored in vertical fashion}
- U B60J 7/16
 - . . non-foldable { and rigid, e.g. a one-piece hard-top or a single rigid roof panel} ([B60J 7/10](#) takes precedence)
- B60J 7/1607
 - . . . {-for covering load areas, e.g. rigid panels for pick-up truck beds}
- B60J 7/1614
 - {-with a vertical lifting movement maintaining the inclination of the roof or panel}
- B60J 7/1621
 - {-hinged on one side}
- B60J 7/1628
 - . . . {-for covering the passenger compartment}
- B60J 7/1635
 - {-of non-convertible vehicles}
- B60J 7/1642
 - {-Roof panels, e.g. sunroofs or hatches, movable relative to the main roof structure, e.g. by lifting or pivoting}
- B60J 7/165
 - {-at least a major part of the roof being lifted on all corners}
- B60J 7/1657
 - {-at least a major part of the roof pivoting about a stationary axis}
- B60J 7/1664
 - {-of convertible vehicles (foldable rear hoods for readily detachable hard-tops [B60J 7/108](#))}
- B60J 7/1671
 - {-the roof pivoting about a stationary axis}
- B60J 7/1678
 - {-the axis being horizontal}
- B60J 7/1685
 - {-the axis being vertical}
- B60J 7/1692
 - {-the roof being movable by a linkage system}
- U B60J 7/185
 - . Locking arrangements (locks in general [E05B](#))
- B60J 7/1851
 - . . {-for locking the foldable soft- or hard-top to the windshield header}
- B60J 7/1853
 - . . . {-locking mechanism arranged in windshield header}
- B60J 7/1855
 - . . {-for locking or immobilising roof elements when stored}
- B60J 7/1856
 - . . {-for interlocking the roof linkage system when deployed}
- B60J 7/1858
 - . . {-for locking soft tops to a surrounding rigid roof structure, e.g. to a closed vehicle body ([B60J12D](#) takes precedence)}
- U B60J 7/19
 - . . for rigid panels {([B60J 7/1851](#) to [B60J 7/1856](#) take precedence)}
- B60J 7/192
 - . . . {-for locking the sunroof panel to the roof}
- B60J 7/194
 - . . . {-for locking detachable hard-tops or removable roof panels to the vehicle body}
- B60J 7/196
 - . . . {-for locking or interconnecting rigid roof panels to each other}

- B60J 7/198
 - • • {for locking tonneau covers such as covers for roof storage compartments or for pick-up truck beds}
- U B60J 7/20
 - Vehicle storage compartments for roof parts {or for collapsible flexible tops}
- B60J 7/201
 - • {being outside of vehicle, e.g. onto boot lid, or into a storage compartment to be closed by one of the roof panels itself}
- B60J 7/202
 - • {being characterised by moveable cover parts for closing the gap between boot lid and rearmost seats}
- B60J 7/203
 - • • {the cover part comprising cover side flaps}
- B60J 7/205
 - • {where the boot lid opens in rearward direction to receive the roof and in forward direction to receive luggage}
- B60J 7/206
 - • {being arranged at the vehicle front}
- B60J 7/207
 - • {being adjustable in volume, i.e. collapsible in order to increase luggage space in boot when roof is not stored}
- B60J 7/208
 - • {with improved trunk access by moving the folded roof package when opening the trunk lid for loading or unloading luggage}
- U **B60J 10/00**
 - **Sealing arrangements ({sealing arrangements for other vehicle parts [B60R 13/06](#)}; sealings in general [F16J 15/00](#))**
- U B60J 10/0014
 - {characterised by the shape}
- U B60J 10/0031
 - • {having tubular parts}
- B60J 10/004
 - • • {having projections within tubular parts, e.g. ribs}
- B60J 10/0042
 - • • {having more than one tubular sealing cavity, e.g. separate tubular sealing parts or partitioning walls within tubular sealing part}
- B60J 10/0054
 - • {having projections, grooves or channels in the longitudinal direction}
- B60J 10/0057
 - • • {for enclosing or housing cables or other functional devices}
- B60J 10/006
 - • • {for facilitating pre-defined deformation of sealing parts, e.g. to enhance proper folding}
- B60J 10/0094
 - {characterised by means for prevention of noise, e.g. window rattling or vibration}
- B60J 10/0097
 - {characterised by defrosting arrangements, e.g. the heating of sealing}
- U B60J 10/02
 - for windows or windscreens {([B60J 10/0002](#) to [B60J 10/0091](#) take precedence)}
- U B60J 10/04
 - • for sliding window panes, e.g. sash guides
- B60J 10/042
 - • • {for the window sash, e.g. glass run channels}
- B60J 10/043
 - • • • {preventing outward displacement of window at high speed}
- B60J 10/044
 - • • • {on corner pieces, e.g. on mirror supports or quarter windows}
- B60J 10/045
 - • • • {with arrangements to reduce air resistance due to glazing not being flush with sash guide}
- B60J 10/046
 - • • {for sashless windows}
- B60J 10/047
 - • • • {preventing outward displacement of window at high speed}
- B60J 10/048
 - • • • {the sealing arrangement being between the edges of adjacent glazings}
- B60J 10/049
 - • • • • {mounted on the pillar}
- B60J 10/06
 - • • for flush-glass windows { i.e. flush with body or window frame-([B60J 10/041](#) takes precedence)}
- B60J 10/08
 - for doors, {lids or bonnets-([B60J 10/0002](#) to [B60J 10/0091](#) take precedence)}
- B60J 10/081
 - • {arranged on body side}
- B60J 10/083
 - • • {with additional seals on body side}
- B60J 10/085
 - • {arranged on door side}

- B60J 10/086
 - B60J 10/088
 - B60J 10/10
 - U B60J 11/00
 - U B60J 11/02
 - B60J 11/025
- · · {-with additional seals on door side}
 - · · {-mounted on, or integral with, the glass-run sealing}
 - for non-fixed roofs, {e.g. foldable roofs, removable hard-tops and tarpaulins-[B60J 10/0002](#) to [B60J 10/0091](#) take precedence}}
 - Removable external protective coverings specially adapted for vehicles or part of vehicles, e.g. parking covers (covering of load on vehicles [B60P 7/00](#); guard strips for body finishing, identifying or decorating [B60R 13/04](#); tents for use as garages [E04H 15/00](#))**
 - Covers wound on rollers
 - {-specially adapted for covering vehicle parts, e.g. for doors, windows or windscreens}

Project: N/A (B60K)

- U B60K 7/00
 - B60K 7/0023
 - U B60K 17/00
 - U B60K 17/04
 - U B60K 17/16
 - B60K 17/18
 - B60K 17/20
 - U B60K 17/34
 - U B60K 17/348
 - U B60K 17/35
 - B60K 17/352
 - B60K 17/358
 - U B60K 20/00
 - U B60K 20/02
 - B60K 20/14
 - B60K 41/00
- Disposition of motor in, or adjacent to, traction wheel (roller-skate driving mechanisms [A63C 17/12](#))**
 - {-the motor being pneumatic}
 - Arrangement or mounting of transmissions in vehicles (clutches per se, e.g. construction thereof, [F16D](#); gearing per se, e.g. construction thereof, [F16H](#))**
 - characterised by arrangement, location, or kind of gearing (electric equipment or propulsion of electrically-propelled vehicles [B60L](#))
 - · of differential gearing
 - · · in which the differential movement is obtained by resilient means
 - · · in which the differential movement is limited
 - for driving both front and rear wheels, e.g. four wheel drive vehicles (arrangement or mounting of control devices for changing number of driven wheels [B60K 23/08](#))
 - · having differential means for driving one set of wheels, e.g. the front, at one speed and the other set, e.g. the rear, at a different speed ([B60K 17/346](#) takes precedence)
 - · · including arrangements for suppressing or influencing the power transfer, e.g. viscous clutches (differential gearing with locking devices {[F16H1/44](#)})
 - · · · manually operated
 - · all driven wheels being steerable
 - Arrangement or mounting of change-speed gearing control devices in vehicles (movable cabs having special adaptations of vehicle control devices [B62D 33/06](#); such control devices per se [F16H](#))**
 - of initiating means (control mechanisms in general [G05G](#))
 - · fluid
 - Conjoint control of drive units; -Conjoint control of at least two sub-units thereof (arrangement of plural diverse prime-movers for mutual or common propulsion [B60K 6/00](#))**

NOTES

The control of a single sub-unit is classified in the relevant class for the sub-unit. Where a single sub-unit is controlled by means of signals or commands from other sub-units the control of this single sub-unit is classified in the relevant class for this sub-unit. For instance, the control of variable-ratio gearing by means of

signals from the engine or { from another sub-unit influenced by} the accelerator is classified in subclass [F16H](#)

Conjoint control of drive units, e.g. propulsion units, and variable-ratio gearing occurring only transiently during ratio shift and being also characterised by the control of the gearing is classified in subclass [F16H](#)

WARNING

This group and its subgroups are no longer used for the classification of new documents as from January 1st, 2006. The backlog of these groups is being continuously reclassified to the relevant groups of [B60W](#).

- B60K 41/02 · of propulsion unit and clutch
- B60K 41/04 · of propulsion unit and gearing
- B60K 41/06 · · the gearing being stepped
- B60K 41/08 · · · with interruption of the drive
- B60K 41/10 · · · without interruption of the drive
- B60K 41/12 · · the gearing being infinitely variable
- B60K 41/14 · · · of mechanical type
- B60K 41/16 · · · of fluid type
- B60K 41/18 · · · of electric type, e.g. electromagnetic
- B60K 41/20 · of propulsion unit and brake system
- B60K 41/22 · of clutch and gearing (control of torque converter lock-up clutches [F16H 61/14](#))
- B60K 41/24 · of clutch and brake system
- B60K 41/26 · of gearing and brake system
- B60K 41/28 · of three or more sub-units

Project: N/A (B60L)

- U B60L 1/00 **Supplying electric power to auxiliary equipment of vehicles (circuit arrangements for charging batteries [H02J 7/00](#))****
 - B60L 1/006 · {-to power outlets}
 - B60L 1/20 · {-Energy regeneration from auxiliary equipment}
- U B60L 3/00 **Electric devices on electrically-propelled vehicles for safety purposes; Monitoring operating variables, e.g. speed, deceleration, power consumption (measuring in general [G01](#))****
 - B60L 3/0007 · {-Measures or means for preventing or attenuating collisions}
 - B60L 3/0015 · · {-Prevention of collisions}
 - B60L 3/0023 · {-Detecting, eliminating, remedying or compensating for drive train abnormalities, e.g. failures within the drive train}
 - B60L 3/003 · · {-relating to inverters}
 - B60L 3/0038 · · {-relating to sensors}
 - B60L 3/0046 · · {-relating to electric energy storage systems, e.g. batteries or capacitors}
 - B60L 3/0053 · · {-relating to fuel cells}
 - B60L 3/0061 · · {-relating to electrical machines}
 - B60L 3/0069 · · {-relating to the isolation, e.g. ground fault or leak current}
 - B60L 3/0076 · · {-relating to braking}
 - B60L 3/0084 · · {-relating to control modules}
 - B60L 3/0092 · {-with use of redundant elements for safety purposes}
- U B60L 3/10 · Indicating wheel slip; { Correction of wheel slip}**

- B60L 3/104
- B60L 3/106
- B60L 3/108
- U B60L 7/00 Electrodynamic brake systems for vehicles in general**
 - B60L 7/003
 - B60L 7/006
- U B60L 8/00 Electric propulsion with power supply from force of nature, e.g. sun, wind**
 - B60L 8/003
 - B60L 8/006
- B60L 11/00 Electric propulsion with power supplied within the vehicle (B60L 8/00, B60L 13/00 take precedence; arrangements or mounting of plural diverse prime-movers for mutual or common propulsion B60K 6/20 ; control systems specially adapted for hybrid vehicles B60W 20/00)**
 - B60L 11/002
 - B60L 11/005
 - B60L 11/007
 - U B60L 11/02**
 - U B60L 11/12**
 - B60L 11/123
 - B60L 11/126
 - U B60L 11/18**
 - B60L 11/1803
 - B60L 11/1805
 - B60L 11/1807
 - U B60L 11/1809**
 - U B60L 11/1811**
 - B60L 11/1812
 - B60L 11/1814
 - U B60L 11/1816**
 - B60L 11/1818
 - U B60L 11/1824**
 - B60L 11/1825
 - B60L 11/1827
 - B60L 11/1829
 - B60L 11/1831
 - B60L 11/1833
 - B60L 11/1835
 - B60L 11/1837
 - U B60L 11/1838**

- B60L 11/184 {-Optimising energy costs, e.g. by charging depending on electricity rates}
- B60L 11/1842 {-Energy stored in the vehicle is provided to the network, i.e. vehicle to grid (V2G) arrangements}
- B60L 11/1844 {-the charging being dependent on network capabilities}
- B60L 11/1846 {-Identification of the vehicle}
- B60L 11/1848 {-Methods related to measuring, billing or payment}
- B60L 11/185 {-Fast charging}
- B60L 11/1851 . . {-Battery monitoring or controlling; Arrangements of batteries, structures or switching circuits therefore}
- B60L 11/1853 . . . {-by battery splitting}
- B60L 11/1855 {-by series/parallel switching}
- B60L 11/1857 . . . {-Battery age determination}
- B60L 11/1859 . . . {-Preventing deep discharging}
- B60L 11/1861 . . . {-Monitoring or controlling state of charge (SOC)}
- B60L 11/1862 {-Target range for state of charge (SOC)}
- B60L 11/1864 . . . {-Control of a battery packs, i.e. of a set of batteries with the same voltage}
- B60L 11/1866 {-Balancing the charge of multiple batteries or cells}
- B60L 11/1868 . . . {-Controlling two or more batteries with different voltages}
- B60L 11/187 . . . {-Battery temperature regulation}
- B60L 11/1872 {-by control of electric loads}
- B60L 11/1874 {-by cooling}
- B60L 11/1875 {-by heating}
- B60L 11/1877 . . . {-Arrangements of batteries}
- B60L 11/1879 . . . {-Adaptation of battery structures for electric vehicles}
- B60L 11/1881 . . {-Fuel cells monitoring or controlling; Arrangements of fuel cells, structures or switching circuits therefore}
- B60L 11/1883 . . . {-Details of fuel cells}
- B60L 11/1885 . . . {-Starting of fuel cells}
- B60L 11/1888 . . . {-Fuel cell temperature regulation}
- B60L 11/189 {-by control of electric loads}
- B60L 11/1892 {-by cooling}
- B60L 11/1894 {-by heating}
- B60L 11/1896 . . . {-Arrangements of the fuel cells}
- B60L 11/1898 . . . {-Adaptation of fuel cell structures for electric vehicles}
- U B60L 15/00 Methods, circuits, or devices for controlling the traction-motor speed of electrically-propelled vehicles**
- B60L 15/002 . . {-for control of propulsion for monorail vehicles, suspension vehicles or rack railways; for control of magnetic suspension or levitation for vehicles for propulsion purposes}
- B60L 15/005 . . . {-for control of propulsion for vehicles propelled by linear motors}
- B60L 15/007 . . {-Physical arrangements or structures of drive train converters specially adapted for the propulsion motors of electric vehicles}
- U B60L 15/20 . . for control of the vehicle or its driving motor to achieve a desired performance, e.g. speed, torque, programmed variation of speed
- B60L 15/2009 . . . {-for braking }

- B60L 15/2018 . . . {-for braking on a slope}
- B60L 15/2027 {-whilst maintaining constant speed}
- B60L 15/2036 . {-Electric differentials, e.g. for supporting steering of vehicles (arrangement of control devices for differential gearing [B60K 23/02](#))}
- B60L 15/2045 . . {-for optimising the use of energy}
- B60L 15/2054 . . {-by controlling transmissions or clutches}
- B60L 15/2063 . . {-for creeping}
- B60L 15/2072 . . {-for drive off }
- B60L 15/2081 . . . {-for drive off on a slope}
- B60L 15/209 . . {-for overtaking}

Project: N/A (B60M)

- U B60M 7/00 Power lines or rails specially adapted for electrically-propelled vehicles of special types, e.g. suspension tramway, ropeway, underground railway**
- B60M 7/003 . {for vehicles using stored power (*e.g. charging stations*)}(~~e.g. charging stations~~)

Project: N/A (B60N)

B60N VEHICLE PASSENGER ACCOMMODATION NOT OTHERWISE PROVIDED FOR (furniture construction [A47](#))

NOTES

Attention is drawn to the Explanatory Note following the class title [B60](#)

In this subclass the following term is used with the meaning indicated:

- "cushion": seating part of a seat distinguished from the back-rest

- B60N 2/00 Seats specially adapted for vehicles (-for facilitating access of invalids to, or exit of invalids from, vehicles [A61G 3/02](#) ; railway seats [B61D 33/00](#) ; cycle seats [B62J 1/00](#) ; aircraft seats [B64D 11/06](#) , [B64D 25/04](#) , [B64D 25/10](#))**
- B60N 2/002 . {Passenger detection systems (-weighing apparatus, e.g. for airbag systems [G01G 19/4142](#)-)}
- B60N 2/005 . Arrangement or mounting of seats in vehicles {e.g. dismantable auxiliary seats}(~~B60N 2/02~~ takes precedence; { for railway vehicles [B61D 1/04](#) })
- U B60N 2/015 . . Attaching seats directly to vehicle chassis
- U B60N 2/01508 . . . {-using quick release attachments}
- U B60N 2/01516 {-with locking mechanisms}
- U B60N 2/01525 {-with locking elements expanding inside or under the vehicle floor or rail}
- B60N 2/01533 {-using balls interlocking with notches (-interlocking balls in general [E05B 63/121](#)-)}
- B60N 2/01541 {-using moving hooks (~~B60N 2/01583~~ takes precedence-)}
- B60N 2/02 . the seat or part thereof being movable, e.g. adjustable ({ [B60N 2/427](#) takes precedence } ; adjustable arm-rests [B60N 2/46](#) ; adjustable head-rests [B60N 2/48](#)-)
- B60N 2/0224 . . {-Non-manual adjustment, e.g. with electrical operation (~~B60N 2/0296~~ , [B60N 2/52](#) take precedence-)}
- B60N 2/0284 . . {-Adjustable seat-cushion length (~~B60N 2/0224~~ takes precedence-)}
- U B60N 2/04 . . the whole seat being movable

- B60N 2/045
 - • • {Longitudinal adjustment by means of articulated rods supporting the seat, e.g. parallelogram mechanisms (~~-B60N 2/38 takes precedence-~~)}
- B60N 2/06
 - • • slidable (~~-B60N 2/12 { B60N 2/2209 }takes precedence~~)
- B60N 2/10
 - • • tiltable(~~-B60N 2/2875 takes precedence-~~)
- B60N 2/14
 - • • rotatable, e.g. to permit easy access(~~-B60N 2/2869 takes precedence-~~)
- U B60N 2/16
 - • • height-adjustable
- B60N 2/169
 - • • • {Stepwise movement mechanisms, e.g. ratchets (~~-B60N 2/167 takes precedence; ratchets in general G05G 7/06-~~)}
- U B60N 2/18
 - • • • the front or the rear portion of the seat being adjustable, e.g. independently of each other
- B60N 2/1896
 - • • • • {Stepwise movement mechanisms, e.g. ratchets (~~-B60N 2/1882 takes precedence; ratchets in general G05G 7/06-~~)}
- B60N 2/20
 - • the back-rest being tiltable, e.g. to permit easy access ({ B60N 2/0224 }, B60N 2/04 , B60N 2/22 , { B60N 2/3002 }take precedence)
- B60N 2/22
 - • the back-rest being adjustable(~~-B60N 2/2878 takes precedence-~~)
- B60N 2/2213
 - • • {Gear wheel driven mechanism (~~-B60N 2/2231 , B60N 2/225 take precedence-~~)}
- B60N 2/224
 - • • {Stepwise movement mechanisms, e.g. ratchets (~~-ratchets in general G05G 7/06-~~)}
- B60N 2/225
 - • • by cycloidal or planetary mechanisms{ transmissions with orbital motion in general F16H 1/28 , F16H 1/32-}
- B60N 2/2251
 - • • • {with gears having orbital motion, e.g. sun and planet gears (~~-in general F16H 1/28-~~)}
- B60N 2/2252
 - • • • {in which the central axis of the gearing lies inside the periphery of an orbital gear, e.g. one gear without sun gear (~~-in general F16H 1/32-~~)}
- B60N 2/23
 - • • by {linear actuators, e.g.}linear screw mechanisms
- U B60N 2/24
 - for particular purposes or particular vehicles
- B60N 2/245
 - • {for handicapped persons (~~-facilitating access or loading of wheelchairs in ambulances A61G 3/00-~~)}
- B60N 2/26
 - • for children (~~-B60N 2/30 takes precedence-~~)
- B60N 2/28
 - • • Seats readily mountable on, and dismountable from, existing seats {or other parts}of the vehicle
- B60N 2/2803
 - • • • {Adaptations for seat belts (~~-seat belts for children in general B60R 22/105-~~)}
- U B60N 2/2821
 - • • • {having a seat and a base part}
- B60N 2/2824
 - • • • • {part of the base being supported by the vehicle frame (~~-B60N 2/289 takes precedence-~~)}
- B60N 2/2827
 - • • • • {part of the base being supported by the seat sub-frame (~~-B60N 2/2893 takes precedence-~~)}
- U B60N 2/2842
 - • • • {adapted to carry the child, when dismounted from the vehicle}
- B60N 2/2848
 - • • • • {being convertible or adaptable ro a preambulator, e.g. a baby-carriage or a push-chair (~~-preambulators in general B62B 7/14-~~)}
- B60N 2/2854
 - • • • {Children`s cots; Hammocks (~~-children`s chairs in general A47D 1/00-~~)}
- B60N 2/2857
 - • • • • {characterised by the peculiar orientation of the child (~~-B60N 2/2869 takes precedence-~~)}
- B60N 2/286
 - • • • • {forward facing (~~-B60N 2/2866 takes precedence-~~)}
- B60N 2/30
 - • Non-dismountable {or dismountable}seats storable in a non-use position, e.g. foldable spare seats (~~-convertible for other use B60N 2/32-~~)
- U B60N 2/3072
 - • • {on a lower level of a multi-level vehicle floor}

- B60N 2/3075 {stowed in recess (-[B60N 2/3079](#) takes precedence-)}
- B60N 2/3097 . . . {Dismountable seats storable in a non-use position (-[B60N 2/015](#) ,
[B60N 2/28](#) take precedence-)}
- U B60N 2/32 . . convertible for other use
- B60N 2/34 . . . into a bed (-sleeping arrangements in caravans [B60P 3/38](#)-)
- B60N 2/36 . . . into a loading platform{ ski-bags in [B60R 5/006](#) , [B60N 2/065](#) takes
precedence-}
- B60N 2/42 . . the seat constructed to protect the occupant from the effect of abnormal g-
forces, e.g. crash or safety seats (-[B60N 2/26](#) , [B60N 2/46](#) , [B60N 2/48](#) take
precedence-){(-built-in air bags [B60R 21/207](#)-)}
- U B60N 2/427 . . . Seats or parts thereof displaced during a crash
- U B60N 2/42727 {involving substantially rigid displacement}
- B60N 2/42745 {of the back-rest (-[B60N 2/433](#) takes precedence; higher part of the
back-rest moving together with the headrest [B60N 2/4885](#)-)}
- B60N 2/43 . . . {Safety locks (-for back-rests [B60N 2/433](#)-)}
- B60N 2/44 . Details or parts not otherwise provided for{(-seats in general [A47C 7/00](#) ;
storage compartments mounted on or under a seat [B60R 7/043](#)-)}
- B60N 2/4415 . . {Hydro-pneumatic adjustments of the shape (-for coach-like constructions
[B60N 2/7082](#)-)}
- B60N 2/442 . . {Positioning and locking mechanisms (-[B60N 2/16](#) , [B60N 2/18](#) , [B60N 2/22](#) ,
[B60N 2/225](#) take precedence-)}
- U B60N 2/4435 . . . {rotatable}
- B60N 2/4445 {Stepwise movement mechanisms, e.g. ratchets (-ratchets in general
[G05G 7/06](#)-)}
- B60N 2/448 . . {massaging systems (-massaging systems in general [A61H 1/00](#)-)}
- B60N 2/449 . . {Side-rests (-[B60N 2/2872](#) , [B60N 2/4882](#) take precedence-)}
- B60N 2/48 . . Head-rests{ [B60N 2/2851](#) takes precedence-}
- B60N 2/4802 . . . {fixed (-[B60N 2/487](#) and [B60N 2/4876](#) take precedence-)}
- B60N 2/4805 . . . {movable or adjustable (-[B60N 2/4876](#) takes precedence-)}
- B60N 2/4808 {slidable (-[B60N 2/4864](#) , [B60N 2/4867](#) take precedence-)}
- B60N 2/487 . . . {movable to an inoperative position (-[B60N 2/4832](#) , [B60N 2/4855](#) take
precedence-)}
- B60N 2/4873 {for rear seats (-[B60N 2/4835](#) , [B60N 2/4858](#) take precedence-)}
- B60N 2/4876 . . . {with diverse use, e.g. loud-speakers, magnetic devices, heating or cooling
devices (-roll-over protection [B60R 21/13](#)-)}
- U B60N 2/50 . . Seat suspension devices
- B60N 2/502 . . . {attached to the base of the seat (-[B60N 2/504](#) takes precedence-)}
- B60N 2/503 . . . {attached to the backrest (-[B60N 2/504](#) takes precedence-)}
- U B60N 2/54 . . . using mechanical springs{(springs in general [F16F](#))}
- B60N 2/544 {Compression or tension springs (-[B60N 2/542](#) takes precedence-)}
- B60N 2/56 . . Heating or ventilating devices{ heating, cooling, ventilating or other air-
treating in vehicles in general [B60H 1/00](#) ; control of temperature in general
[G05D 23/00](#) ; ventilation, heating or cooling of chairs in general [A47C 7/74](#)-}
- U B60N 2/58 . . Seat coverings
- B60N 2/5891 . . . {Manufacturing methods specially adapted therefor (-manufacturing of seat
covers in general [A47C 3/00](#)-)}
- B60N 2/62 . . Thigh-rests{(-[B60N 2/4415](#) takes precedence-)}
- B60N 2/64 . . Back-rests {or cushions (-[B60N 2/2222](#) takes precedence-)}

- B60N 2/643 · · · {shape of the back-rests (-B60N 2/66 takes precedence-)}
- B60N 2/66 · · · Lumbar supports{(-B60N 2/4415 takes precedence; lumbar supports for chairs or stools in general A47C 7/46-)}
- U B60N 2/70 · · {Upholstery, e.g.}upholstery springs
- B60N 2/7017 · · · {Manufacturing methods specially adapted therefor (-manufacturing of seat upholstery in general A47C 7/00 , shaping of substances in a plastic state in general B29C-)}
- U B60N 2/7023 · · · {Coach-like constructions}
- U B60N 2/7035 · · · · {Cushions}
- U B60N 2/7047 · · · · · {Springs}
- B60N 2/7082 · · · · · · {with air or fluid cushions (-B60N 2/4415 takes precedence-)}
- B60N 2/7088 · · · · · · · {with valves (-B60N 2/4415 takes precedence-)}
- B60N 3/00** **Arrangements or adaptations of other passenger fittings, not otherwise provided for (of radio sets, television sets, telephones, {stowing or holding appliances} , safety belts or the like B60R-)**
- B60N 3/001 · {of tables or trays (-detachable tables in general with provisions for use in vehicles A47B 31/06-)}
- B60N 3/008 · {of beds (-travelling or camp beds adapted to be used in, or connected to, a vehicle A47C 17/80-)}
- U B60N 3/02 · of hand grips or straps
- B60N 3/026 · · {characterised by the fixing means (-B60N 3/023 takes precedence-)}
- B60N 3/04 · of floor mats {or carpets}
- B60N 3/042 · · {of carpets (-B60N 3/046 , B60N 3/048 take precedence-)}
- B60N 3/044 · · {of removable mats (-B60N 3/046 , B60N 3/048 take precedence-)}
- B60N 3/06 · of footrests (floors of road vehicles{ B62D 25/20 })
- B60N 3/08 · of receptacles for refuse, e.g. ash-trays (-ashtrays per se A24F-)
- B60N 3/10 · of receptacles for food or beverages, e.g. refrigerated (-picnic sets A45F-){ cup holders in general A47G 23/02-}
- B60N 3/12 · of receptacles for cigarettes or the like ({ B60N 2/4686 takes precedence } ; receptacles for cigarettes or the like A24F-)
- B60N 3/14 · of electrically-heated lighters{ arrangements of lighting devices for vehicle interiors for lighting passenger or driving compartment B60Q 3/02 , igniters using electrically-produced heat F23Q 7/00-}
- B60N 3/16 · of cooking or boiling devices (-cooking of boiling devices per se A47 , F24C-)
- B60N 3/18 · of drinking-water {or other beverage}dispensing devices
- B60N 5/00** **Arrangements or devices on vehicles for entrance or exit control of passengers, e.g. turnstiles (-turnstiles in general E06B 11/08-)**

Project: N/A (B60P)

- U B60P 1/00 **Vehicles predominantly for transporting loads and modified to facilitate loading, consolidating the load, or unloading (vehicles for carrying harvested crops with means for self-loading or self-unloading A01D 90/00; peculiar to refuse collecting-vehicles B65F; loading or unloading vehicles by means not incorporated therein B65G)**
- U B60P 1/64 · the load supporting or containing element being readily removable ({B60P 1/48 takes precedence}; caravan, camping, or the like vehicles characterised by living accommodation in the form of a removable body supported by the vehicle unit {B60P 3/34})
- B60P 1/6418 · · {-the load-transporting element being a container or similar}

- U B60P 7/00** **Securing or covering of load on vehicles (immobilising the load during lifting a loading platform [B60P 1/4457](#)); for railway vehicles [B61D 45/00](#))**
- U B60P 7/06 • Securing of load (vehicle retainers [B60P 3/073](#))
- U B60P 7/08 • • securing to the vehicle floor or sides ({[B60P 7/065](#)}, [B60P 7/13](#), [B60P 7/135](#) take precedence)
- U B60P 7/0823 • • • {Straps; Tighteners}
- B60P 7/0846 • • • • {-winding up or storing of straps}
- B60P 7/0861 • • • • {-Measuring or identifying the tension in the securing element}
- B60P 7/0869 • • • • {-Protecting the strap or the load from wear}

Project: N/A (B60Q)**B60Q**

VEHICLE LIGHTING OR SIGNALLING (arrangement of signalling or lighting devices, the mounting or supporting thereof for rail vehicles [B61D](#), for cycles [B62J](#), for ships [B63B](#), for aircrafts [B64D](#); lighting in general, lighting devices per se [F21](#), [H05B](#); signalling in general [G08](#); electric switches per se [H01H](#))

NOTES

This subclass covers also:

- electric signalling of lighting circuits so far as specially arranged in vehicles;
- arrangements or adaptations of lighting switches or signal-initiating means

Attention is drawn to the Note following the title of class [B60](#)

Attention is drawn to the following places :

B60K 28/00	Safety devices, e.g. sleeping driver
B60R 25/00	Anti theft
B62D	Driving assistance
B62D 15/02	Steering aids
B60K 31/0008	Cruise control
F21S 48/00	Lighting devices or systems specially adapted for vehicles
G01S	Infra red night vision
G01S 13/931	Anti Collision
G05D 1/00	Automatic pilot
G06K 9/00	Pattern recognition
G06T 3/00	Image transformation
G06T 5/00	Image enhancement
G06T 7/00	Image analysis
G08B 21/00	Alarms in general
G08G	Traffic control
G08G 1/16	Anti-collision systems
H04N	Television systems

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

B60Q 1/128	covered by	B60Q 1/124
B60Q 1/132	covered by	B60Q 1/124
B60Q 1/136	covered by	B60Q 1/124

B60Q 1/00	Arrangements or adaptations of optical signalling or lighting devices (-for lighting vehicle interior B60Q 3/00 ; { circuit arrangements for electric light sources in general H05B 37/00 })
B60Q 1/0005	· {Devices preventing the lights from becoming dirty or damaged (-protecting lighting devices from damage in general F21V 15/00 -), e.g. protection grids (-fastening of grids or protective cages in general F21V 17/00 -), cleaning by air flow(-windshield wipers for cleaning optical devices of vehicles B60S 1/04 -)}
B60Q 1/0011	· {with light guides for distributing the light between several lighting or signalling devices (-using light guides inside a single device F21S 8/00 , light guides per se G02B 6/0001 -)}
B60Q 1/0064	· {with provision for maintenance, e.g. changing the light bulb (-swivel arrangements B60Q 1/0425 ; fastening of covers F21S 48/15 ; changing light sources in general F21V 19/04 ; fastening of light sources or lamp holders F21S 48/1104 , F21S 48/211 -)}
B60Q 1/007	· · {via a removable cap (-fastening of the light source by a cap holding the light source F21S 48/1104 , F21S 48/211 -)}
B60Q 1/0076	· {Switches therefor (- B60Q 1/1446 , B60Q 1/343 , B60Q 1/40 take precedence, arrangements or fitting of control knobs on dashboard B60K 37/06 -)}
B60Q 1/0088	· {Details of electrical connections (- B60Q 1/305 takes precedence; electrical connectors in general H01R ; electrical connection of the light source itself F21S 48/1109 , F21S 48/212 -)}
B60Q 1/0094	· · {Arrangement of electronic circuits separated from the light source (-e.g. mounting of housings for starter circuits for discharge lamps, circuits per se H05B , arrangements being part of the light source holder F21V 17/06 , F21S 48/1109 , F21S 48/212 -)}
U B60Q 1/02	· the devices being primarily intended to illuminate the way ahead or to illuminate other areas of way or environments
U B60Q 1/04	· · the devices being headlights
B60Q 1/0408	· · · {built into the vehicle body, e.g. details concerning the mounting of the headlamps on the vehicle body (- B60Q 1/0491 , B60Q 1/05 take precedence, integrated front ends B62D 25/00 -)}
B60Q 1/0433	· · · · {the housing being fastened onto the vehicle body using screws (-adjustable headlamp by rotation of a screw B60Q 1/0683 -)}
B60Q 1/045	· · · · {with provision for adjusting the alignment of the headlamp housing with respect to the vehicle body (-adjusting the light beam B60Q 1/06 -)}
B60Q 1/0458	· · · · {the front cover being directly mounted onto the vehicle body (-mounting the cover on the housing F21S 48/15 -)}
B60Q 1/0491	· · · {Shock absorbing devices therefor (-resilient mounting of lighting devices in general F21V 15/04 ; shock absorbing devices in general F16F 15/04 -)}
B60Q 1/06	· · · adjustable, e.g. remotely controlled from inside vehicle (- B60Q 1/05 takes precedence; { changing the characteristics or distribution of the light by adjustment of parts, e.g. reflectors, light sources, lenses, screens F21V 14/00 })
B60Q 1/076	· · · · by electrical means {including means to transmit the movements, e.g. shafts or joints}
U B60Q 1/08	· · · · automatically
B60Q 1/085	· · · · · [due to special conditions, e.g. adverse weather, type of road, badly illuminated road signs or potential dangers (- B60Q 1/10 , B60Q 1/12 , B60Q 1/1423 take precedence-)]
U B60Q 1/10	· · · · · due to vehicle inclination, e.g. due to load distribution

- B60Q 1/115 by electric means{(-details of the electric drive components, e.g. motors, shafts, ball joints [B60Q 1/076](#)-)}
- U B60Q 1/12 due to steering position
- B60Q 1/122 {with electrical actuating means{(-details of the electric drive components, e.g. motors, shafts, ball joints [B60Q 1/076](#)-)}
- B60Q 1/14 having dimming means{(-lighting power supply circuits in general [H05B](#)-)}
- B60Q 1/1407 {General lighting circuits comprising dimming circuits {(-dimming circuits per se [B60Q 1/1415](#)-)}
- B60Q 1/1438 {Actuating means for dimming masks or screens{(-adjustable screens per se [F21V 11/04](#)-)}
- B60Q 1/18 being additional front lights{(-bracket mounted headlights [B60Q 1/0483](#)-)}
- B60Q 1/20 Fog lights{(-single shaped beam lighting devices specially adapted for vehicles for penetrating fog or preventing glare [F21S 8/12](#)-)}
- U B60Q 1/24 for lighting other areas than only the way ahead
- B60Q 1/245 {using spotlights adjustable from within the vehicle {(-adjustable headlights [B60Q 1/06](#)-)}
- B60Q 1/26 the devices being primarily intended to indicate the vehicle, or parts thereof, or to give signals, to other traffic{(-such devices mounted on the vehicle rear part [F21S 48/20](#) ; means for the lighting or illuminating of aerials, e.g. for purpose of warning [H01Q 1/06](#)-)}
- B60Q 1/2611 {Indicating devices mounted on the roof of the vehicle {(-flashing light sources in general [F21S 10/06](#)-)}
- B60Q 1/2657 {mounted on a shaft, e.g. telescopic {(-lamps on antennas or powerlines [F21S 8/085](#)-)}
- B60Q 1/2661 {mounted on parts having other functions{(-on wheels [B60Q 1/323](#)-)}
- B60Q 1/2665 {on rear-view mirrors {(-lighting devices for vehicle interior on or for rear-view mirrors [B60Q 3/023](#) ; adaptations or arrangements of mirrors for use on cycles [B62J 29/00](#) ; rear-view mirror arrangements [B60R 1/02](#) ; mirror assemblies combined with lamps [B60R 1/1207](#)-)}
- B60Q 1/2669 {on door or boot handles {(-lighting devices for vehicle interior on door handles [B60Q 3/0233](#) ; vehicle doors [B60J 5/00](#) illuminating devices on or for locks or keys [E05B 17/10](#) ; Keyhole finders [E05B 15/08](#)-)}
- B60Q 1/2673 {on parts worn by the driver, e.g. clothes {(-professional or sporting clothes with reflecting or luminous means [A41D 13/01](#)-), gloves {(-protective gloves with reflecting or luminous means [A41D 19/0157](#)-), or bags, specially adapted to provide auxiliary vehicle signalling}
- B60Q 1/2676 {Helmets {(-helmets in general [A42B 3/00](#) ; helmets with signalling or lighting devices [A42B 3/0433](#)-)}
- B60Q 1/268 {on windcreens or windows {(-[B60Q 1/302](#) takes precedence; windows or windcreens in general [B60J 1/00](#) ; lighting devices for vehicle interior on or for windows [B60Q 3/0213](#)-)}
- B60Q 1/2684 {on wipers or windscreen washers{(-vehicle wipers [B60S 1/04](#) ; windscreen washers [B60S 1/46](#)-)}
- B60Q 1/2688 {on exhaust pipes (exhaust or silencing apparatuses in general [F01N](#))}
- B60Q 1/2692 {retractable lights {(-retractable headlights [B60Q 1/05](#)-)}
- B60Q 1/2696 {Mounting of devices using LEDs{(-fastening of LEDs on printed circuits [F21V 19/001](#)-)}
- U B60Q 1/30 for indicating rear of vehicle, e.g. by means of reflecting surfaces
- B60Q 1/307 {mounted on loading platforms {(-warning signals on loading platforms [B60P 1/4464](#)-)}

- U B60Q 1/32
 - • for indicating vehicle sides,{e.g. clearance lights}
- B60Q 1/323
 - • • {on or for doors or running boards, e.g. to facilitate access to the vehicle (-illumination of door locks [E05B 17/10](#)-)}
- B60Q 1/34
 - • for indicating change of drive direction{(-[B60Q 1/22](#) takes precedence-)}
- B60Q 1/343
 - • • {Manually actuated switching arrangements therefor (-**Hand actuated multifunction switches** [B60Q 1/1461](#) ; *Hand actuated multifunction switches* [B60Q 1/1461](#) ; [B60Q 1/40](#) takes precedence-)}
- B60Q 1/40
 - • • having {mechanical, electric or electronic}automatic return to inoperative position
- U B60Q 1/42
 - • • • {having mechanical automatic return to inoperative position}due to steering-wheel position,{e.g. with roller wheel control}
- B60Q 1/425
 - • • • • {using a latching element for resetting a switching element (-**Hand actuated multifunction switches** [B60Q 1/1461](#) -*Hand actuated multifunction switches* [B60Q 1/1461](#))}
multifunction switches [B60Q 1/1461](#))}
- U B60Q 1/44
 - • for indicating braking action or preparation for braking,{e.g. by detection of the foot approaching the brake pedal}
- B60Q 1/441
 - • • {Electric switches operable by the driver`s pedals (-electric switches in general [H01H](#)-)}
- B60Q 1/444
 - • • {with indication of the braking strength or speed changes, e.g. by changing shape or intensity of the indication (-[B60Q 1/1407](#) , [B60Q 1/442](#) , [B60Q 1/447](#) take precedence-)}
- B60Q 1/46
 - • for giving flashing caution signals during drive, other than signalling change of direction, e.g. flashing the headlights,{hazard lights(-flashing lights in general [F21S 10/06](#)-)}
- B60Q 1/48
 - • for parking purposes{(-warning arrangements in garages [E04H 6/42](#)-)}
- U B60Q 1/50
 - • for indicating other intentions or conditions, e.g. request for waiting or overtaking
- B60Q 1/52
 - • • for indicating emergencies{(-braking indicating devices [B60Q 1/44](#) , portable emergency signal devices [B60Q 7/00](#)-)}
- B60Q 1/525
 - • • • {indicating risk of collision between vehicles or with pedestrians (-using video cameras [B62D 1/00](#) ; Radars designed for anti-collision purposes between land vehicles or between land vehicle and fixed obstacles [G01S 13/931](#) ; Control of position or course in two dimensions for land vehicles [G05D 1/021](#) ; Anti-collision systems for road vehicles [G08G 1/16](#)-)}
- B60Q 1/54
 - • • for indicating speed {outside of the vehicle(-automatic vehicle speed controlling fittings including unintended speed signalling devices to the vehicle driver [B60K 31/18](#)-)}
- B60Q 1/56
 - • for illuminating registrations or the like,{e.g. for licence plates(-license plates [B60R 13/10](#)-)}
- U B60Q 3/00**
 - Arrangements or adaptations of lighting devices for vehicle interior**
- B60Q 3/001
 - {manually adjustable, e.g. colours, orientation, intensity}{(-automatically adjusted [B60Q 3/0293](#)-)}
- B60Q 3/007
 - {with means for electrical plugging into vehicle, e.g. in cigarette lighter, in special plug}{(-arrangement of electrically heated lighters [B60N 3/14](#)-)}
- U B60Q 3/02
 - for lighting passenger or driving compartment
- B60Q 3/0203
 - • {Details of mounting onto vehicle interior, e.g. onto ceiling, floor}{(-mounting of lighting devices [F21V 21/04](#) , vehicle liners [B60R 13/02](#) , connectors [H01R 33/00](#)-)}
- B60Q 3/0206
 - • • {Modular mounting systems, e.g. using tracks, rails, multiple plugs}{(-for lighting devices in general [F21V 21/005](#)-)}

- U B60Q 3/0209 . . {mounted onto or for lighting specific vehicle fittings}
- B60Q 3/0213 . . . {on or for sun roofs, or windows (-windows per se [B60J 1/00](#) , sun roofs per se [B60J 7/00](#)-)}
- B60Q 3/0216 . . . {on or for doors or steps (-vehicle doors [B60J 5/00](#)-)}
- B60Q 3/022 . . . {on or for small compartments, e.g. glove compartment (-stowing small appliances in vehicles [B60R 7/00](#)-)}
- B60Q 3/0223 . . . {on or for seats, arm rests or head rests (-vehicle seats per se [B60N 2/00](#)-)}
- B60Q 3/0226 . . . {on or for sun visors (-sun visors per se [B60J 3/0204](#)-)}
- B60Q 3/023 . . . {on or for rear view mirrors (-rear view mirror per se [B60R 1/00](#)-)}
- B60Q 3/0233 . . . {on or for door handles or hand grabs (-door handles per se [B60N 3/02](#)-)}
- B60Q 3/0236 . . . {on or for smoking related tools, e.g. cigarette lighters, ashtrays (-cigarette lighters [B60N 3/14](#) , ashtrays [B60N 3/083](#)-)}
- B60Q 3/024 . . . {on or for steering wheel or gear shift (-steering wheels [B62D 1/04](#) , gear shifts [B60K 20/00](#)-)}
- B60Q 3/0243 . . . {others, e.g. cup holders, ignition locks (-lighting for door locks [E05B 15/08](#) , [E05B 17/10](#)-)}
- B60Q 3/0246 . . . {for mass transit vehicles (-[B60Q 3/0209](#) , [B60Q 3/04](#) take precedence, illumination of sides, boards or panels in general [G09F 13/00](#)-)}
- B60Q 3/0256 . . . {Emergency lighting, e.g. escape routes (-illumination of emergency signs [G09F 13/00](#)-)}
- B60Q 3/0263 . . . {Mounted on a shaft (-for lighting devices in general [F21V 21/26](#) and [F21V 21/32](#)-)}
- B60Q 3/0269 . . . {with provision for being portable (-portable lighting devices in general [F21L](#)-)}
- B60Q 3/0279 . . . {overall lighting alone or in combination with specific lighting, e.g. arrangement of room lamps, combination of room lamps with reading lamps (-fastening of components within lighting devices [F21V 17/00](#) , [F21V 19/00](#) and [F21V 23/00](#)-)}
- B60Q 3/0283 . . . {using lighting panels or mats, e.g. electro-luminescent panels, LED mats (-electroluminescent light sources [H05B 33/00](#)-)}
- B60Q 3/0286 . . . {Specific lighting, e.g. reading lamps, directional or focussed lighting towards small surfaces, e.g. using blends (-fastening of components within lighting devices [F21V 17/00](#) , [F21V 19/00](#) and [F21V 23/00](#)-)}
- B60Q 3/0293 . . . {circuits or control for interior lights (-circuits for light sources in general [H05B 37/00](#) and [H05B 39/00](#) , for electric vehicles [B60L 1/14](#) , electronic switching [H03K 17/00](#) , remote control [H04Q 9/00](#)-)}
- B60Q 3/0296 . . . {Switches specifically designed for interior lights, e.g. switching by tilting the lens (-mechanical switches in general [H01H](#) , electronic switches in general [H03K 17/00](#) , arrangement of instruments in vehicles in general [B60K 35/00](#) and [B60K 37/00](#)-)}
- B60Q 3/04 . . . for dashboard{-lighting of individual instruments [G01D](#), association of lighting devices with LCDs [G02F 1/1335](#)-)}
- B60Q 3/046 . . . {Circuits or control therefore (-for electric vehicles [B60L 1/14](#) ; electronic switching [H03K 17/00](#) ; remote control [H04Q 9/00](#) ; circuits for light sources in general [H05B 37/00](#) , [H05B 39/00](#)-)}
- B60Q 3/048 {for varying the light intensity (-controlling the light intensity of displays [G09G](#); circuits for controlling the light intensity emitted by particular light sources [H05B](#)-)}
- U B60Q 3/06 . . . for lighting compartments other than passenger or driving space, e.g. luggage or engine compartment
- B60Q 3/065 . . . {with provision for being portable (-portable lighting devices in general [F21L](#)-)}

- B60Q 5/00** Arrangements or adaptations of acoustic signal devices~~{(-sound producing devices in general [G10K](#)-)}~~
- U B60Q 5/005 · {automatically actuated}
- B60Q 5/006 · · {indicating risk of collision between vehicles or with pedestrians ~~(-using video cameras [B62D 1/00](#) ; Radars designed for anti-collision purposes between land vehicles or between land vehicle and fixed obstacles [G01S 13/931](#) ; Control of position or course in two dimensions for land vehicles [G05D 1/021](#) ; Anti-collision systems for road vehicles [G08G 1/16](#)-)}~~
- B60Q 7/00** Arrangement or adaptation of portable emergency signal devices on ~~{board}vehicles {to be placed on roadways or vehicles, e.g. warning triangles},(-arrangements for enforcing caution on roads, e.g. marker posts, [E01F 9/00](#) ; signs [G09F](#) , e.g. reflecting warning triangles [G09F 13/16](#)-)}~~
- U **B60Q 9/00** Arrangements or adaptations of signal devices not provided for in one of the preceding main groups,~~{e.g. haptic signalling}~~
- B60Q 9/002 · {for parking purposes, e.g. for warning the driver that his vehicle has contacted or is about to contact an obstacle ~~(-warning arrangements in garages [E04H 6/42](#)-)}~~
- B60Q 9/004 · · {using wave sensors ~~(-radar designed for anti-collision purposes between land vehicles or between land vehicles and fixed obstacles [G01S 13/931](#)-)}~~
- B60Q 11/00** Arrangements of monitoring devices for devices provided for in groups [B60Q 1/00](#) to [B60Q 9/00](#) ~~{(-testing of electric installations on road vehicle [G01R 31/00](#)-)}~~
- U B60Q 11/005 · {for lighting devices, e.g. indicating if lamps are burning or not}
- B60Q 11/007 · · {the lighting devices indicating change of drive direction ~~(-change of drive direction indicators [B60Q 1/34](#)-)}~~

Project: N/A (B60R)

- B60R 1/00** Optical viewing arrangements ~~{(house mirrors and spies [A47G 1/00](#) ; } antiglare equipment, e.g. polarising, for windscreens or windows [B60J 3/00](#) ; { visual aids for tractors [B62D 49/0614](#) ; } devices per se [G02B](#)-)}~~
- B60R 1/002 · {specially adapted for covering the peripheral part of the vehicle, e.g. for viewing tyres, bumpers or the like ~~(-integrated in the windows [B60R 1/001](#) ; combined with rear-view mirrors [B60R 1/08](#)-)}~~
- B60R 1/006 · {Side-view mirrors, e.g. V-shaped mirrors located at the front or rear part of the vehicle ~~(-combined with rear-view mirrors [B60R 1/08](#) ; side-view periscopes [B60R 1/10](#)-)}~~
- B60R 1/008 · {allowing the driver to see passengers, e.g. for busses ~~(-combined with rear-view mirrors [B60R 1/08](#)-)}~~
- B60R 1/02 · Rear-view mirror arrangements ~~(-periscope arrangements [B60R 1/10](#)-)~~
- B60R 1/04 · · mounted inside vehicle~~{(-[B60R 1/025](#) , [B60R 1/08](#) take precedence-)}~~
- B60R 1/06 · · mounted on vehicle exterior~~{(-[B60R 1/025](#) , [B60R 1/08](#) take precedence-)}~~
- B60R 1/062 · · · with remote control for adjusting position~~{(-[B60R 1/0607](#) takes precedence-)}~~
- B60R 1/076 · · · yieldable to excessive external force and provided with an indexed use position ~~{([B60R 1/0617](#) , [B60R 1/074](#) }take precedence)~~
- B60R 1/08 · · involving special optical features, e.g. avoiding blind spots~~{e.g. convex mirrors; Side-by-side associations of rear-view and other mirrors(-[B60R 1/025](#) , [B60R 1/10](#) take precedence-)}~~
- U B60R 1/083 · · · {Anti-glare mirrors, e.g. "day-night" mirrors}

- B60R 1/084
- • • {using a removable filtering or hiding screen (-associated with windows or windscreens [B60J 3/00-](#))}
- B60R 1/10
- Front-view mirror arrangements; {(-specially adapted for covering the peripheral part of the vehicle [B60R 1/002-](#)); periscope arrangements({i.e. optical devices using combinations of mirrors, lenses, prisms or the like (-specially adapted for covering the peripheral part of the vehicle [B60R 1/002](#) ; for viewing traffic-lights [B60R 1/005-](#)); Other mirror arrangements giving a view from above or under the vehicle}
- B60R 3/00** **Arrangements of steps (or ladders facilitating access to or on the vehicle), e.g. running-boards ({ construction of steps for railway vehicles [B61D 23/00](#) } ; ladders [E06C-](#))**
- B60R 3/002
- {Running boards (-for vehicle tops [B60R 3/005](#); at the sides of the vehicle for carrying loads [B60R 9/02-](#))}
- B60R 3/007
- {Removable steps or ladders, e.g. foldable (-as access means for vehicle tops [B60R 3/005-](#))}
- B60R 3/02
- Retractable steps {or ladders, e.g. movable under shock(-[B60R 3/005](#) takes precedence-)}
- B60R 5/00** **Compartments within vehicle body primarily intended or sufficiently spacious for trunks, suit-cases, or the like (-primarily intended for stowing loads in load-transporting vehicles [B60P](#) ; arrangements for stowing spare wheels [B62D 43/00-](#))**
- B60R 5/003
- {Luggage racks, e.g. for busses (-primarily intended for passengers` property smaller than suitcases [B60R 7/04](#) ; [B60R 7/08](#) ; luggage racks for rail vehicles [B61D 37/003-](#))}
- B60R 5/02
- arranged at front of vehicle{(-[B60R 5/003](#) takes precedence-)}
- B60R 5/04
- arranged at rear of vehicle{(-[B60R 5/003](#) , [B60R 5/006](#) take precedence; external trunks arranged at rear of vehicle [B60R 9/065-](#))}
- B60R 5/041
- {extensible externally of the vehicle body, e.g. to create an open luggage compartment of increased capacity (-devices for anchoring the boot lid while carrying oversize objects [E05C 17/042-](#))}
- B60R 7/00** **Stowing or holding appliances inside vehicle primarily intended for personal property smaller than suit-cases, e.g. travelling articles, or maps (-for radio sets, television sets, telephones or the like, mounting of cameras operative during drive, tools, or spare parts [B60R 11/00](#) ; for receptacles for refuse, food, beverages, cigarettes [B60N-](#))**
- B60R 7/02
- in separate luggage compartment{(-[B60R 7/005](#) takes precedence-)}
- B60R 7/04
- in driver or passenger space,{e.g. using racks(-[B60R 7/005](#) , [B60R 7/08](#) take precedence-)}
- B60R 7/08
- Disposition of racks, clips,{holders, containers}or the like {for supporting specific articles(-[B60R 7/005](#) takes precedence-)}
- U B60R 9/00** **Supplementary fittings on vehicle exterior for carrying loads, e.g. luggage, sports gear or the like**
- B60R 9/04
- Carriers associated with vehicle roof (-[B60R 9/08](#) takes precedence-)
- B60R 9/045
- • Carriers being adjustable or transformable, e.g. expansible, collapsible{(-transformable into tents [B60P 3/36](#) ; into beds [B60P 3/38-](#))}
- U B60R 9/048
- • Carriers characterised by article-gripping,{-covering,}-retaining, or -locking means
- B60R 9/0485
- • {for ladders (-[B60R 9/0423](#) takes precedence-)}
- B60R 9/05
- • Carriers characterised by wind deflecting means (-wind deflectors for open roofs [B60J 7/22-](#))

- B60R 9/052
- Carriers comprising elongate members extending only transversely of vehicle (~~B60R 9/08~~ takes precedence)
- B60R 9/055
- Enclosure-type carriers, e.g. containers, boxes (~~B60R 9/048~~ takes precedence)
- B60R 9/06
- at vehicle front or rear (~~rear luggage compartments within vehicle extensible externally of the vehicle body B60R 5/041~~)
- B60R 9/08
- specially adapted for sports gear (~~vehicles specially adapted for carrying aeroplanes, for carrying boats B60P~~)
- U B60R 11/00 Arrangements for holding or mounting articles, not otherwise provided for**
- B60R 11/02
- for radio sets, television sets, telephones, or the like; Arrangements of control thereof (~~stowing of tape cartridges, compact discs or the like B60R 7/088; of aerials H01Q~~)
- B60R 11/0205
- {for radio sets (~~B60R 11/0211~~ takes precedence)}
- B60R 11/04
- Mounting of cameras operative during drive; Arrangement of controls thereof relative to the vehicle (cameras per se [G03B](#))
- B60R 11/06
- for tools or spare parts (~~for vehicle roof parts [B60J 7/20](#) ; for spare wheels [B62D](#)~~)
- U B60R 13/00 Elements for body-finishing, identifying, or decorating; Arrangements or adaptations for advertising purposes**
- B60R 13/02
- {Internal}Trim mouldings; {Internal}Ledges; Wall liners {for passenger compartments}; Roof liners (~~B60R 13/01~~ takes precedence; { padded linings for the vehicle interior [B60R 21/04](#) ; arrangements or adaptations of floor mats or carpets in vehicles [B60N 3/04](#) ; internal lining for trains [B61D 17/18](#) })
- B60R 13/0206
- {Arrangements of fasteners and clips specially adapted for attaching inner vehicle liners or mouldings (~~devices for fastening or securing [F16B](#)~~)}
- B60R 13/0212
- {Roof or head liners (~~movable head-liners [B60J 7/0007](#)~~)}
- B60R 13/0268
- {Rear parcel liners (~~used as luggage covering means [B60R 5/044](#)~~)}
- B60R 13/0275
- {comprising removable or hinged parts (~~for accessing storage compartments [B60R 7/04](#) ; for airbag deployment [B60R 21/215](#)~~)}
- B60R 13/04
- {External}Ornamental or guard strips; Ornamental inscriptive devices {thereon (~~fastening strips or bars to sheets or plates by means of clips [F16B 5/12](#)~~)}
- B60R 13/06
- Sealing strips (~~sealing arrangements for vehicle windows, windscreens, non-fixed roofs, doors, or similar devices [B60J 10/00](#)~~)
- B60R 13/07
- Water drainage or guide means not integral with roof structure (~~B60R 13/06~~ , { [B60J 10/0045](#) }take precedence;{ integral with roof structure [B62D 25/07](#) ; drainage openings having movable or removable closures [B62D 25/24](#) })
- B60R 13/08
- Insulating elements, e.g. for sound insulation (~~sound insulating linings for trains [B61D 17/185](#) ; drivers` cabs for load-carrying vehicles insulated against vibrations or noise [B62D 33/0604](#) ; thermal or acoustic insulation of engines [F02B 77/11](#) ; damping of sounds using compensation by electro-acoustic methods [G10K 11/178](#)~~)
- B60R 13/0815
- {Acoustic or thermal insulation of passenger compartments (~~wall or roof liners integrating the insulating function [B60R 13/02](#) ; insulating floor mats or carpets [B60N 3/04](#)~~)}
- B60R 13/0892
- {for humidity insulation (~~sealing strips [B60R 13/06](#)~~)}
- U B60R 15/00 Arrangements or adaptations of sanitation devices**
- B60R 15/02
- Washing facilities (~~in railway vehicles [B61D 35/002](#)~~)
- B60R 15/04
- Toilet facilities (~~in railway vehicles [B61D 35/005](#)~~)

B60R 16/00	Electric or fluid circuits specially adapted for vehicles and not otherwise provided for; Arrangement of elements of electric or fluid circuits specially adapted for vehicles and not otherwise provided for {(-devices for protecting vehicle occupants in case of accidents B60R 21/00 ; safety belts B60R 22/00 ; central door locking E05B 49/00 , E05B65/38 -)}
B60R 16/005	· {Electro-mechanical devices, e.g. switched}(-electric switches in general H01H -)}
B60R 16/02	· electric {constitutive elements}
U B60R 16/023	· · for transmission of signals between vehicle parts or subsystems
B60R 16/0231	· · · {Circuits relating to the driving or the functioning of the vehicle}(-for dash boards B60K 37/00 , B60Q 3/04 ; for indicating emergencies B60Q 1/52 ; registering or indicating the working of vehicles G07C 5/00 ; measuring distance G01C , e.g. combinations of speed and distance G01C 23/00 ; engine indicators G01L ; measuring speed or acceleration G01P ; brake control systems B60T ; monitoring tyres B60C 23/00 ; indicating overspeed B60K 31/00 -)}
B60R 16/0237	· · · {circuits concerning the atmospheric environment (meteorology G01W)}
B60R 16/027	· · · between relatively movable parts of the vehicle, e.g. between steering wheel and column{-devices for measuring, signalling or controlling tyre pressure or temperature specially adapted for mounting on vehicles B60C 23/00 -)}
B60R 16/03	· · for supply of electrical power to vehicle subsystems {or for(-circuit arrangements for charging batteries H02J 7/00 -)}
B60R 16/0315	· · · {using multiplexing techniques (-multiplexing for transmission of signals G08C 15/00 ; multiplexing for electrical communication in general H04J -)}
B60R 16/033	· · · characterised by the use of electrical cells or batteries (-for propulsion purposes B60K 1/04 ; supplying batteries to, or removing batteries from, vehicles B60S 5/06 ; testing of charge state G01R 31/36 -)
U B60R 16/037	· · for occupant comfort,{e.g. for automatic adjustment of appliances according to personal settings, e.g. seats, mirrors, steering wheel}
B60R 16/0373	· · · {Voice control (in general G10L)}
B60R 16/06	· · for removing electrostatic charges (-carrying-off electrostatic charges in general H05F 3/00 -)
B60R 17/00	Arrangements or adaptations of lubricating systems or devices (-lubricating in general F16N -)
B60R 19/00	Wheel guards; Radiator guards,{e.g. grilles}; Obstruction removers; Fittings damping bouncing force in collisions ({ reinforcement elements for side doors B60J 5/0412 ; }mudguards B62D)
B60R 19/02	· Bumpers, i.e. impact receiving or absorbing members for protecting vehicles or fending off blows from other vehicles or objects ({ B60R 19/56 takes precedence; } initiating brake action by contact of bumper with an external object B60T 7/22 ; for rail vehicles B61F 19/04 ; safety equipment for cycles B62J 27/00 ;] integral with waterborne vessels or specially adapted therefor B63B 59/02 -)
B60R 19/03	· · characterised by material, e.g. composite (- B60R 19/18 takes precedence-)
B60R 19/04	· · formed from more than one section {in a side-by-side arrangement}
U B60R 19/18	· · {characterised by the cross-section;}Means within the bumper to absorb impact
B60R 2019/1806	· · · {Structural beams therefor, e.g. shock-absorbing} (-bumper beams made of cellular materials B60R 19/22 -)}

- B60R 2019/1886
 - • • {Bumper fascias and fastening means therefor (-on fenders [B60R 2019/247-](#))}
- B60R 19/20
 - • • containing {mainly}gas or liquid, e.g. inflatable (-connection of valves to inflatable elastic bodies [B60C 29/00-](#))
- B60R 19/22
 - • • containing {mainly}cellular material, e.g. solid foam
- U B60R 19/24
 - • Arrangements for mounting bumpers on vehicles
- B60R 19/26
 - • • comprising yieldable mounting means ({[B60R 19/38](#) takes precedence; } springs, shock absorbers, or means for damping vibrations per se [F16F-](#))
- B60R 19/36
 - • • • Combinations of yieldable mounting means of different types{(-fluid shock absorbers with coaxial coil springs [B60R 19/32-](#))}
- B60R 19/38
 - • • adjustably or movably mounted, e.g. horizontally displaceable for securing a space between parked vehicles{(-adjustably mounted for compensating manufacturing tolerances [B60R 19/24](#) , [B60R 19/26-](#))}
- B60R 19/40
 - • • • in the direction of an obstacle before a collision,{or extending during driving of the vehicle, i.e. to increase the energy absorption capacity of the bumper(-inflatable bumpers [B60R 19/20-](#))}
- B60R 19/42
 - • extending primarily along the sides of, or completely encircling, a vehicle (-ornamental or guard strips [B60R 13/04-](#))
- B60R 19/52
 - Radiator or grille guards{; Radiator grilles(-cooling aspects [B60K 11/08-](#))}
- B60R 19/54
 - Obstruction removers or deflectors (-[B60R 19/16](#) , [B60R 21/34](#) take precedence-)
- B60R 21/00**

Arrangements or fittings on vehicles for protecting or preventing injuries to occupants or pedestrians in case of accidents or other traffic risks (- safety belts or body harnesses in vehicles [B60R 22/00](#) ; devices, apparatus or methods for life-saving in general [A62B](#) ; safety devices for propulsion unit control specially adapted for, or arranged in, vehicles [B60K 28/00](#) ; seats constructed to protect the occupant from the effect of abnormal g-forces, e.g. crash or safety seats, [B60N 2/42](#) ; energy-absorbing arrangements for hand wheels for steering vehicles [B62D 1/11](#) ; energy-absorbing arrangements for vehicle steering columns [B62D 1/19](#) ; harnessing in aircraft [B64D 25/00-](#))
- B60R 21/01
 - Electrical circuits for triggering {passive} safety arrangements, {e.g. airbags, safety belt tighteners,} in case of vehicle accidents or impending vehicle accidents {(-electrical circuits for transmission of signals between steering wheel and the vehicle itself [B60R 16/027](#); for electrically actuating belt retractor locking means [B60R 22/343-](#))}
- U B60R 2021/01122
 - • {Prevention of malfunction}
- B60R 2021/01184
 - • • {Fault detection or diagnostic circuits (-in power circuits [B60R 2021/01129-](#))}
- B60R 21/017
 - • including arrangements for providing electric power to safety arrangements {or their actuating means, e.g. to pyrotechnic fuses or electro-mechanic valves}
- B60R 21/02
 - Occupant safety arrangements or fittings,{e.g. crash pads(-seat belts with crash pads [B60R 22/14](#) ; removable children's seats having a front guard or barrier [B60N 2/2839-](#))}
- B60R 21/026
 - • {Rigid partitions inside vehicles, e.g. between passengers and load compartments (-[B60R 21/12](#) takes precedence-)}
- B60R 21/0286
 - • {Padded or energy absorbing driving control initiating means, e.g. gear lever, pedals (-[B60R 21/09](#) takes precedence; padded linings for steering control means [B60R 21/05-](#))}
- U B60R 21/04
 - • Padded linings for the vehicle interior,{Energy absorbing structures associated with padded or non-padded linings}

- B60R 21/05
 - • • associated with the steering wheel, {steering} hand lever or {steering} column (-yieldable steering columns [B62D 1/18-](#))
 - B60R 21/055
 - • Padded {or energy-absorbing} fittings, {e.g. seat belt anchors (-sun visors [B60J 3/00](#) ; head rests [B60N 2/48-](#))}
 - B60R 21/06
 - • Safety nets, transparent sheets, curtains, or the like, e.g. between occupants and glass ({ [B60R 21/026](#) }, [B60R 21/11](#) , [B60R 21/12](#) , [B60R 21/16](#) take precedence-)
 - B60R 21/08
 - • • {automatically} movable from an inoperative to an operative position, e.g. in a collision (-electrical circuits for triggering safety arrangements [B60R 21/01-](#))
 - B60R 21/09
 - • Control elements or operating handles movable from an operative to an out-of-the way position, e.g. {pedals,} switch knobs, window cranks ({-specially adapted for brake pedals, e.g. by venting of master cylinder or destruction of force transmitting rod, [B60T 7/065-](#))}
 - B60R 21/11
 - • Overhead guards, e.g. against loads falling down ({-specially adapted for fork-lift trucks [B66F 9/07545-](#))}
 - B60R 21/13
 - • Roll-over protection (-electrical circuits for triggering safety arrangements [B60R 21/01-](#))
 - B60R 21/131
 - • • {Protective devices for drivers in case of overturning of tractors (-means for preventing overturning or tipping of tractors [B62D 49/08-](#))}
 - B60R 21/16
 - • Inflatable occupant restraints or confinements designed to inflate upon impact or impending impact, e.g. air bags ({ protective garments with automatically inflatable shock-absorbing means [A41D 13/018](#) ; } connection of valves to inflatable elastic bodies [B60C 29/00-](#))
 - U B60R 21/20
 - • • Arrangements for storing inflatable members in their non-use or deflated condition; Arrangement or mounting of air bag modules or components
 - U B60R 21/203
 - • • • in steering wheels or steering columns
 - B60R 21/2035
 - • • • • {using modules containing inflator, bag and cover attachable to the steering wheel as a complete sub-unit (-steering wheel covers with tear lines [B60R 21/21656](#) ; assembling of modules [B60R 21/217-](#))}
 - B60R 21/2037
 - • • • • • {the module or a major component thereof being yieldably mounted, e.g. for actuating the horn switch or for protecting the driver in a non-deployment situation (-horn switches integrated in steering wheel covers with tear lines [B60R 21/21658-](#))}
 - B60R 21/21
 - • • • in vehicle side panels, e.g. doors ({-pillar mounted arrangements [B60R 21/213-](#))}
 - B60R 21/215
 - • • • characterised by the covers for the inflatable member ({-[B60R 21/2176](#) takes precedence-})
 - B60R 2021/21512
 - • • • • {the lid being displaced towards the occupant during deployment (-[B60R 2021/2161](#) , [B60R 2021/21525](#) take precedence-)}
 - U B60R 21/217
 - • • • Inflation fluid source retainers, e.g. reaction canisters; Connection of bags, covers, diffusers or inflation fluid sources therewith or together
 - B60R 21/2171
 - • • • • {specially adapted for elongated cylindrical or bottle-like inflators with a symmetry axis perpendicular to the main direction of bag deployment, e.g. extruded reaction canisters (-[B60R 21/2176](#) takes precedence-)}
 - B60R 21/23
 - • • Inflatable members ({ [B60R 21/18](#) takes precedence; connection to inflation fluid source retainers [B60R 21/217](#) })
 - U B60R 21/231
 - • • • characterised by their shape, construction or spatial configuration
- WARNING**
Groups [B60R 21/2334](#) - [B60R 21/2346](#) are not complete, pending a reorganisation; see provisionally also group [B60R 21/233](#)

- B60R 21/23138 {specially adapted for side protection (~~B60R 21/23184~~ , ~~B60R 21/232~~ take precedence-)}
- B60R 21/233 comprising a plurality of individual compartments; comprising two or more bag-like members, one within the other (~~B60R 21/232~~ takes precedence-)
- U B60R 21/235 characterised by their material
- U B60R 2021/23504 {characterised by material}
- B60R 2021/23519 {Resin (~~for coating fabric B60R 2021/23514~~-)}
- B60R 2021/23523 {Composite (~~coated fabric B60R 2021/23514~~-)}
- B60R 21/26 . . . characterised by the inflation fluid source or means to control inflation fluid flow (~~arrangement or mounting thereof to the vehicle B60R 21/20~~ ; blasting cartridges for producing gas under pressure in general ~~F42B 3/04~~ ; Initiators or igniters therefor ~~F42B 3/10~~-)}
- WARNING**
Groups ~~B60R 21/261~~ - ~~B60R 21/264~~ are not complete, pending a reorganisation; see provisionally also this group
- B60R 21/263 using a variable source, e.g. plural stage or controlled output (~~hybrid inflators B60R 21/272~~-)
- B60R 21/264 using instantaneous generation of gas, e.g. pyrotechnic (~~B60R 21/268~~ takes precedence-)
- B60R 21/268 using instantaneous release of stored pressurized gas (~~B60R 21/26005~~ takes precedence-)}
- B60R 21/276 with means to vent the inflation fluid source, e.g. in case of overpressure (~~B60R 21/30~~ takes precedence; venting means on inflatable member walls ~~B60R 21/239~~-)}
- B60R 21/33 . . . Arrangements for non-electric triggering of inflation (~~electrical circuits for triggering safety arrangements B60R 21/01~~-)
- B60R 21/34 . . . Protecting non-occupants of a vehicle, e.g. pedestrians (~~B60R 19/02~~ takes precedence-)}
- B60R 22/00 Safety belts or body harnesses in vehicles (- safety belts or body harnesses in general ~~A62B 35/00~~)**
- B60R 22/02 . . . Semi-passive restraint systems, e.g. systems applied or removed automatically but not both; {Manual restraint systems (~~knee, leg or head belts B60R 22/001~~ ; devices for releasing in an emergency, remote or automatic unbuckling devices ~~B60R 22/32~~-)}
- B60R 22/023 . . . {Three-point seat belt systems comprising two side lower and one side upper anchoring devices (~~B60R 22/022~~ , ~~B60R 22/03~~ take precedence-)}
- B60R 22/024 . . . {Adaptations for use by small passengers, e.g. children (~~B60R 22/20~~ takes precedence; using belt anti-slip devices ~~B60R 22/30~~-)}
- B60R 22/10 . . . specially adapted for children or animals (~~children`s seats B60N 2/24~~-)
- NOTE**
Groups ~~B60R 22/02~~ { ~~B60R 22/022~~ } to ~~B60R 22/08~~ , ~~B60R 22/18~~ to ~~B60R 22/48~~ take precedence over group ~~B60R 22/10~~
- B60R 22/105 . . . {for children (~~adaptation of children`s seats for seat belts B60N 2/265~~ , ~~B60N 2/2803~~-)}
- B60R 22/12 . . . Construction of belts or harnesses (~~B60R 21/18~~ takes precedence; { woven fabrics for safety belts ~~D03D 1/0005~~ })

- B60R 22/14
 - • incorporating enlarged restraint areas, e.g. vests, nets{, crash pads, optionally for children(-crash pads for occupants` safety on vehicles in general [B60R 21/02-](#))}
- U B60R 22/18
 - Anchoring devices
- B60R 22/185
 - • with stopping means for acting directly upon the belt in an emergency, e.g. by clamping or friction{(-[B60R 22/195](#) takes precedence; combined with the retractor [B60R 22/42-](#))}
- B60R 22/19
 - • with means for reducing belt tension during use under normal conditions{(-included in the retractor [B60R 22/44-](#))}
- U B60R 22/195
 - • with means to tension the belt in an emergency,{e.g. means of the through-anchor or splitted reel type}(electrical circuits for triggering safety arrangements{ [B60R 21/01](#) })

NOTE

If the type of belt tensioner is not specified and can be used indifferently for pulling belt anchors or rotating belt reels, the documents are classified in [B60R 22/46](#)
- B60R 22/1954
 - • • {characterised by fluid actuators, e.g. pyrotechnic gas generators }(-actuating a cable [B60R 22/1952-](#))}
- B60R 22/1956
 - • • {Mechanical triggering means therefor }(-also adapted for air bag inflators [B60R 21/33-](#))}
- B60R 22/1958
 - • • {characterised by spring actuators }(-[B60R 22/1953](#) takes precedence-)}
- U B60R 22/20
 - • adjustable in position, e.g. in height
- B60R 22/201
 - • • {with the belt anchor connected to a slider movable in a vehicle-mounted track }(-for passive restraint systems [B60R 22/06-](#))}
- B60R 22/202
 - • • • {the slider comprising spring-actuated locking means }(-[B60R 22/205](#) takes precedence-)}
- B60R 22/28
 - incorporating energy-absorbing devices{(-belt anchors provided with energy-absorbing means for protecting the occupants in case of physical contact therewith [B60R 21/055](#) ; belt retractors comprising energy-absorbing means [B60R 22/341](#) , [B60R 22/4676-](#))}
- B60R 22/30
 - Coupling devices other than buckles, including length-adjusting fittings {or anti-slip devices(-adaptations of manual three-point seat belt systems for use by small passengers using other means than belt anti-slip devices [B60R 22/024](#) ; buckles [A44B 11/00](#) ; releasable fastenings in general [F16B-](#))}
- B60R 22/32
 - Devices for releasing in an emergency, e.g. after an accident; {Remote or automatic unbuckling devices(-unlocking devices for retractors [B60R 22/3416-](#))}
- B60R 22/322
 - • {using automatic actuating means }(-[B60R 22/321](#) takes precedence-)}
- B60R 22/325
 - • {using remote control means }(-[B60R 22/321](#) , [B60R 22/322](#) take precedence-)}
- B60R 22/34
 - Belt retractors, e.g. reels (anchoring devices{e.g. guide loops} , with means to tension the belt in an emergency [B60R 22/195-](#))
- B60R 22/3408
 - • {without locking means }(-[B60R 22/3405](#) takes precedence-)}
- U B60R 22/341
 - • {comprising energy-absorbing means}
- B60R 22/3413
 - • • {operating between belt reel and retractor frame }(-[B60R 22/4676](#) takes precedence-)}
- B60R 22/3416
 - • {Unlocking devices for retractors }(-[B60R 22/3405](#) takes precedence-)}
- B60R 22/343
 - • with electrically actuated locking means{(-[B60R 22/3405](#) takes precedence-)}
- B60R 22/347
 - • with means for permanently locking the retractor during the wearing of the belt ({ [B60R 22/3405](#) } , [B60R 22/343](#) , [B60R 22/415](#) take precedence-)

- B60R 22/36
 - • self-locking in an emergency ({ [B60R 22/3405](#) } , [B60R 22/343](#) take precedence-)
- B60R 22/41
 - • • with additional means for preventing locking {during unwinding}under predetermined conditions
- B60R 22/42
 - • • having means for acting directly upon the belt, e.g. by clamping or friction{(not combined with the retractor [B60R 22/185](#)-)}
- B60R 22/44
 - • with means for reducing belt tension during use under normal conditions{(not included in the retractor [B60R 22/19](#) ; [B60R 22/3405](#) takes precedence-)}
- B60R 2022/4473
 - • • {using an electric retraction device (-combined with a spring [B60R 2022/444](#) , [B60R 2022/4466](#)-)}
- B60R 22/46
 - • {Reels}with means to tension the belt in an emergency {by forced winding up}{-electrical circuits for triggering safety arrangements [B60R 21/01](#)-} { tensioners using reels only guiding the belt during normal use, e.g. splitted reels [B60R 22/195](#)-}
- B60R 22/4628
 - • • {characterised by fluid actuators, e.g. pyrotechnic gas generators (-actuating a cable [B60R 22/4619](#)-)}
- B60R 22/4652
 - • • • {Mechanical triggering means therefor (-also adapted for air bag inflators [B60R 21/33](#)-)}
- B60R 22/4671
 - • • {characterised by spring actuators (-[B60R 22/4623](#) takes precedence-)}
- B60R 25/00**

Fittings or systems for preventing or indicating unauthorised use or theft of vehicles (locks for vehicles [E05B 77/00](#)-[E05B 85/00](#))

WARNING

Subgroups of [B60R 25/00](#) corresponding to IPC2013.01 are not complete pending the completion of a reclassification; see also [B60R 25/00](#) and its other subgroups
- B60R 25/002
 - {Locking of control actuating or transmitting means (-of steering mechanism [B60R 25/02](#)-)}
- U B60R 25/003
 - • {locking of control actuating means}
- B60R 25/005
 - • • {of foot actuated control means (-rods connecting pedals and steering wheels [B60R 25/0221](#)-)}
- U B60R 25/01
 - operating on vehicle systems or fittings, e.g. on doors, seats or windscreens
- U B60R 25/02
 - • operating on the steering mechanism
- B60R 25/022
 - • • operating on the steering wheel, e.g. bars locked to the steering wheel rim (-[B60R 25/021](#) takes precedence-)
- B60R 25/0225
 - • • • {using a rod locked on the steering wheel rim (-[B60R 25/0221](#) takes precedence-)}
- B60R 25/0227
 - • • • {using means preventing access, e.g. boxes enclosing the steering wheel (-[B60R 25/014](#) takes precedence-)}
- U B60R 25/10
 - actuating a signalling device
- B60R 25/1001
 - • {Alarm systems associated with another car fitting or mechanism, e.g. door lock or knob, pedals (-features related to the general power supply [B60R 25/1018](#))}
- B60R 25/1004
 - • {Alarm systems characterised by the type of sensor, e.g. current sensing means (-using door lock sensors [B60R 25/1001](#)-)}
- B60R 25/1006
 - • • {Mechanical sensors, e.g. pendulums (-[B60R 25/101](#) takes precedence-)}
- B60R 25/40
 - ~~{2013.01}~~ Features of the power supply for the anti-theft system, e.g. anti-theft batteries, back-up power supply or means to save battery power

Project: N/A (B60S)

- U B60S 1/00** **Cleaning of vehicles (by apparatus not integral with vehicle [B60S 3/00](#); cleaning in general [B08B](#); de-icing of aircraft [B64D](#); heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#))**
- U B60S 1/02 Cleaning windscreens, windows or optical devices {(wind deflectors specially adapted for preventing soiling of windows or windscreens [B60J 1/2002](#))}
- U B60S 1/04 Wipers or the like, e.g. scrapers
- U B60S 1/043 {Attachment of the wiper assembly to the vehicle}
- U B60S 1/0441 {characterised by the attachment means}
- B60S 1/045 {having a pre-attachment device *(i.e. to hold elements in position during mounting)* ~~(i.e. to hold elements in position during mounting)~~}
- U B60S 1/06 characterised by the drive (producing other than swinging movement [B60S 1/44](#))
- U B60S 1/08 electrically driven {(conjoint control of windscreen wiper motor and liquid supply of windscreen washer [B60S 1/482](#); conjoint control of windscreen wiper motor and means for cleaning parts o parts other than windscreens or front windows [B60S 1/56](#), [B60S 1/58](#), [B60S 1/606](#))}
- U B60S 1/0818 {including control systems responsive to external conditions, e.g. by detection of moisture, dirt or the like}
- B60S 1/0822 {characterized by the arrangement or type of detection means}
- B60S 1/0825 {Capacitive rain sensor}
- B60S 1/0829 {Oscillator-resonator rain sensor}
- B60S 1/0833 {Optical rain sensor}
- B60S 1/0837 {with a particular arrangement of the optical elements}
- B60S 1/084 {including a hologram}
- B60S 1/0844 {including a camera}
- B60S 1/0848 {Cleaning devices for cameras on vehicle}
- B60S 1/0851 {Resistive rain sensor}
- B60S 1/0855 {Ultrasonic rain sensor}
- B60S 1/0859 {Other types of detection of rain, e.g. by measuring friction or rain drop impact}
- B60S 1/0862 {including additional sensors (vehicle speed sensors [B60S 1/0896](#))}
- B60S 1/0866 {including a temperature sensor (heating devices for windshield [B60H](#))}
- B60S 1/087 {including an ambient light sensor (control of vehicle lights [B60Q](#))}
- B60S 1/0874 {characterized by the position of the sensor on the windshield}
- B60S 1/0877 {at least part of the sensor being positioned between layers of the windshield}
- B60S 1/0881 {characterized by the attachment means on the windshield}
- B60S 1/0885 {the sensor being integrated in a rear-view mirror module}
- B60S 1/0888 {characterized by the attachment of the elements in a unit}
- B60S 1/0892 {Testing and production of rain sensors}
- U B60S 1/32 characterised by constructional features of wiper blade arms {or blades}
- U B60S 1/34 Wiper arms; Mountings therefor {(wiper arms provided with liquid spreading means [B60S 1/522](#); with gas spreading means [B60S 1/544](#))}
- B60S 1/3422 {Means arranged in the wiper structure to lift the arm at extremes of wipe (means arranged on the vehicle body [B60S 1/0455](#))}

- B60S 1/3425 {-Constructional aspects of the arm}
- B60S 1/3427 {-Arm piece, link piece and mounting head formed as one element}
- B60S 1/3429 {-Arm pieces}
- B60S 1/3431 {-Link pieces}
- B60S 1/3434 {-Manufacturing details thereof}
- B60S 1/3436 {-Mounting heads}
- B60S 1/3438 {-Manufacturing details thereof}
- B60S 1/344 {-Flat-type mounting heads}
- B60S 1/3443 {-Wiper shafts}
- B60S 1/3445 {-Joints between elements}
- B60S 1/3447 {-the elements being an arm piece and a link piece}
- B60S 1/345 {-the elements being a link piece and a mounting head}
- B60S 1/3452 {-the joint being a snap fit pivot joint}
- B60S 1/3454 {-the joint being at end of mounting head furthest away from blade}
- B60S 1/3456 {-Locks or stays for holding arms in fully folded back position}
- B60S 1/3459 {-the element being a mounting head and a shaft}
- B60S 1/3461 {-with means to adjust the orientation of the head relative to shaft}
- B60S 1/3463 {-Means to press blade onto screen}
- B60S 1/3465 {-with coil springs}
- B60S 1/3468 {-Mountings therefor}
- B60S 1/347 {-with adjustment means to adjust wiping pressure (during wiping [B60S 1/3411](#))}
- B60S 1/3472 {-with adjustment means to keep wiping pressure constant (varying wiping pressure [B60S 1/3411](#))}
- B60S 1/3475 {-with blade or leaf springs}
- B60S 1/3477 {-with elastomeric or rubber springs}
- B60S 1/3479 {-Means to cover the wiper parts}
- B60S 1/3481 {-for mounting head}
- B60S 1/3484 {-integral with arm or link piece}
- B60S 1/3486 {-Means to allow blade to follow curvature of the screen (*i.e. rotation along longitudinal axis of the arm*)} (*i.e. rotation along longitudinal axis of the arm*)}
- B60S 1/3488 {-Means for mounting wiper arms onto the vehicle}
- B60S 1/349 {-Means for mounting the wiper bearing to the vehicle body}
- B60S 1/3493 {-Means for mounting the wiper shaft in the wiper bearing}
- B60S 1/3495 {-Means for mounting the drive mechanism to the wiper shaft}
- B60S 1/3497 {-Additional means for guiding the blade other than the arm or blade joint}
- U B60S 1/38 Wiper blades {(provided with liquid spreading means [B60S 1/524](#); provided with gas spreading means [B60S 1/546](#))}
- B60S 1/3806 {-Means, or measures taken, for influencing the aerodynamic quality of the wiper blades}
- B60S 1/3808 {-Spoiler integral with the squeegee}
- B60S 1/381 {-Spoilers mounted on the squeegee or on the vertebra}
- B60S 1/3848 {-Flat-type wiper blade, i.e. without harness}

- B60S 1/3849 {-Connectors therefor; Connection to wiper arm; Attached to blade}
 - B60S 1/3851 {-Mounting of connector to blade assembly}
 - B60S 1/3853 {-Snap-fit, e.g. elastic connection}
 - B60S 1/3855 {-by welding, gluing or the like}
 - B60S 1/3856 {-Gripping the blade}
 - B60S 1/3858 {-with protrusions cooperating with holes}
 - B60S 1/386 {-made in two halves}
 - B60S 1/3862 {-Transport of liquid there through}
 - B60S 1/3863 {-Connectors having a spoiler}
 - B60S 1/3865 {-Connectors having an integral pivot pin for connection with the wiper arm}
 - B60S 1/3867 {-pin formed on the interior of side walls}
 - B60S 1/3868 {-pin formed on the exterior of side walls}
 - B60S 1/387 {-the connector being suitable for receiving different types of adapter}
 - B60S 1/3872 {-without connector, e.g. connection to wiper arm via squeegee or vertebra}
 - B60S 1/3874 {-with a reinforcing vertebra}
 - B60S 1/3875 {-rectangular section}
 - B60S 1/3877 {-embedded in the squeegee}
 - B60S 1/3879 {-placed in side grooves in the squeegee}
 - B60S 1/3881 {-in additional element, e.g. spoiler}
 - B60S 1/3882 {-C-shape section}
 - B60S 1/3884 {-Wire-shaped section}
 - B60S 1/3886 {-End caps}
 - B60S 1/3887 {-Mounting of end caps}
 - B60S 1/3889 {-cooperating with holes in the vertebra}
 - B60S 1/3891 {-with locking device}
 - B60S 1/3893 {-cooperating with holes in the squeegee}
 - B60S 1/3894 {-having a particular shape}
 - B60S 1/3896 {-with openings at the longitudinal extremities}
 - U B60S 1/40 Connections between blades and arms
 - B60S 1/4003 {-Multi-purpose connections for two or more kinds of arm ends}
- NOTE
- Multi-aspect classification is applied for technical subjects relating to the arms and covered by subgroups [B60S 1/4006](#) to [B60S 1/4083](#)
- B60S 1/4006 {-for arms provided with a hook-shaped end}
 - B60S 1/4009 {-comprising a detachable intermediate element mounted on the hook-shaped end}
 - B60S 1/4016 {-the element being provided with retention means co-operating with the hook-shaped end of the arm}
 - B60S 1/4019 {-the retention means being protrusions or holes}
 - B60S 1/4038 {-for arms provided with a channel-shaped end}
 - B60S 1/4041 {-the channel-shaped end comprising a pivot pin mounted between the side walls}

- B60S 1/4045 {-comprising a detachable intermediate element mounted on the channel-shaped end}
- B60S 1/4048 {-the element being provided with retention means co-operating with the channel-shaped end of the arm}
- B60S 1/4064 {-the channel-shaped end being provided with protrusions on, or holes in, the side walls to create a pivot}
- B60S 1/4067 {-for arms provided with a side pin}
- B60S 1/407 {-with means provided on the arm for locking the side pin}
- B60S 1/4074 {-with means provided on the blade for locking the side pin}
- B60S 1/4077 {-characterised by the connecting part of, or an intermediate element mounted on, the wiper blade (means for locking the side pin [B60S 1/4074](#))}
- B60S 1/4083 {-for arms provided with a flat end}
- B60S 1/4087 {-the end being provided with protrusions or holes}

Project: N/A (B60T)**B60T**

VEHICLE BRAKE CONTROL SYSTEMS OR PARTS THEREOF; BRAKE CONTROL SYSTEMS OR PARTS THEREOF, IN GENERAL (electrodynamic brake systems for vehicle, in general [B60L](#); brakes per se, i.e. devices where braking effect occurs, including ultimate brake actuators, [F16D](#)); ARRANGEMENT OF BRAKING ELEMENTS ON VEHICLES IN GENERAL; PORTABLE DEVICES FOR PREVENTING UNWANTED MOVEMENT OF VEHICLES; VEHICLE MODIFICATIONS TO FACILITATE COOLING OF BRAKES

NOTE

In this subclass, the term "brake control systems" includes brake control systems for vehicles or of general applicability

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B60T 8/20](#) covered by [B60T 8/18](#)

[B60T 8/22](#) covered by [B60T 8/18](#)

[B60T 8/60](#) - [B60T 8/70](#) covered by [B60T 8/17](#)

[B60T 8/78](#) - [B60T 8/84](#) covered by [B60T 8/17](#)

[B60T 13/122](#) covered by [B60T 13/147](#) , [B60T 13/167](#)

[B60T 13/125](#) covered by [B60T 13/141](#)

[B60T 13/128](#) covered by [B60T 13/145](#) , [B60T 13/165](#)

[B60T 13/13](#) covered by [B60T 13/146](#) , [B60T 13/166](#)

[B60T 13/132](#) covered by [B60T 13/143](#) , [B60T 13/162](#)

[B60T 13/135](#) covered by [B60T 13/144](#) , [B60T 13/163](#)

[B60T 13/138](#) covered by [B60T 13/148](#) , [B60T 13/168](#)

[B60T 13/60](#) covered by [B60T 13/58](#)

[B60T 15/06](#) covered by [B60T 15/04](#)

[B60T 15/08](#) covered by [B60T 15/04](#)

B60T 1/00

Arrangements of braking elements, i.e. of those parts where braking effect occurs {specially for vehicles}

- U B60T 1/02 acting by retarding wheels
- B60T 1/06 acting otherwise than on tread, e.g. employing rim, drum, disc, or transmission {or on double wheels}
- B60T 1/065 {employing disc (-[B60T 1/062](#) takes precedence-)}

B60T 1/067	· · · {employing drum (- B60T 1/062 takes precedence-)}
B60T 1/10	· · by utilising wheel movement for accumulating energy, e.g. driving air compressors (using propulsion unit as braking means, see the relevant class)
U B60T 1/12	· acting otherwise than by retarding wheels, e.g. jet action
B60T 1/14	· · directly on road (-portable devices, e.g. chocks B60T 3/00-)
B60T 5/00	Vehicle modifications to facilitate cooling of brakes
U B60T 7/00	Brake-action initiating means
U B60T 7/02	· for personal initiation
U B60T 7/04	· · foot actuated
U B60T 7/06	· · · Disposition of pedal
B60T 7/065	· · · · {with means to prevent injuries in case of collision (-for vehicle pedals in general by moving them from an operative to an out-of-the way position B60R 21/09-)}
B60T 7/12	· for automatic initiation; for initiation not subject to will of driver or passenger{-limiting speed of vehicles other than rail vehicles B60K 31/00- }
B60T 7/124	· · {Brakes for railway vehicles coming into operation in case of accident, derailment or damage of rolling stock or superstructure (-self-acting brakes in general F16D 59/00-)}
B60T 7/126	· · {Brakes for railway vehicles coming into operation in case of exceeding a predetermined speed (-self-acting brakes in general F16D 59/00-)}
B60T 7/128	· · {Self-acting brakes of different types for railway vehicles (- B60T 7/12 takes precedence; self-acting brakes in general F16D 59/00-)}
B60T 7/14	· · operated upon collapse of driver (-deadman`s devices for electrically propelled vehicles B60L 3/02-)
B60T 7/20	· · specially for trailers, e.g. in case of uncoupling of {or overrunning by}trailer (-inertia-actuated over-run brakes B60T 13/08-)
B60T 8/00	Arrangements for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions, e.g. limiting or varying distribution of braking force (-by changing number of effective brake cylinders in power brake systems B60T 17/10-)
B60T 8/17	· Using electrical or electronic regulation means to control braking{-detecting or indicating faulty operation B60T 8/885- }
B60T 8/1701	· · {Braking or traction control means specially adapted for particular types of vehicles (-for vehicles having more than one drive axle B60T 8/1769-)}
B60T 8/172	· · Determining control parameters used in the regulation, e.g. by calculations involving measured or detected parameters{- B60T 8/17551 takes precedence-}
B60T 8/1725	· · · {Using tyre sensors, e.g. Sidewall Torsion sensors (SWT)(-for tyre pressure and temperature detection B60C 23/00-)}
B60T 8/175	· · Brake regulation specially adapted to prevent excessive wheel spin during vehicle acceleration, e.g. for traction control (-safety devices for propulsion unit control responsive to, or preventing, skidding of wheels B60K 28/16-)
B60T 8/1755	· · Brake regulation specially adapted to control the stability of the vehicle, e.g. taking into account yaw rate or transverse acceleration in a curve (-road vehicle drive control systems for control of driving stability otherwise than by controlling a particular sub-unit B60W 30/02-)
B60T 8/17554	· · · {specially adapted for enhancing stability around the vehicles longitudinal axle, i.e. roll-over prevention (-road vehicle drive control systems for roll-over prevention otherwise than by controlling a particular sub-unit B60W 30/04-)}

- B60T 8/17557
- • {specially adapted for lane departure prevention (-road vehicle drive control systems for lane keeping otherwise than by controlling a particular sub-unit [B60W 30/12-](#))}
- B60T 8/17558
- • {specially adapted for collision avoidance or collision mitigation (-road vehicle drive control systems for collision avoidance otherwise than by controlling a particular sub-unit [B60W 30/09-](#))}
- B60T 8/176
- • Brake regulation specially adapted to prevent excessive wheel slip during vehicle deceleration, e.g. ABS (-[B60T 8/1755](#) takes precedence-)
- B60T 8/1763
- • responsive to the coefficient of friction between the wheels and the ground surface (-[B60T 8/1764](#) takes precedence-)
- B60T 8/1764
- • Regulation during travel on surface with different coefficients of friction, e.g. between left and right sides, mu-split {or between front and rear}
- B60T 8/18
- responsive to vehicle weight or load, e.g. load distribution ({ using electrical circuitry on regulation means [B60T 8/17](#) ; } [B60T 8/30](#) takes precedence; responsive to weight and speed condition [B60T 8/58-](#))
- NOTE**
[B60T 8/1887](#) and [B60T 8/1893](#) take precedence over [B60T 8/1806](#) to [B60T 8/1881](#)
- U B60T 8/1837
- • {characterised by the load-detecting arrangements}
- B60T 8/1856
- • {Arrangements for detecting suspension spring load (-[B60T 8/1843](#) takes precedence-)}
- B60T 8/24
- responsive to vehicle inclination or change of direction, e.g. negotiating bends{(-using electrical circuitry or regulation means [B60T 8/17-](#))}
- B60T 8/26
- characterised by producing differential braking between front and rear wheels{(-using electrical circuitry or regulation means [B60T 8/17-](#))}
- B60T 8/262
- • {using valves with stepped characteristics (-[B60T 8/261](#) , [B60T 8/266](#) take precedence-)}
- B60T 8/266
- • {using valves or actuators with external control means (-[B60T 8/261](#) takes precedence-)}
- B60T 8/28
- • responsive to deceleration{(-[B60T 8/261](#) , [B60T 8/262](#) , [B60T 8/266](#) take precedence-)}
- B60T 8/30
- • responsive to load{(-[B60T 8/261](#) , [B60T 8/262](#) , [B60T 8/266](#) take precedence-)}
- B60T 8/32
- responsive to a speed condition, e.g. acceleration or deceleration ({ using electrical circuitry or regulation means [B60T 8/17](#) } ; [B60T 8/28](#) takes precedence; electric devices on electrically propelled vehicles indicating the wheel slip [B60L 3/10](#) ; measuring linear or angular speed per se [G01P 3/00-](#))
- B60T 8/3205
- • {acceleration (-[B60T 8/34](#) , [B60T 8/52](#) , [B60T 8/54](#) , [B60T 8/56](#) , [B60T 8/58](#) , [B60T 8/72](#) , [B60T 8/86](#) , [B60T 8/88](#) take precedence-)}
- B60T 8/321
- • {deceleration (-[B60T 8/34](#) , [B60T 8/52](#) , [B60T 8/54](#) , [B60T 8/56](#) , [B60T 8/58](#) , [B60T 8/72](#) , [B60T 8/86](#) , [B60T 8/88](#) take precedence-)}
- B60T 8/3215
- • {Systems characterised by having means acting on components of the drive line, e.g. retarder, clutch or differential gear (-[B60T 8/322](#) takes precedence-)}
- B60T 8/3225
- • {Systems specially adapted for single-track vehicles, e.g. motorcycles (-[B60T 8/3235](#) takes precedence-)}
- U B60T 8/3255
- • {Systems in which the braking action is dependent on brake pedal data}
- U B60T 8/326
- • • {Hydraulic systems}
- B60T 8/3265
- • • • {with control of the booster (-[B60T 8/3275](#) takes precedence-)}
- U B60T 8/34
- • having a fluid pressure regulator responsive to a speed condition

- B60T 8/341 . . . {Systems characterised by their valves (~~B60T 8/36~~ , ~~B60T 8/38~~ take precedence-)}
- B60T 8/343 . . . {Systems characterised by their lay-out (~~B60T 8/349~~ takes precedence-)}
- U B60T 8/344 {Hydraulic systems}
- B60T 8/346 {2 Channel systems (~~B60T 8/345~~ takes precedence-)}
- B60T 8/347 {3 Channel systems (~~B60T 8/345~~ takes precedence-)}
- B60T 8/348 {4 Channel systems (~~B60T 8/345~~ takes precedence-)}
- U B60T 8/36 . . . including a pilot valve responding to an electromagnetic force
- B60T 8/3615 {Electromagnetic valves specially adapted for anti-lock brake and traction control systems (~~electromagnetic valves in general F16K 31/06-~~)}
- B60T 8/362 {in pneumatic systems (~~B60T 8/3655~~ , ~~B60T 8/3675~~ and ~~B60T 8/369~~ take precedence-)}
- B60T 8/363 {in hydraulic systems (~~B60T 8/3655~~ , ~~B60T 8/3675~~ and ~~B60T 8/369~~ take precedence-)}
- B60T 8/3635 {switching between more than two connections, e.g. 3/2-valves (~~B60T 8/364~~ , ~~B60T 8/3645~~ and ~~B60T 8/365~~ take precedence-)}
- B60T 8/364 {switching between a number of discrete positions as a function of the applied signal, e.g. 3/3-valves (~~B60T 8/3645~~ takes precedence-)}
- B60T 8/369 {Valves using piezo-electric elements (~~in general F16K 31/004-~~)}
- B60T 8/3695 {wherein the pilot valve is mounted separately from its power section (~~B60T 8/3605~~ , ~~B60T 8/361~~ and ~~B60T 8/3615~~ take precedence-)}
- U B60T 8/40 . . . comprising an additional fluid circuit including fluid pressurising means for modifying the pressure of the braking fluid, e.g. including wheel driven pumps for detecting a speed condition, or pumps which are controlled by means independent of the braking system
- B60T 8/4018 {Pump units characterised by their drive mechanisms (~~B60T 8/4095~~ takes precedence-)}
- B60T 8/4022 {Pump units driven by an individual electric motor (~~B60T 8/4027~~ takes precedence-)}
- B60T 8/4031 {Pump units characterised by their construction or mounting (~~in combination with valve blocks B60T 8/36-~~)}
- B60T 8/4036 {Pump units characterised by their failure-responsive means (~~B60T 8/88~~ takes precedence-)}
- U B60T 8/404 {Control of the pump unit}
- B60T 8/4054 {involving the delivery pressure control (~~B60T 8/4072~~ takes precedence-)}
- U B60T 8/4072 {Systems in which a driver input signal is used as a control signal for the additional fluid circuit which is normally used for braking}
- B60T 8/4081 {Systems with stroke simulating devices for driver input (~~B60T 8/4077~~ takes precedence-)}
- B60T 8/42 . . . having expanding chambers for controlling pressure {i.e. closed systems}
- U B60T 8/4208 {Debooster systems}
- B60T 8/4216 {having a mechanically actuated expansion unit (~~B60T 8/4225~~ and ~~B60T 8/4266~~ take precedence-)}
- U B60T 8/4225 {having a fluid actuated expansion unit}
- B60T 8/4233 {with brake pressure relief by introducing fluid pressure into the expansion unit (~~B60T 8/4241~~ takes precedence-)}

- B60T 8/44
 - • • co-operating with a power-assist booster means associated with a master cylinder for controlling the release and reapplication of brake pressure through an interaction with the power assist device {i.e. open systems}
- B60T 8/441
 - • • • {using hydraulic boosters (-[B60T 8/445](#) , [B60T 8/446](#) , [B60T 8/447](#) take precedence-)}
- B60T 8/443
 - • • • {using compressed air (-[B60T 8/445](#) , [B60T 8/446](#) , [B60T 8/448](#) take precedence-)}
- B60T 8/444
 - • • • {using vacuum (-[B60T 8/445](#) , [B60T 8/446](#) , [B60T 8/448](#) take precedence-)}
- B60T 8/48
 - • • connecting the brake actuator to an alternative or additional source of fluid pressure {e.g. traction control systems}
- U B60T 8/4809
 - • • • {Traction control, stability control, using both the wheel brakes and other automatic braking systems}
- U B60T 8/4827
 - • • • • {in hydraulic brake systems}
- B60T 8/4836
 - • • • • • {wherein a booster output pressure is used for normal or anti lock braking (-[B60T 8/4845](#) , [B60T 8/4863](#) , [B60T 8/489](#) take precedence-)}
- B60T 8/4863
 - • • • • • {closed systems (-[B60T 8/4845](#) , [B60T 8/489](#) take precedence-)}
- B60T 8/50
 - • • having means for controlling the rate at which pressure is reapplied to {or released from}the brake
- B60T 8/5006
 - • • • {Pressure reapplication by pulsing of valves (-[B60T 8/5012](#) , [B60T 8/5018](#) , [B60T 8/505](#) , [B60T 8/5056](#) take precedence-)}
- B60T 8/5018
 - • • • {Pressure reapplication using restrictions (-[B60T 8/5012](#) , [B60T 8/505](#) take precedence-)}
- B60T 8/5075
 - • • • {Pressure release by pulsing of valves (-[B60T 8/5081](#) , [B60T 8/5087](#) take precedence-)}
- B60T 8/5087
 - • • • {Pressure release using restrictions (-[B60T 8/5081](#) takes precedence-)}
- B60T 11/00**
 - Transmitting braking action from initiating means to ultimate brake actuator without power assistance or drive or where such assistance or drive is irrelevant (-the power assistance or drive being essential [B60T 13/00](#)-)**
- U B60T 11/04
 - transmitting mechanically
- B60T 11/046
 - • {Using cables (-[B60T 11/043](#) takes precedence-)}
- U B60T 11/10
 - transmitting by fluid means, e.g. hydraulic
- B60T 11/103
 - • {in combination with other control devices (-conjoint control of brake system and at least another sub-unit [B60K 41/00](#)-)}
- B60T 11/12
 - • the transmitted force being varied therein (-[B60T 11/16](#) to [B60T 11/26](#) take precedence-)
- B60T 11/16
 - • Master control, e.g. master cylinders (-master cylinders associated with vacuum boosters [B60T 13/565](#)-)
- U B60T 11/20
 - • • Tandem, side-by-side, or other multiple master cylinder units
- B60T 11/21
 - • • • with two pedals operating on respective circuits, pressures therein being equalised when both pedals are operated together, e.g. for steering (-steering non-deflectable wheels or endless tracks by differentially driving ground-engaging elements on opposite vehicle sides using brakes as main steering effecting means [B62D 11/08](#)-)
- B60T 11/228
 - • • Pressure-maintaining arrangements, e.g. for replenishing the master cylinder chamber with fluid from a reservoir (-[B60T 11/232](#) takes precedence-)
- B60T 11/24
 - • Single initiating means operating on more than one circuit e.g. dual circuits (-multiple master cylinder units [B60T 11/20](#)-)

- B60T 11/26
 - • Reservoirs (-integral with master controls [B60T 11/22-](#))
- B60T 11/28
 - • Valves specially adapted therefor (-recuperation valves [B60T 11/232-](#))
- B60T 11/34
 - • • Pressure reducing or limiting valves{(for arrangements for adjusting wheel-braking force responsive to vehicle weight or load [B60T 8/1831-](#))}
- B60T 13/00**

Transmitting braking action from initiating means to ultimate brake actuator with power assistance or drive; Brake systems incorporating such transmitting means, e.g. air-pressure brake systems (-arrangements for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions [B60T 8/00](#) ; valves incorporated in such systems [B60T 15/00-](#))
- B60T 13/02
 - with mechanical assistance or drive{(-combined with fluid pressure [B60T 13/588-](#))}
- B60T 13/04
 - • by spring or weight (-fluid released [B60T 13/10-](#))
- U B60T 13/10
 - with fluid assistance, drive, or release
- U B60T 13/12
 - • the fluid being liquid
- B60T 13/14
 - • • using accumulators or reservoirs {fed by pumps}
- B60T 13/141
 - • • • {Systems with distributor valve (-[B60T 13/147](#) takes precedence-)}
- U B60T 13/16
 - • • using pumps directly, i.e. without interposition of accumulators or reservoirs
- B60T 13/18
 - • • • with control of pump output delivery {e.g. by distributor valves(-[B60T 13/167](#) takes precedence-)}
- U B60T 13/24
 - • the fluid being gaseous
- U B60T 13/26
 - • • Compressed-air systems
- B60T 13/38
 - • • • Brakes applied by springs or weights and released by compressed air{(-[B60T 13/261](#) takes precedence-)}
- B60T 13/40
 - • • • indirect i.e. compressed air booster units {indirect systems}
- U B60T 13/403
 - • • • • {specially adapted for coupling with dependent systems, e.g. tractor-trailer systems}
- B60T 13/406
 - • • • • {specially adapted for transfer of two or more command signals e.g. railway systems (-with electrical control [B60T 13/665-](#))}
- U B60T 13/66
 - • Electrical control in fluid-pressure brake systems
- B60T 13/665
 - • • {the systems being specially adapted for transferring two or more command signals, e.g. railway systems (-[B60T 13/662](#) takes precedence-)}
- B60T 13/68
 - • • by electrically-controlled valves{(-[B60T 13/662](#) and [B60T 13/665](#) take precedence-)}
- B60T 13/683
 - • • • {in pneumatic systems or parts thereof (-in vacuum systems [B60T 13/72-](#))}
- B60T 13/72
 - • • in vacuum systems {or vacuum booster units}
- U B60T 13/74
 - with electrical assistance or drive
- B60T 13/748
 - • {acting on electro-magnetic brakes (-combined with fluid-pressure brake systems [B60T 13/667-](#))}
- B60T 15/00**

Construction arrangement, or operation of valves incorporated in power brake systems and not covered by groups [B60T 11/00](#) or [B60T 13/00](#) (-valve structures responsive to a speed condition [B60T 8/34](#) ; valves in general [F16K-](#))
- U B60T 15/02
 - Application and release valves
- U B60T 15/04
 - • Driver`s valves
- B60T 15/041
 - • • {controlling auxiliary pressure brakes, e.g. parking or emergency brakes (-[B60T 15/048](#) takes precedence-)}
- B60T 15/043
 - • • {controlling service pressure brakes (-[B60T 15/048](#) takes precedence-)}

- U B60T 15/18
 - Triple or other relay valves which allow step-wise application or release and which are actuated by brake-pipe pressure variation to connect brake cylinders or equivalent to compressed air or vacuum source or atmosphere
- B60T 15/181
 - • • {Trailer control valves (~~B60T 15/20~~ and ~~B60T 15/243~~ take precedence)}
- B60T 15/182
 - • • {Trailer brake valves (~~B60T 15/20~~ and ~~B60T 15/246~~ take precedence)}
- U B60T 15/20
 - • • controlled by two fluid pressures
- B60T 15/203
 - • • • {Trailer control valves (~~B60T 15/223~~ takes precedence)}
- B60T 15/206
 - • • • {Trailer brake valves (~~B60T 15/226~~ takes precedence)}
- B60T 15/36
 - Other control devices or valves characterised by definite functions{(-electrically controlled valves in fluid-pressure brake systems [B60T 15/027](#) , [B60T 15/028](#)-)}
- B60T 17/00**

Component parts, details, or accessories of power brake systems not covered by groups [B60T 8/00](#) , [B60T 13/00](#) or [B60T 15/00](#) , or presenting other characteristic features (-air compressors per se [F04](#)-)
- B60T 17/04
 - Arrangements of piping, valves in the piping, e.g. cut-off valves, couplings or air hoses (-traction couplings involving joints for supply lines, electric circuits, or the like [B60D 1/62](#) ; couplings peculiar to railway vehicles for, or combined with, couplings or connectors for fluid conduits or electric cables [B61G 5/06](#) ; pipes, cut-off valves, couplings, air hoses per se [F16C](#) , [F16K](#) , [F16L](#)-)
- B60T 17/08
 - Brake cylinders other than ultimate actuators (-with built-in wear-compensating mechanisms, ultimate actuators [F16D](#)-)
- U B60T 17/18
 - Safety devices; Monitoring
- U B60T 17/22
 - • Devices for monitoring or checking brake systems; Signal devices
- B60T 17/221
 - • • {Procedure or apparatus for checking or keeping in a correct functioning condition of brake systems (-hydraulic pressure systems in general [F15B 19/00](#) , [F15B 21/04](#) ; testing structures or apparatus [G01M](#)-)}
- B60T 17/225
 - • • {brake fluid level indicators (-level indication in general [G01F](#) ; [H01H](#)-)}
- U B60T 2240/00**

Monitoring, detecting wheel/tire behaviour; counteracting thereof
- B60T 2240/02
 - Longitudinal grip (-detection of road friction [B60T 2210/10](#)-)
- U B60T 2270/00**

Further aspects of brake control systems not otherwise provided for
- U B60T 2270/30
 - ESP control system
- B60T 2270/313
 - • with less than three sensors (*yaw rate, steering angle, lateral acceleration*)(~~yaw rate, steering angle, lateral acceleration~~)

Project: N/A (B60V)

- U B60V 1/00**

Air-cushion (land vehicles, waterborne vessels, or aircraft adapted or modified to travel on air cushion [B60V 3/00](#))
- U B60V 1/04
 - wherein the cushion is contained at least in part by walls
- B60V 1/043
 - • {-the walls being flexible (skirt details [B60V 1/16](#))}
- B60V 1/046
 - • {-the walls or a part of them being rigid}
- U B60V 1/11
 - Stability or attitude control
- B60V 1/115
 - • {-by ground or water engaging means, e.g. rudders or wheels}
- U B60V 1/14
 - Propulsion; Control thereof ([B60V 1/11](#) takes precedence)
- B60V 1/145
 - • {-using a water propeller}
- U B60V 3/00**

Land vehicles, waterborne vessels, or aircraft, adapted or modified to travel on air cushions
- U B60V 3/02
 - Land vehicles, e.g. road vehicles

- B60V 3/025
 - U B60V 3/06
 - B60V 3/065
- · {-co-operating with a flat surface, e.g. transporting loads on platforms}
 - Waterborne vessels
 - · {-hulls therefor}

Project: N/A (B60W)

- U **B60W 10/00** **Conjoint control of vehicle sub-units of different type or different function (for propulsion of purely electrically-propelled vehicles with power supplied within the vehicle [B60L 11/00](#))**

NOTE

When classifying in this group, each controlled sub-unit must be separately identified by a classification in a relevant place in this group.

- U B60W 10/02
 - B60W 10/023
 - B60W 10/026
 - U B60W 10/18
 - B60W 10/182
- including control of driveline clutches
 - · {-Fluid clutches, e.g. torque converters}
 - · {-Clutches for bridging a fluid gearing, e.g. lock-up}
 - including control of braking systems
 - · {-including control of parking brakes}

- U **B60W 20/00** **Control systems specially adapted for hybrid vehicles, i.e. vehicles having two or more prime movers of more than one type, e.g. electrical and internal combustion motors, all used for propulsion of the vehicle**

NOTE

Classification is also made in [B60K 6/42](#) for the different types of hybrid electric vehicles

- B60W 20/10
 - B60W 20/102
 - B60W 20/104
 - B60W 20/106
 - B60W 20/1062
 - B60W 20/108
 - B60W 20/1082
 - B60W 20/1084
 - B60W 20/1086
 - B60W 20/1088
 - B60W 20/20
 - B60W 20/30
 - B60W 20/40
 - B60W 20/50
 - B60W 30/00**
 - U B60W 30/02
- {-controlling the power contribution of each of the prime movers to meet required power demand}
 - · {-using model predictive control [MPC]} strategies, i.e. control methods based on models predicting performance}
 - · {-using control strategies considering route information}
 - · {-in order to stay within battery power input and output limits or to prevent overcharging or over-discharging}
 - · · {-in conjunction with braking regeneration}
 - · {-Special control strategies to achieve a particular effect}
 - · · {-Control strategies to reduce engine exhaust emissions}
 - · · {-Control strategies to reduce noise}
 - · · {-Control strategies to avoid aging of fuel}
 - · · {-Control strategies to achieve boost-effect}
 - {-Control strategies including selection of hybrid configuration, e.g. selection between series or parallel configuration}
 - {-Control strategies including selection of transmission gear ratio}
 - {-controlling the transition between prime movers, i.e. engaging or disengaging a prime mover}
 - {-Control strategies for fault diagnosis, failsafe operation or limp home mode}
 - Purposes of road vehicle drive control systems not related to the control of a particular sub-unit, e.g. of systems using conjoint control of vehicle sub-units, { or advanced driver assistance systems for ensuring comfort, stability and safety or drive control systems for propelling or retarding the vehicle-(anti-lock brake systems (ABS) [B60T 8/00](#))}**
 - Control of vehicle driving stability

- B60W 30/025
 - • {-related to comfort of drivers or passengers}
 - B60W 30/08
 - {-Active safety systems} predicting or avoiding probable or impending collision { or attempting to minimise its consequences}
 - U B60W 30/095
 - • Predicting travel path or likelihood of collision
 - B60W 30/0953
 - • • {-the prediction being responsive to vehicle dynamic parameters}
 - B60W 30/0956
 - • • {-the prediction being responsive to traffic or environmental parameters}
 - B60W 30/14
 - {Adaptive} cruise control
 - B60W 30/143
 - • {-Speed control ([B60W 30/16](#) takes precedence)}
 - B60W 30/146
 - • • {-Speed limiting}
 - U B60W 30/16
 - • Control of distance between vehicles, e.g. keeping a distance to preceding vehicle
 - B60W 30/162
 - • • {-Speed limiting therefor}
 - U B60W 30/18
 - Propelling the vehicle
- WARNING
- Subgroups of [B60W 30/18](#) are not complete. Documents from [B60K 41/00](#) and [B60W 30/18](#) are in the process of being reorganised to the new groups
- B60W 30/18009
 - • {-related to particular drive situations}
 - B60W 30/18018
 - • • {-Start-stop drive, e.g. in a traffic jam}
 - B60W 30/18027
 - • • {-Drive off, accelerating from standstill}
 - B60W 30/18036
 - • • {-Reversing}
 - B60W 30/18054
 - • • {-at stand still, e.g. engine in idling state (hill holding [B60W 30/18118](#))}
 - B60W 30/18063
 - • • {-Creeping}
 - B60W 30/18072
 - • • {-Coasting}
 - B60W 30/181
 - • • {-Preparing for stopping}
 - B60W 30/18109
 - • • {-Braking}
 - B60W 30/18118
 - • • • {-Hill holding}
 - B60W 30/18127
 - • • • {-Regenerative braking}
 - B60W 30/18136
 - • • • {-Engine braking}
 - B60W 30/18145
 - • • {-Cornering}
 - B60W 30/18154
 - • • {-Approaching an intersection}
 - B60W 30/18163
 - • • {-Lane change; Overtaking manoeuvres}
 - B60W 30/18172
 - • {-Preventing, or responsive to skidding of wheels}
 - B60W 30/18181
 - • {-Propulsion control with common controlling member for different functions}
 - U B60W 30/184
 - • Preventing damage resulting from overload or excessive wear of the driveline
 - B60W 30/1843
 - • • {-Overheating of driveline components ([B60W 30/186](#) takes precedence)}
 - B60W 30/1846
 - • • {-Preventing of breakage of drive line components, e.g. parts of the gearing}
 - U B60W 30/188
 - • Controlling power parameters of the driveline, e.g. determining the required power
 - B60W 30/1882
 - • • {-characterised by the working point of the engine, e.g. by using engine output chart}
 - B60W 30/1884
 - • • {-Avoiding stall or overspeed of the engine}
 - B60W 30/1886
 - • • {-Controlling power supply to auxiliary devices}
 - B60W 30/1888
 - • • • {-Control of power take off (PTO)}

- U B60W 40/00** Estimation or calculation of { non-directly measurable} driving parameters for road vehicle drive control systems not related to the control of a particular sub unit, { e.g. by using mathematical models}
- U B60W 40/10
B60W 40/1005
- related to vehicle motion
 - · {-Driving resistance}
- U B60W 50/00** Details of control systems for road vehicle drive control not related to the control of a particular sub-unit, { e.g. process diagnostic or vehicle driver interfaces}
- WARNING
New subgroups of IPC8 are not yet complete. Documents from [B60K](#), in particular [B60K 41/00](#) and subgroups, are in the process of being reclassified to the new groups
- B60W 50/0097
- {-Predicting future conditions}
- B60W 50/0098
- {-Details of control systems ensuring comfort, safety or stability not otherwise provided for}
- U B60W 50/02
- Ensuring safety in case of control system failures, e.g. by diagnosing, circumventing or fixing failures
- B60W 50/0205
- · {-Diagnosing or detecting failures; Failure detection models}
- B60W 50/0225
- · {-Failure correction strategy}
- U B60W 50/04
- Monitoring the functioning of the control system
- B60W 50/045
- · {-Monitoring control system parameters}
- U B60W 50/08
- Interaction between the driver and the control system
- B60W 50/082
- · {-Selecting or switching between different modes of propelling }
- B60W 50/085
- · {-Changing the parameters of the control units, e.g. changing limit values, working points by control input}
- B60W 50/087
- · {-where the control system corrects or modifies a request from the driver}

Project: N/A (B61C)**B61C**

LOCOMOTIVES; MOTOR RAILCARS (vehicles in general [B60](#); frames or bogies [B61F](#); special railroad equipment for locomotives [B61J](#), [B61K](#))

NOTE

This subclass covers :

- general design features or items of locomotives and motor railcars not otherwise provided for;
- non-electric features of electric locomotives

B61C 1/00

Steam locomotives or railcars (-engines [F01](#); characterised by power transmissions [B61C 9/00](#) ; boilers [F22B](#)-)

B61C 1/02

- of articulated construction; with two or more engines (-appliances of booster engines [B61C 15/02](#)-)

B61C 1/04

- with steam accumulators (-steam accumulators [F01K](#)-)

B61C 1/06

- Streamlining (-of coachwork [B61D](#)-)

B61C 3/00

Electric locomotives or railcars (-characterised by power transmission [B61C 9/00](#) ; electrical features [B60L](#) ; [H02](#)-)

B61C 5/00

Locomotives or motor railcars with IC engines or gas turbines (-characterised by power transmission [B61C 9/00](#) ; engines [F02](#)-)

U B61C 7/00

Other locomotives or motor railcars

- B61C 7/04
- Locomotives or motor railcars with two or more different kinds or types of engine, e.g. steam and IC engines
- B61C 9/00**
- Locomotives or motor railcars characterised by the type of transmission system used; Transmission systems specially adapted for locomotives or motor railcars (machine elements [F16](#))**
- U B61C 9/08
- Transmission systems in or for locomotives or motor railcars with IC reciprocating piston engines
- B61C 9/10
- • mechanical (combined with hydraulic gearing [B61C 9/14](#))
- B61C 9/24
- • electric ([B61C 9/38](#) takes precedence)
- U B61C 9/28
- Transmission systems in or for locomotives or motor railcars with rotary prime movers, e.g. turbines
- B61C 9/30
- • mechanical (combined with hydraulic gearing [B61C 9/34](#))
- B61C 9/36
- • electric ([B61C 9/38](#) takes precedence)
- B61C 9/38
- Transmission systems in or for locomotives or motor railcars with electric motor propulsion (electrical features [B60L](#))
- B61C 9/52
- • with transmission shafts at an angle to the driving axles
- B61C 11/00**
- Locomotives or motor railcars characterised by the type of means applying the tractive effort; Arrangement or disposition of running gear other than normal driving wheel (constructions wheels [B60B](#))**
- B61C 11/005
- {tractive effort applied by a transported road vehicle (railway wagons or vans adapted for carrying vehicles in general [B61D 3/18](#) ; vehicles for use both on rail and road, e.g. with rail and road wheels on the same axle [B60F](#))}
- B61C 13/00**
- Locomotives or motor railcars characterised by their application to special systems or purposes ([B61C 11/00](#) takes precedence; self-propelled scaffold cars, break-down cranes, inspection trolleys [B61D 15/00](#) ; general design of track recording vehicles [B61K 9/00](#))**
- B61C 13/04
- for elevated railways with rigid rails ([B61C 13/08](#) takes precedence)
- B61C 13/08
- for saddle or like balanced type railways
- B61C 15/00**
- Maintaining or augmenting the starting or braking power by auxiliary devices and measures; Preventing wheel slippage; Controlling distribution of tractive effort between driving wheels (propelling locomotives or motor railcars by special means [B61C 11/00](#) ; driving wheels with non-slipping devices [B60B](#) ; brakes [B61H](#) ; wetting or lubricating rails [B61K](#))**
- B61C 15/04
- by controlling wheel pressure, e.g. by movable weights or heavy parts or by magnetic devices (magnetic brakes [B61H](#))
- B61C 15/08
- Preventing wheel slippage (adjusting wheel-braking force to prevent wheel slippage [B60T 8/00](#) ; { removing undesirable matter from the permanent way of railways [E01H 8/00](#) })
- B61C 15/10
- • by depositing sand or like friction increasing materials (for vehicles in general [B60B](#) ; combined control of sanding apparatus and brakes [B61H](#))
- U **B61C 17/00**
- Arrangement or disposition of parts; Details or accessories not otherwise provided for; Use of control gear and control systems**
- B61C 17/02
- Bunkers; Tanks; Tenders (coachwork [B61D](#)); Water or fuel pick-up or scoop apparatus; Water or fuel supply fittings (track-side installations, e.g. bunkers, tanks, for filling locomotives with sand or water [B61K 11/00](#))
- B61C 17/04
- Arrangement or disposition of driving cabins, footplates or engine rooms; Ventilation thereof (driving cabins and accessories [B61D](#))
- B61C 17/08
- Lubrication systems (in general [F16N](#))

- B61C 17/10 · Connecting-rods for driving wheels; Arrangements of their bearings (-connection-rods or bearings, in general [F16C 7/00](#) , [B61C 9/04-](#))
- B61C 17/12 · Control gear; Arrangements for controlling locomotives from remote points in the train or when operating in multiple units (-control from points outside the train [B61L 3/00](#) ; fluid-actuated telemotors, servomotors [F15B](#) ; control devices in general [G05-](#))

Project: N/A (B61D)

- U B61D 3/00** **Wagons or vans (tank wagons [B61D 5/00](#); hopper wagons [B61D 7/00](#); tipping wagons [B61D 9/00](#); mine cars [B61D 11/00](#); vehicles specially adapted for animal transportation [B60P 3/04](#); {container traffic [B65G](#)})**
 - B61D 3/005 · {-convertible ([B61D 3/04](#), [B61D 3/06](#), [B61D 15/04](#) take precedence)}
- U B61D 5/00** **Tank wagons for carrying fluent materials**
 - B61D 5/04 · with means for cooling, heating, or insulating
 - B61D 5/08 · Covers or access openings; -Arrangements thereof
- U B61D 19/00** **Door arrangements specially adapted for rail vehicles (locks for vehicles [E05B 77/00](#) - [E05B 85/00](#); door-operating mechanisms [E05F](#))**
 - U B61D 19/003 · {characterised by the movements of the door}
 - U B61D 19/005 · · {sliding ([B61D 19/008](#), [B61D 19/009](#) take precedence)}
 - B61D 19/006 · · · {-vertically ([B61D 19/006](#) takes"precedence)}
 - B61D 19/009 · · {both sliding and plugging, (*e.g. for refrigerator cars*)}(*e.g. for refrigerator cars*)}

Project: N/A (B61L)

- U B61L 1/00** **Devices along the route controlled by interaction with the vehicle or vehicle train, { e.g. pedals}(detonators [B61L 5/20](#); operation of points or signals by passage of the vehicle [B61L 11/00](#), [B61L 13/00](#); central traffic control systems controlled by train [B61L 27/04](#); operation of gates, or gates and signals, by approaching vehicle [B61L 29/18](#))**
- U B61L 1/16 · Devices for counting axles; Devices for counting vehicles (counting moving objects in general [G06M](#))
 - B61L 1/161 · · {-characterised by the counting methods}
 - B61L 1/162 · · {-characterised by the error correction}
 - B61L 1/163 · · {-Detection devices}
 - B61L 1/164 · · · {-Mechanical}
 - B61L 1/165 · · · {-Electrical}
 - B61L 1/166 · · · {-Optical}
 - B61L 1/167 · · {-Circuit details}
 - B61L 1/168 · · {-Specific transmission details}
 - B61L 1/169 · · {-Diagnosis}
- U B61L 3/00** **Devices along the route for controlling devices on the vehicle or vehicle train, e.g. to release brake, to operate a warning signal**
 - B61L 3/004 · {-Memory means reproducing during the running of the vehicle or vehicle train, e.g. smart cards}
 - B61L 3/006 · {-On-board optimisation of vehicle or vehicle train operation (track-side optimisation of operation [B61L 27/0027](#))}

- B61L 3/008
 - {-On-board target speed calculation or supervision (track-side control of safe travel [B61L 27/0038](#); speed control circuitry [B60L 3/08](#); speed control of electric drives [B60L 15/20](#))}
- U B61L 3/02
 - at selected places along the route, e.g. intermittent control {simultaneous mechanical and electrical control}
- U B61L 3/08
 - · controlling electrically
- U B61L 3/10
 - · · using current passing between devices along the route and devices on the vehicle train
- B61L 3/106
 - · · · {-with mechanically controlled electrical switch on the vehicle}
- U B61L 3/12
 - · · using magnetic or electrostatic induction; using radio waves
- B61L 3/125
 - · · · {-using short-range radio transmission (long-range radio transmission [B61L 15/0027](#), [B61L 27/0005](#))}
- B61L 3/126
 - · · · {-Constructional details}
- B61L 3/127
 - · · · {-for remote control of locomotives (remote control of locomotives within a train consist [B61C 17/12](#))}
- B61L 3/128
 - · · · {-for control of tilting trains by external control devices, e.g. by Eurobalise (tilting details [B61F 5/22](#))}
- U B61L 7/00**
 - Remote control of local operating means for points, signals, or trackmounted scotch-blocks ([B61L 11/00](#) takes precedence; interlocking arrangements [B61L 19/00](#); transmission per se, see the relevant classes)**
- U B61L 7/02
 - using mechanical transmission; e.g. wire, lever
- B61L 7/028
 - · {-Indicating or fixing arrangements in the event of breaking or tension difference of transmission wires for points, signals or similar}
- U B61L 13/00**
 - Operation of signals from the vehicle or by the passage of the vehicle**
- U B61L 13/04
 - using electrical or magnetic interaction between vehicle and track {e.g. by conductor circuits using special means or special conductors}
- B61L 13/045
 - · {using separated rail contacts, pedals or similar }([B61L 1/02](#) takes precedence-)+}
- U B61L 15/00**
 - Indicators provided on the vehicle or vehicle train for signalling purposes; { On-board control or communication systems}**
- B61L 15/0018
 - {-Communication with or on the vehicle or vehicle train (line transmission systems [H04B 3/00](#))}
- B61L 15/0027
 - · {-Radio-based, e.g. using GSM-R}
- B61L 15/0036
 - · {-Conductor-based, e.g. using CAN-Bus, train-line or optical fibres}
- B61L 15/0045
 - {-Destination indicators, identification panels or distinguishing signs on the vehicles (displaying in general [G09F](#))}
- B61L 15/0054
 - {-Train integrity supervision, e.g. end-of-train (EOT) devices}
- B61L 15/0063
 - {-Multiple on-board control systems, e.g. "2 out of 3"-systems (trackside multiple control systems [B61L 27/0061](#))}
- B61L 15/0072
 - {-On-board train data handling (trackside train data handling [B61L 27/0077](#))}
- B61L 15/0081
 - {-On-board diagnosis or maintenance (trackside diagnosis or maintenance [B61L 27/0083](#))}
- B61L 15/009
 - {-On-board display devices}
- U B61L 23/00**
 - Control, warning, or like safety means along the route or between vehicles or vehicle trains**
- U B61L 23/04
 - for monitoring the mechanical state of the route
- B61L 23/041
 - · {-Obstacle detection}

- B61L 23/042
- B61L 23/044
- B61L 23/045
- B61L 23/047
- B61L 23/048

U B61L 25/00 Recording or indicating positions or identities of vehicles or vehicle trains or setting of track apparatus

- U B61L 25/02
- B61L 25/023
- B61L 25/025
- B61L 25/026
- B61L 25/028

U B61L 27/00 Central traffic control systems; { Track-side control or specific communication systems}

- B61L 27/0005
- B61L 27/0011
- B61L 27/0016
- B61L 27/0022
- B61L 27/0027
- B61L 27/0033
- B61L 27/0038
- B61L 27/0055
- B61L 27/0061
- B61L 27/0066
- B61L 27/0072
- B61L 27/0077
- B61L 27/0083
- B61L 27/0088
- B61L 27/0094

U B61L 29/00 Safety means for rail/road crossing traffic

- U B61L 29/02
- U B61L 29/023
- B61L 29/026

Project: N/A (B62B)

- B62B 3/00 Hand carts having more than one axis carrying transport wheels; Steering devices therefor; Equipment therefor{(convertible from one-axled to two-axled vehicle [B62B 1/002](#)-)}**

- U B62B 3/02
- involving parts being adjustable, collapsible, attachable, detachable or convertible
- B62B 3/022
- • {folding down the body to the wheel carriage or by retracting projecting parts (-collapsible containers [B65D](#), e.g. [B65D 7/24](#) , [B65D 9/12](#) , [B65D 11/18](#)-)}
- U B62B 3/04
- involving means for grappling or securing in place objects to be carried; Loading or unloading equipment
- B62B 3/06
- • for simply clearing the load from the ground (-masted lift trucks [B66F](#)-)
- B62B 3/14
- characterised by provisions for nesting or stacking, e.g. shopping trolleys{(-collapsible shopping trolleys [B62B 3/027](#)-)}
- B62B 3/1404
- • {Means for facilitating stowing or transporting of the trolleys; Antitheft arrangements (-[B62B 5/0423](#) takes precedence-)}
- B62B 3/1472
- • {Supports for specific articles (-[B62B 3/1468](#) takes precedence-)}
- B62B 3/18
- • nestable by means of pivoted supports or support parts, e.g. baskets{(-[B62B 3/1476](#) takes precedence-)}
- B62B 5/00**
- Accessories or details specially adapted for hand carts ({ [B62B 3/1404](#) } , [B62B 9/00](#) take precedence; wheels, axles, or axle bearing for vehicles [B60B](#); castors for vehicles, castors in general [B60B 33/00](#)-)**
- B62B 5/02
- providing for travelling up or down a flight of stairs (-chairs or multi-track cycles specially adapted for invalids [A61G 5/00](#)-)
- B62B 5/06
- Hand moving equipment, e.g. handle bars (-for cycles [B62K 11/14](#) , [B62K 21/12](#)-)
- B62B 5/08
- Children`s seats (-[B62B 3/14](#) takes precedence-); {Seats or supports for other persons}
- B62B 7/00 - B62B 11/00**
- Carriages for children; Perambulators (-chairs or multi-track cycles specially adapted for invalids [A61G 5/00](#)-)**
- B62B 7/006
- {Carriages supporting a rigid seat (-when detachable or rotatable [B62B 7/145](#)-)}
- U B62B 7/04
- having more than one wheel axis; Steering devices therefor
- B62B 7/12
- • convertible, e.g. into children`s furniture or toy (-children`s chairs convertible to pushchairs [A47D 1/06](#)-)
- B62B 7/123
- • • {from seat to bed (-[B62B 7/147](#) , [B62B 9/104](#) take precedence-)}
- B62B 7/14
- • with detachable or rotatably-mounted body (-the body usable as a child's seat in a vehicle [B60N 2/2848](#)-)]
- B62B 9/00**
- Accessories or details specially adapted for children`s carriages or perambulators (-providing for travelling on snow [B62B 19/00](#)-)**
- B62B 9/005
- {Safety means for traffic, e.g. lights, reflectors, mirrors etc.(-Signaling means for cycles [B62J](#)-)}
- WARNING
- Not complete, see also [B62B 9/00](#)
- B62B 9/10
- Perambulator bodies; Equipment therefor (-collapsible or foldable [B62B 7/06](#) ; convertible [B62B 7/12](#)-)
- B62B 9/12
- • involving parts that are adjustable, attachable or detachable{(-[B62B 9/102](#) , [B62B 9/14](#) take precedence-)}
- U B62B 9/14
- • {Equipment protecting from environmental influences, e.g.}Hoods; Weather screens; Cat nets
- B62B 9/147
- • • {Attachments or holders for umbrellas, parasols or sunshade panels (-details of umbrellas [A45B 25/00](#)-)}

- B62B 9/24
- Safety guards for children, e.g. harness (-cat nets [B62B 9/14](#) ; devices for use in guiding or supporting children, e.g. safety harness [A47D 13/08](#)-)
- B62B 11/00** **Hand-propelled vehicles not otherwise provided for** (-rider propulsion of vehicles [B62M 1/00](#))
- B62B 13/00 - B62B 19/00** **Sledges** (-characterised by animal propulsion [B62C](#) ; propulsion of sledges by driver or engine [B62M](#)-)
- B62B 13/00** **Sledges with runners** (-ice boats or sailing sledges [B62B 15/00](#)-)
- U B62B 13/02
- characterised by arrangement of runners
- U B62B 13/04
- • arranged in a single line
- B62B 13/043
- • • {having one single runner} (-Monoski [A63C 5/03](#)-)
- WARNING
- Not complete, see [B62B 13/04](#)
- B62B 13/18
- Vehicles having alternatively-usable runners and wheels {or other transport means}
- U **B62B 15/00** **Other sledges; Ice boats or sailing sledges**
- B62B 15/008
- {Wheeled sledges (-[B62B 13/18](#) and [B62B 15/001](#) take precedence)}
- B62B 17/00** **Accessories or details of sledges**{(-propulsion devices for sledges [B62M 27/00](#) , [B62M 29/00](#)-)}
- B62B 17/02
- Runners (-attachable to or replacing vehicle wheels [B62B 19/00](#)-)
- U B62B 17/06
- Superstructures; Attachments therefor
- B62B 17/062
- • {Resilient suspensions of bodies (-[B62B 17/04](#) takes precedence-)}
- B62B 2203/00 - B62B 2501/00** **Sledges** (-characterised by animal propulsion [B62C](#) ; propulsion of sledges by driver or engine [B62M](#)-)

Project: N/A (B62D)**B62D**

MOTOR VEHICLES; TRAILERS (-steering, or guiding on a desired track, of agricultural machines or implements [A01B 69/00](#) ; wheels, castors, axles, increasing wheel adhesion [B60B](#); vehicle tyres, tyre inflation or tyre changing [B60C](#); connections between vehicles of a train or the like [B60D](#); vehicles for use on rail and road, amphibious or convertible vehicles [B60F](#); suspension arrangements [B60G](#); heating, cooling, ventilating or other air treating devices [B60H](#); windows, windscreens, non-fixed roofs, doors or similar devices, protective coverings for vehicles not in use [B60J](#); propulsion plant arrangements, auxiliary drives, transmissions, controls, instrumentation or dashboards [B60K](#); electric equipment or propulsion of electrically-propelled vehicles [B60L](#); power supply for electrically-propelled vehicles [B60M](#); passenger accommodation not otherwise provided for [B60N](#); adaptations for load transportation or to carry special loads or objects [B60P](#); arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general [B60Q](#); vehicles, vehicle fittings or vehicle parts not otherwise provided for [B60R](#); servicing, cleaning, repairing, supporting, lifting, or manoeuvring, not otherwise provided for, [B60S](#); brake arrangements, brake control systems or parts thereof [B60T](#); air-cushion vehicles [B60V](#); motor-cycles, accessories therefor [B62J](#), [B62K](#); testing of vehicles [G01M](#)-)

NOTE

In this subclass, the following terms are used with the meanings indicated:
 - "vehicles" include motor vehicles and trailers;

- "trailers" include forecars or sidecars.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B62D 25/13](#) covered by [B60J 1/20](#) , [B60R 13/07](#)
[B62D 25/22](#) covered by [B60R 3/00](#) [B62D 65/08](#)
covered by [B60J 10/0088](#)

U B62D 1/00

Steering controls, i.e. means for initiating a change of direction of the vehicle

- U B62D 1/02
 - vehicle-mounted
 - U B62D 1/04
 - • Hand wheels
 - B62D 1/06
 - • • Rims, e.g. with heating means; Rim covers (~~-B62D 1/11 takes precedence-~~)
 - B62D 1/065
 - • • • {Steering wheels with heating and ventilating means (heating and ventilating arrangements for spaces of vehicles [B60H](#))}
 - B62D 1/08
 - • • Spokes, e.g. resilient (~~-B62D 1/11 takes precedence-~~)
 - B62D 1/10
 - • • Hubs; Connecting hubs to steering columns, e.g. adjustable (~~-B62D 1/11 takes precedence-~~)
 - B62D 1/105
 - • • • {Non-rotatable hubs, e.g. the central part of the steering wheel not rotating (~~-for storing airbags [B60R 21/2032-](#)~~)}
 - B62D 1/11
 - • • incorporating energy-absorbing arrangements, e.g. by being yieldable or collapsible (~~-padded linings associated with the steering wheel [B60R 21/05](#) ; shock absorbers using plastic deformation of members in general [F16F 7/12-](#)~~)
 - U B62D 1/16
 - • Steering columns
 - B62D 1/166
 - • • {Means changing the transfer ratio between steering wheel and steering gear (~~-by continuous supply of energy, e.g. from electric motor [B62D 5/008](#) ; controlling steering depending on driving conditions sensed and responded to [B62D 6/00-](#)~~)}
 - B62D 1/18
 - • • yieldable or adjustable, e.g. tiltable (~~-padded linings associated with the steering column [B60R 21/05-](#)~~)
- NOTE
- Group [B62D 1/181](#) takes precedence over groups [B62D 1/183](#) - [B62D 1/187](#) .
- B62D 1/184
 - • • • Mechanisms for locking columns at selected positions(~~-locking of telescopic systems in general [F16B 7/10-](#)~~)}
 - B62D 1/185
 - • • • adjustable by axial displacement, e.g. telescopically (~~-[B62D 1/183](#) , [B62D 1/187](#) , [B62D 1/19](#) take precedence-~~)
 - B62D 1/187
 - • • • with tilt adjustment; with tilt and axial adjustment (~~-[B62D 1/183](#) , [B62D 1/19](#) takes precedence-~~)
 - B62D 1/19
 - • • • incorporating energy-absorbing arrangements, e.g. by being yieldable or collapsible (~~-shock absorbers using plastic deformation of members in general [F16F 7/12-](#)~~)
 - B62D 1/24
 - not vehicle-mounted(~~-special adaptations of automatic tractor steering [A01B69/04](#) ; devices for lifting, movable on wheels, automatically guided [B66F 9/063-](#)~~)}
 - B62D 1/26
 - • mechanical, e.g. by a non-load-bearing guide (~~-railways [B61-](#)~~)

- B62D 1/28
 - • non-mechanical {e.g. following a line or other known markers (-steering position indicators [B62D 15/02](#) ; steering aids [B62D 15/025](#) ; parking aids [B62D 15/027](#) ; steering assistants [B62D 15/029](#) ; determination or calculation of trajectory of land vehicles [G05D 1/021](#)-)}
- B62D 3/00**
 - Steering gears (-power assisted or power driven [B62D 5/00](#) ; steering linkages [B62D 7/00](#) ; for non-deflectable wheels [B62D 11/00](#) ; gearing in general [F16H](#)-)**
- B62D 5/00**
 - Power-assisted or power-driven steering ({controlling steering depending on driving conditions sensed and responded to [B62D 6/00](#) ; } for non-deflectable wheels [B62D 11/00](#) ; fluid pressure servomotors in general [F15B](#)-)**
- B62D 5/001
 - {-Mechanical aspects of steer-by-wire systems, not otherwise provided in [B62D 5/00](#) (-hydraulic steer-by-wire systems [B62D 5/091](#)-)}
- B62D 5/003
 - • {Backup systems, e.g. for manual steering (-[B62D 5/30](#) takes precedence-)}
- U B62D 5/005
 - • {means for generating torque on steering wheel, e.g. feedback}
- B62D 5/006
 - • • {power actuated (-control thereof [B62D 6/008](#)-)}
- U B62D 5/04
 - electrical, e.g. using an electric servo-motor connected to, or forming part of, the steering gear
- U B62D 5/043
 - • {characterised by clutch means between driving element, e.g. motor, and driven element, e.g. steering column or steering gear}
- B62D 5/0439
 - • • {Controllable friction clutches (-[B62D 5/0436](#) takes precedence-)}
- U B62D 5/0442
 - • {Conversion of rotational into longitudinal movement}
- B62D 5/0445
 - • • {Screw drives (-Screw mechanisms in general [F16H 25/20](#)-)}
- B62D 5/0457
 - • {characterised by control features of the drive means as such (-controlling steering depending on driving conditions sensed and responded to [B62D 6/00](#) ; determination of steering angle [B62D 15/021](#) ; measuring torque applied to steering wheels [G01L 5/221](#) ; control of electric motor as such [H02P](#)-)}
- U B62D 5/0481
 - • • {monitoring the steering system, e.g. failures}
- B62D 5/0487
 - • • • {detecting motor faults (-[B62D 5/0496](#) takes precedence-)}
- U B62D 5/06
 - fluid, i.e. using a pressurised fluid for most or all the force required for steering a vehicle
- U B62D 5/062
 - • {Details, component parts}
- B62D 5/063
 - • • {Pump driven by vehicle engine (-[B62D 5/065](#) takes precedence-)}
- B62D 5/064
 - • • {Pump driven independently from vehicle engine, e.g. electric driven pump (-[B62D 5/065](#) takes precedence-)}
- U B62D 5/07
 - • Supply of pressurised fluid for steering also supplying other consumers; {control thereof}
- B62D 5/075
 - • • {using priority valves (-priority valves in general [F15B 13/022](#)-)}
- B62D 5/08
 - • characterised by type of {steering}valve used (-valves in general [F16K](#)-)
- U B62D 5/083
 - • • Rotary valves
- B62D 5/0835
 - • • • {characterised by means for actively limiting the deflection angle, e.g. depending on driving parameters (-controlling steering depending on driving conditions sensed and responded to [B62D 6/00](#)-)}
- U B62D 5/09
 - • characterised by means for actuating valves
- B62D 5/093
 - • • Telemotor driven by steering wheel movement (-hydraulic steering gear [B62D 3/14](#)-)

- B62D 5/20
- specially adapted for particular type of steering gear or particular application (-steering gears per se [B62D 3/00](#) ; steering linkages not characterised by being power-assisted or power-driven [B62D 7/00-](#))
- B62D 5/22
- • for rack-and-pinion type{(-pressure yokes [B62D 3/123-](#))}
- B62D 6/00**
- Arrangements for automatically controlling steering depending on driving conditions sensed and responded to, e.g. control circuits (-means for initiating a change in direction [B62D 1/00](#) ; steering valves [B62D 5/06](#) ; combined with means for inclining the vehicle body or wheels on bends [B62D 9/00-](#))**
- NOTE
- When classifying in this group, classification is also made in the appropriate one of groups [B62D 1/00](#) to [B62D 5/00](#) or [B62D 7/00](#) to [B62D 19/00](#) if other aspects of the steering system are of interest
- B62D 6/002
- {computing target steering angles for front or rear wheels (-[B62D 7/159](#) takes precedence-)}
- B62D 6/003
- • {in order to control vehicle yaw movement, i.e. around a vertical axis (-[B62D 6/007](#) take precedence; stability systems acting on the brakes [B60T 8/1755-](#))}
- B62D 6/06
- responsive only to vehicle vibration dampening arrangements (-steering dampers for cycles [B62K 21/08-](#))
- B62D 6/08
- responsive only to {driver}input torque
- WARNING
- Group [B62D 6/08](#) is not complete. See also [B62D 5/04](#)
- B62D 6/10
- • characterised by means for sensing {or determining}torque
- WARNING
- Group [B62D 6/10](#) is not complete. See also [G01L 5/22](#)
- B62D 7/00**
- Steering linkage; Stub axles or their mountings (- [B62D 13/00](#) takes precedence; power-assisted or power-driven steering [B62D 5/00-](#))**
- U B62D 7/06
- for individually-pivoted wheels, e.g. on king-pins
- U B62D 7/08
- • the pivotal axes being situated in a single plane transverse to the longitudinal centre line of the vehicle
- B62D 7/09
- • • characterised by means varying the ratio between the steering angles of the steered wheels (-varying the ratio automatically depending on driving conditions [B62D 6/00-](#))
- U B62D 7/14
- • the pivotal axes being situated in more than one plane transverse to the longitudinal centre line of the vehicle, e.g. all-wheel steering
- B62D 7/146
- • • {characterised by comprising means for steering by acting on the suspension system, e.g. on the mountings of the suspension arms (-means on vehicle for adjusting camber, castor or toe-in [B62D 17/00-](#))}
- B62D 7/15
- • • characterised by means varying the ratio between the steering angles of the steered wheels{ [B62D 7/148](#) takes precedence-}
- U B62D 7/1518
- • • • {comprising a mechanical interconnecting system between the steering control means of the different axles}
- B62D 7/1536
- • • • {provided with hydraulic assistance; (-power-assisted fluid steering per se [B62D 5/06-](#))}
- B62D 7/1545
- • • • {provided with electrical assistance; (-power-assisted electrical steering per se [B62D 5/04-](#))}

- B62D 7/1554
- • • • {comprising a fluid interconnecting system between the steering control means of the different axles; (-power-assisted fluid steering per se [B62D 5/06](#)-)}
- B62D 7/1563
- • • • • {provided with fluid control means; (-[B62D 7/1572](#) takes precedence-)}
- B62D 7/1581
- • • • {characterised by comprising an electrical interconnecting system between the steering control means of the different axles; (-power-assisted electrical steering per se [B62D 5/04](#)-)}
- B62D 7/16
- Arrangement of linkage connections (-pivots per se [F16C](#) ; { e.g. ball joints [F16C 11/06](#) })
- B62D 7/166
- {substantially perpendicular, e.g. between tie-rod and steering knuckle (-steering knuckles in general [B62D 7/18](#)-)}
- B62D 7/20
- Links, e.g. track rods (-means for adjusting camber, castor, or toe-in [B62D 17/00](#)-)
- B62D 7/22
- Arrangements for reducing or eliminating reaction, e.g. vibration, from parts, e.g. wheels, of the steering system{(-dampers in general [F16F](#)-)}
- B62D 9/00**
- Steering deflectable wheels not otherwise provided for (-steering position indicators [B62D 15/02](#)-)**
- B62D 9/04
- combined with means for {inwardly}inclining wheels on bends (-[B62D 9/02](#) takes precedence-)
- WARNING
Group [B62D 9/04](#) is not complete. See also [B62D 9/02](#)
- U B62D 11/00**
- Steering non-deflectable wheels; Steering endless tracks or the like**
- NOTE
Gearings of interest apart from this application are also classified in the relevant group of subclass [F16H](#) covering gearings per se
- B62D 11/001
- {control systems (-[B62D 11/183](#) takes precedence-)}
- NOTE
When classifying in this group, classification is also made in the appropriate one of groups [B62D 11/02](#) to [B62D 11/24](#) if other aspects of the steering system are of interest
- U B62D 11/02
- by differentially driving ground-engaging elements on opposite vehicle sides
- U B62D 11/06
- • by means of a single main power source
- B62D 11/10
- • • using gearings with differential power outputs on opposite sides, e.g. with twin-differential or epicyclic gears{(-arrangements or mounting of transmissions in vehicles [B60K 17/00](#) ; gearing in general [F16H](#)-)}
- B62D 11/105
- • • • {using variable ratio belt and pulley gearings (-gearing for conveying rotary motion by endless flexible members [F16H 7/00](#) , [F16H 9/00](#)-)}
- B62D 11/20
- Endless-track steering having pivoted bogie carrying track (-[B62D 11/02](#) takes precedence-)
- B62D 12/00**
- Steering specially adapted for vehicles operating in tandem or having pivotally connected frames (-steering endless tracks or the like [B62D 11/00](#) ; steering specially adapted for trailers [B62D 13/00](#)-)**
- B62D 13/00**
- Steering specially adapted for trailers (-combined traction and steering hitches [B60D](#)-)**
- U B62D 15/00**
- Steering not otherwise provided for**
- U B62D 15/02
- Steering position indicators;{Steering position determination; Steering aids}

- B62D 15/021
- B62D 15/025
- B62D 15/029
- {Determination of steering angle (-sensors in general [G01B-](#))}
 - {Active steering aids, e.g. helping the driver by actively influencing the steering system after environment evaluation (-[B62D 1/28](#) takes precedence; parking aids [B62D 15/027-](#))}
 - {Steering assistants using warnings or proposing actions to the driver without influencing the steering system (-parking aids [B62D 15/027](#) , determination or calculation of trajectory of land vehicles [G05D 1/021](#) , image processing [G06T-](#))}
- B62D 19/00** **Radius rods, i.e. distance members**
- B62D 21/00** **Understructures, i.e. chassis frame on which a vehicle body may be mounted (-combined frame and vehicle body [B62D 23/00](#) ; { characterised by the material thereof [B62D 29/00](#) })**
- B62D 21/15
- B62D 21/18
- B62D 21/183
- B62D 21/186
- having impact absorbing means, e.g. a frame designed to permanently or temporarily change shape or dimension upon impact with another body (-bumpers [B60R 19/02](#) ; shock absorbers in general [F16F-](#))
 - characterised by the vehicle type and not provided for in groups [B62D 21/02](#) to [B62D 21/17](#)
 - {specially adapted for sports vehicles, e.g. race, dune buggies, go-karts (-tubular skeleton [B62D 23/005-](#))}
 - {for building site vehicles or multi-purpose tractors (-tracked vehicles [B62D 55/10](#) ; tractors in general [B62D 49/00](#) ; building site vehicles in general [E02F](#) ; lift-trucks [B66F-](#))}
- B62D 23/00** **Combined superstructure and frame, i.e. monocoque constructions ({ having impact absorbing means [B62D 21/15](#) ; }superstructure{or monocoque structure}sub-units{or parts or details thereof} [B62D 25/00](#) ; { characterised by the material thereof [B62D 29/00](#) })**
- B62D 23/005
- {with integrated chassis in the whole shell e.g. meshwork, tubes, or the like (-[B62D 33/044](#) takes precedence-)}
- B62D 24/00** **Connections between vehicle body and vehicle frame (-[B62D 23/00](#) , [B62D 33/077](#) take precedence-)**
- WARNING
- Group [B62D 24/00](#) and subgroups are not complete. See also other groups of [B62D](#)
- B62D 25/00** **Superstructure {or monocoque structure}sub-units; Parts or details thereof not otherwise provided for((-having impact absorbing means [B62D 21/15](#) ; running-boards, steps, or the like as superstructure sub-unit [B60R 3/00-](#))}**
- B62D 25/02
- B62D 25/06
- B62D 25/08
- B62D 25/081
- B62D 25/10
- Side panels{(-[B62D 33/046](#) takes precedence; sideboards for open load compartments [B62D 33/023-](#))}
 - Fixed roofs (-non-fixed roofs or like shelters [B60J 7/00](#) ; roof liners [B60R 13/02](#) ; insulating elements [B60R 13/08-](#))}
 - Front or rear portions{(-sub-frames for mounting engine or suspensions [B62D 21/11-](#))}
 - {Cowls (-ventilating openings situated directly in front of the vehicle front window [B60H 1/28](#))}
 - Bonnets or lids,{e.g. for trucks, tractors, busses, work vehicles (-for truck beds [B60J 7/1607](#) ; for boats [B63B 19/12](#) ; doors arranged at the vehicle rear [B60J 5/10](#) ; inlet covers for vehicle fuel tanks [B60K 15/05](#) ; for protecting non-occupants of a vehicle [B60R 21/38-](#))}

- B62D 25/12
- • • Parts or details thereof (locks [E05B](#), { [E05B65/19](#) ; devices for holding open [E05C 17/00](#) , e.g. while carrying oversize objects [E05C 17/042](#) } ; hinges [E05D](#) ; counterbalancing means [E05F](#) ; { checks, stops, buffers [E05F 5/00](#) ; } springs, {e.g. pneumatic springs} [F16F](#))
- B62D 25/14
- • Dashboards as superstructure sub-units (-other dashboard aspects [B60K-](#))
- B62D 25/16
- • Mud-guards or wings; Wheel cover panels (-equipped with means for freeing wheels or tyres from foreign matter [B60S-](#))
- U B62D 25/18
- • • Parts or details thereof, e.g. mudguard flaps
- B62D 25/182
- • • • {Movable mudguards, or mudguards comprising movable or detachable parts (-[B62D 25/188](#) takes precedence-)}
- B62D 25/186
- • • • {being attached or suspended laterally from the wheel (-[B62D 25/184](#) takes precedence-)}
- B62D 25/20
- Floors or bottom sub-units({-sub-frames for mounting engine or suspensions [B62D 21/11](#) ; drip trays [F16N 31/006-](#)})
- U B62D 25/2009
- • {in connection with other superstructure subunits}
- B62D 25/2036
- • • {the subunits being side panels, sills or pillars (-[B62D 21/157](#) takes precedence-)}
- B62D 25/2072
- • {Floor protection, e.g. from corrosion or scratching (-floor mats [B60N 3/04](#) , armour [F41H 7/042](#) , insulation [B60R 13/08](#) , streamlining [B62D 35/02-](#)) [M1104]}
- B62D 25/209
- • {Arrangements for the mounting of vehicle hitches (-vehicle connections in general [B60D-](#))}
- B62D 25/24
- Superstructure sub-units with access {or drainage} openings having movable or removable closures; {Sealing means therefor} (-inlet covers for vehicle fuel tanks [B60K 15/05-](#))
- B62D 27/00**
- Connections between superstructure {or understructure} sub-units (-[B62D 33/0207](#) , [B62D 33/044](#) take precedence; between sub-units predominantly made of synthetic material [B62D 29/048](#)-)}**
- U B62D 27/02
- rigid
- B62D 27/026
- • {Connections by glue bonding (-in general [F16B 11/00](#) ; processes [C09J 5/00-](#))}
- U B62D 27/06
- readily releasable
- B62D 27/065
- • {using screwthread (-[Connection of crossbeam to A-pillars B62D 25/147](#) ; [Connection of crossbeam to A-pillars B62D 25/147](#) ; mounting load bearing surfaces [B62D 21/09](#) ; securing mudguards [B62D 25/163](#) ; connections for synthetic parts [B62D 29/048-](#))}
- B62D 29/00**
- Superstructures, {understructures, or sub-units thereof,} characterised by the material thereof (-[B62D 33/044](#) , [B62D 33/048](#) take precedence-)}**
- U B62D 29/001
- {characterised by combining metal and synthetic material}
- B62D 29/002
- • {a foamable synthetic material or metal being added in situ (-shaping of substances in a plastic state by foaming, in general [B29C 44/00-](#))}
- B62D 29/04
- predominantly of synthetic material (working of plastics or substances in a plastic state [B29](#))
- B62D 29/043
- • {Superstructures (-[B62D 25/161](#) takes precedence-)}
- B62D 29/048
- • {Connections therefor, e.g. joints (-[B62D 29/045](#) takes precedence-)}
- B62D 31/00**
- Superstructure for passenger vehicles (-passenger vehicles specially adapted to co-operate with aircraft or terminal buildings [B64F 1/31-](#))**
- U B62D 31/003
- {compact cars e.g. city cars}
- B62D 31/006
- • {foldable (-droppable [B60F 5/006-](#))}

- B62D 33/00 Superstructures for load-carrying vehicles ({ having impact absorbing means [B62D 21/15](#) ; } in which a load-carrying element is movable [B60P](#); liners [B60R 13/00](#) ; { joining sheets or plates to one another or to strips or bars parallel to them [F16B 5/00](#))}**
- B62D 33/02 • Platforms; Open load compartments(~~Flat wagons including posts or standards [B61D 3/08](#)~~ *Flat wagons including posts or standards [B61D 3/08](#)*)
- U B62D 33/0207 • • {Connections of movable or detachable racks or stanchions to platforms}
- B62D 33/0215 • • • {for log hauling vehicles (~~vehicles for log transport in general [B60P 3/41](#)~~)}
- B62D 33/0222 • • {Connecting elements between stanchions, e.g. roof supporting elements, stiffeners (~~non-fixed roofs [B60J 7/00](#) ; securing and covering of load [B60P 7/00](#)~~)}
- B62D 33/023 • • Sideboard or tailgate structures(~~vehicle side panels in general [B62D 25/02](#)~~)
- U B62D 33/027 • • • movable
- B62D 33/0273 • • • • {Movable tailboards for vehicles comprising non-movable sideboards, e.g. pick-up trucks (~~[B62D 33/037](#) takes precedence~~)}
- B62D 33/0276 • • • • {by vertical translation (~~[B62D 33/0273](#) takes precedence~~)}
- B62D 33/03 • • • • by swinging down(~~[B62D 33/0273](#) takes precedence~~)}
- B62D 33/033 • • • • removable(~~[B62D 33/0273](#) takes precedence~~)}
- B62D 33/04 • Enclosed load compartments {Frameworks for movable panels, tarpaulins or side curtains (~~tarpaulins per se [B60J 7/00](#) , [B60P 7/04](#) ; side curtains per se [B60J 5/065](#)~~)}
- B62D 33/042 • • {divided into compartments (~~movable bulk heads [B60P 7/14](#) ; cattle transport [B60P 3/04](#) ; bottled liquids [B60P 3/22](#)~~)}
- B62D 33/046 • • {built up with flat self-supporting panels; Fixed connections between panels (~~[B62D 29/045](#) , [B62D 33/048](#) take precedence~~)}
- B62D 33/06 • Drivers` cabs(~~overhead guards, e.g. against loads falling down [B60R 21/11](#) ; roll-over protection [B60R 21/13](#)~~)}
- B62D 33/0604 • • {Cabs insulated against vibrations or noise, e.g. with elastic suspension (~~resilient connections between superstructure sub-units [B62D 27/04](#) ; damping noise in general [G10K 11/00](#) ; for vehicles in general [B60R 13/08](#)~~)}
- B62D 33/0612 • • {Cabins with living accommodation, especially for long distance road vehicles, i.e. sleeping, cooking, or other facilities (~~beds in general adapted to be used in vehicles [A47C 17/80](#) ; sanitation devices in vehicles in general [B60R 15/00](#) ; living accommodation in vehicles in general [B60P 3/32](#) ; passenger fittings in general [B60N 3/00](#)~~)}
- B62D 33/0617 • • {for tractors or off-the-road vehicles (~~protective devices for drivers in case of overturning of tractors [B60R 21/131](#)~~)}
- B62D 33/077 • characterised by the connection of the superstructure to the vehicle frame(~~[B62D 33/06](#) takes precedence~~)}
- B62D 33/08 • comprising adjustable means (~~[B62D 33/10](#) takes precedence~~)}
- U B62D 35/00 Vehicle bodies characterised by streamlining**
- U B62D 35/001 • {For commercial vehicles or tractor-trailer combinations e.g. caravans}
- B62D 35/002 • • {for caravans (~~[B62D 35/004](#) takes precedence~~)}
- B62D 35/005 • {Front spoilers (~~[B62D 35/001](#) takes precedence~~)}
- B62D 35/007 • {Rear spoilers (~~[B62D 35/001](#) takes precedence~~)}
- B62D 35/008 • {Side spoilers (~~[B62D 35/001](#) takes precedence~~)}

- B62D 35/02 · Streamlining the undersurfaces{(-[B62D 35/005](#) , [B62D 35/007](#) , [B62D 35/008](#) take precedence-)}
- B62D 39/00** **Vehicle bodies not otherwise provided for**{e.g. safety vehicles (-safety equipment [B60R 21/00](#))}
- U B62D 43/00** **Spare wheel stowing, holding, or mounting arrangements**
- B62D 43/002 · {Handling devices, mainly for heavy wheels (-via cables and chains [B62D 43/045](#)-)}
- U B62D 43/06** · within the vehicle body
- B62D 43/10 · · and arranged substantially horizontally
- B62D 47/00 - B62D 67/00** **Motor vehicles or trailers classified according to type; Parts or accessories thereof (-frames for vehicles of special type [B62D 21/18](#)-)**
- B62D 47/00** **Motor vehicles or trailers predominantly for carrying passengers (-superstructures [B62D 31/00](#)-)**
- B62D 47/003 · {convertible in order to modify the number of seats (-foldable compact cars [B62D 31/006](#) ; convertible from one use to a different one [B60P 3/42](#)-)}
- U B62D 47/02** · for large numbers of passengers, e.g. omnibus
- B62D 47/025 · · {articulated buses with interconnecting passageway, e.g. bellows (-coupling aspects [B60D 5/00](#)-)}
- B62D 49/00** **Tractors (-of walk type [B62D 51/04](#) ; endless- track features [B62D 55/00](#)-) { tractors for handling aircraft [B64F 1/22](#) ; transport specially adapted for underground galleries [E21F 13/02](#) }**
- B62D 49/005 · {Tractors for semi-trailers (-combinations of tractor plus semi- trailer [B62D 53/06](#)-)}
- U B62D 49/06** · adapted for multi-purpose use
- B62D 49/0614 · · {equipped with visual aids for positioning implements or to control working condition (-optical signalling for vehicles in general [B60Q 1/26](#)-)}
- B62D 49/0621 · · {comprising traction increasing arrangements e.g. all-wheel traction devices, multiple-axle traction arrangements, auxiliary traction increasing devices (-anti-skid or anti-slip devices fitted onto the wheels [B60B 15/02](#) , [B60B 39/12](#) ; arrangements of transmission for driving both front and rear wheels or tandem wheels of vehicles [B60K 17/34](#) , [B60K 17/36](#)-)}
- B62D 49/0628 · · · {using detachable weights (-counterweights against overturning [B62D 49/085](#) ; movable stabilisation masses [B62D 37/04](#)-)}
- B62D 49/0635 · · · {using additional ground engaging means, e.g. endless tracks (-vehicles with endless tracks and either additional or alternative ground wheels [B62D 55/02](#) , [B62D 55/04](#)-)}
- B62D 49/065 · · {Coupling of multi-purpose tractors with equipment (-towing bars [B60D](#) ; with load transfer [B62D 53/08](#) ; power take-off [B60K](#) ; with lifting devices [B62D 49/02](#) ; pushing gear [B62D 49/04](#)-)}
- B62D 49/0664 · · {Light, simple, and economical tractors (-[B62D 49/002](#) takes precedence-)}
- B62D 49/0678 · · {Tractors of variable track width or wheel base}(-for vehicles in general [B60B 23/12](#) and [B60B 35/10](#)-)}
- B62D 49/0692 · · {characterised by the particular arrangement of control devices, e.g. having more than one control stand, operable from vehicle extension (*control devices or systems characterised by mechanical features only*)}(-*control devices or systems characterised by mechanical features only*-)}
- B62D 49/08 · having means for preventing overturning or tipping (-safety devices for propulsion-unit control, specially adapted for, or arranged in, vehicles [B60K 28/00](#)-)}

B62D 51/00	Motor vehicles characterised by the driver not being seated {(-wheeled carriers for golf bags A63B 55/08 -)}
B62D 51/001	· {characterised by the vehicle control device (-mechanical features of control devices in general G05G ; arrangements of vehicle control devices in general B60K 20/00 , B60K 23/00 , B60K 26/00 -)}
B62D 51/002	· · {comprising safety arrangements (-safety devices for vehicle propulsion unit control B60K 28/00 -)}
B62D 51/004	· {characterised by the transmission (-arrangements or mounting of transmissions in vehicles B60K 17/00 ; gearing in general F16H -)}
B62D 51/005	· {Vehicular characteristics of load handling vehicles, e.g. pedestrian trucks (-fork-lift trucks B66F 9/06 -)}
B62D 51/007	· {the vehicle being of the endless track type (-endless track vehicles in general B62D 55/00 -)}
B62D 51/008	· {characterised by the vehicle being formed by articulated or separable units (-road trains B62D 53/00 -)}
B62D 53/00	Tractor-trailer combinations; Road trains (-traction couplings other than fifth wheel coupling B60D -){ tracked vehicles comprising at least two articulated parts B62D 55/0655 }
B62D 53/005	· {Combinations with at least three axles and comprising two or more articulated parts (-articulated buses B62D 47/025 -)}
B62D 53/02	· comprising a uniaxle tractor unit and a uniaxle trailer unit{ see B60B 11/00 - B60B 11/08 -}
B62D 53/025	· · {Comprising a transmission shaft passing through the coupling joints (- B62D 53/021 takes precedence; trailers with powered axles B62D 59/00 -)}
B62D 53/028	· · {Having only coupling joints other than directional (-articulated frames B62D 21/186 and B62D 55/10 -)}
U B62D 53/04	· comprising a vehicle carrying an essential part of the other vehicle`s load by having supporting means for the front or rear part of the other vehicle
B62D 53/045	· · {with rigid linkage in the horizontal plane (-luggage trailers B62D 63/064 to B62D 63/067 -)}
U B62D 53/06	· · Semi-trailers
B62D 53/061	· · · {of flat bed or low loader type or fitted with swan necks (-detachable swan necks B62D 53/065 ; swan neck-fifth wheel couplings B62D 53/08 -)}
B62D 53/062	· · · · {having inclinable, lowerable platforms; Lift bed trailers; Straddle trailers (-lifting coupling saddles B62D 53/0821 ; crane vehicles B60P 3/28 -)}
B62D 53/067	· · · {Multi-purpose, convertible or extendable load surface semi-trailers (-for container transport B60P 1/6418 ; convertible road transport vehicles in general B60P 3/42 -)}
B62D 53/068	· · · {having devices to equalise or modify the load between the fifth wheel and the rear wheels (-adjustable coupling saddles per se B62D 53/0807 ; load transfer devices to permit coupling or uncoupling B62D 53/0857 ; anti jack-knifing devices B62D 53/0871 -)}
B62D 53/08	· · Fifth wheel traction couplings {Tractors for handling trailers in terminals B62D 49/007 }
U B62D 53/0807	· · · {adjustable coupling saddles mounted on sub-frames; Mounting plates therefor}
B62D 53/0814	· · · · {with adjustment of the clearance between the tractor or the trailer (-devices modifying the load in tractor-trailer combinations B62D 53/068 -)}

- B62D 53/0821
 - • • {Lifting saddles, i.e. to lift the trailer front (-tilting body constructions [B60P-](#))}
- U B62D 53/0842
 - • • {King pins}
- B62D 53/085
 - • • • {fitted with anti-coupling devices, pivotal or retractable king pins, e.g. to prevent theft (-vehicle fittings for preventing theft in general [B60R 25/00-](#))}
- B62D 53/0871
 - • • {with stabilising means, e.g. to prevent jack-knifing, pitching, rolling, buck jumping (-stabilising in general [B62D 37/00](#) ; tractors [B62D 49/08-](#))}
- B62D 53/0892
 - • • {comprising power transmission shafts (-trailers with driven ground wheels [B62D 59/00-](#))}
- B62D 55/00**
 - Endless track vehicles (-steering aspects [B62D 11/00](#) ; { characterised by the driver not being seated [B62D 51/007](#) })**
- B62D 55/02
 - with tracks and additional ground wheels{ for multi-purpose tractors [B62D 49/0635-](#)}
- B62D 55/04
 - with tracks and alternative ground wheels, e.g. changeable from endless track vehicle into wheeled vehicle and vice versa{ for multi-purpose tractors [B62D 49/0635-](#)}
- U B62D 55/06
 - with tracks without ground wheels
- B62D 55/065
 - • Multi-track vehicles, i.e. more than two tracks{(-soil-shifting machines [E02F](#) ; mining machines [E21C-](#))}
- B62D 55/0655
 - • • {Articulated endless track vehicles (-steering specially adapted for trailers [B62D 13/00](#) ; articulated buses [B62D 47/025](#) ; tractor-trailer combinations or road trains comprising a uni-axle unit and a uni-axle trailer [B62D 53/02-](#))}
- B62D 55/075
 - • Tracked vehicles for ascending or descending stairs,{steep slopes or vertical surfaces} (-magnetic or pneumatic ground-engaging parts [B62D 55/265](#) ; chairs or multi-track cycles specially adapted for invalids [A61G 5/00-](#))
- U B62D 55/08
 - Endless track units; Parts thereof
- B62D 55/084
 - • Endless-track units or carriages mounted separably, adjustably or extensibly on vehicles, e.g. portable track units (-[B62D 55/07](#) takes precedence-)
- U B62D 55/088
 - • with means to exclude or remove foreign matter, e.g. sealing means, self-cleaning track links or sprockets, deflector plates or scrapers
- B62D 55/0882
 - • • {Track or sprocket cleaning devices mounted on the frame (-wheel cleaning devices in general [B60S-](#))}
- B62D 55/0887
 - • • {Track-articulation sealings against dust, water, mud or the like (-sealing of bearings in general [F16C 33/72](#) ; chain bushings in general [F16G 15/00-](#))}
- B62D 55/092
 - • with lubrication means (-lubricating in general [F16N-](#))
- U B62D 55/096
 - • with noise reducing means
- B62D 55/0966
 - • • {Low noise rollers, e.g. with antivibration means (-elastic wheel rims in general [B60B 9/00-](#))}
- B62D 55/10
 - • Bogies; Frames (-track-tensioning means [B62D 55/30-](#))
- B62D 55/104
 - • Suspension devices for wheels, rollers, bogies or frames (-vehicle suspension in general [B60G-](#))
- U B62D 55/14
 - • Arrangement, location, or adaptation of rollers
- B62D 55/145
 - • • {Rollers with replaceable wear rings or rims (-driving sprockets with replaceable rims [B62D 55/12-](#))}
- B62D 55/15
 - • • Mounting devices, e.g. bushings, axles, bearings, sealings{(-with lubrication means [B62D 55/092-](#))}
- B62D 55/18
 - • Tracks (-self-cleaning track links [B62D 55/088-](#))
- B62D 55/20
 - • • of articulated type, e.g. chains{(-with lubrication means [B62D 55/092-](#))}
- U B62D 55/24
 - • • of continuously flexible type, e.g. rubber belts

- B62D 55/247
- • • Gas filled or inflatable flexible tracks (-connection of valves to inflatable elastic bodies [B60C 29/00-](#))
- B62D 55/26
- • • Ground engaging parts or elements{ tracks specially adapted for amphibious vehicles [B60F 3/0015-](#)}
- B62D 57/00**
- Vehicles characterised by having other propulsion or other ground-engaging means than wheels or endless track, alone or in addition to wheels or endless track (-sledges [B62B](#) ; motor sledges [B62M-](#))**
- U B62D 57/02
- with ground-engaging propulsion means, e.g. walking members
- B62D 57/021
- • {the ground engaging means being sequentially inflatable bags for peristaltic movement (-[B62D 57/024](#) takes precedence-)}
- B62D 57/024
- • specially adapted for moving on inclined or vertical surfaces (-endless-track vehicles for ascending or descending stairs [B62D 55/075](#) ; hand-carts with provision for travelling up or down stairs [B62B 5/02-](#))
- B62D 57/028
- • having wheels and mechanical legs (-[B62D 57/024](#) takes precedence; ground-engaging vehicle fittings for supporting, lifting or manoeuvring the vehicle, wholly or in part [B60S 9/00-](#))
- B62D 57/032
- • with alternately or sequentially lifted supporting base and legs; with alternately or sequentially lifted feet or skid (-[B62D 57/024](#) takes precedence-)
- B62D 57/036
- • screw type, e.g. Archimedian screw{(-amphibious vehicles comprising screw-type ground-engaging means [B60F 3/0023-](#))}
- B62D 57/04
- having other than ground-engaging propulsion means, e.g. having propellers (-arrangement of jet-propulsion units [B60K-](#))
- U B62D 61/00**
- Motor vehicles or trailers, characterised by the arrangement or number of wheels, not otherwise provided for, e.g. four wheels in diamond pattern**
- B62D 61/10
- with more than four wheels{(-tractors of the low ground pressure type [B62D 49/002-](#))}
- B62D 61/12
- with variable number of ground engaging wheels, e.g. with some wheels arranged higher than others, or with retractable wheels (-for manoeuvring purposes only [B60S-](#))
- B62D 61/125
- • {the retractable wheel being a part of a set of tandem wheels (-resilient suspension for a single set of tandem wheels [B60G 5/00-](#))}
- U B62D 63/00**
- Motor vehicles or trailers not otherwise provided for**
- U B62D 63/02
- Motor vehicles
- B62D 63/025
- • {Modular vehicles (-superstructures for busses having modular sections [B62D 31/025-](#))}
- B62D 63/06
- Trailers (-vehicles comprising living accommodation for people, e.g. caravans, camping or like vehicles [B60P 3/32-](#))
- B62D 63/061
- • {Foldable, extensible or yielding trailers (-foldable caravans [B60P 3/34](#) ; adjustable chassis frames [B62D 21/14-](#))}
- B62D 63/062
- • {Trailers with one axle or two wheels (-semi-trailers [B62D 53/06-](#))}
- B62D 63/064
- • • {light luggage or equipment trailers, e.g. for batteries, gas generators, gas bottles, stretchers (-luggage carriers per se [B60R-](#))}
- B62D 63/068
- • {with more than two axles or more than four wheels (-vehicles with more than four wheels in general [B62D 61/10-](#))}
- B62D 63/08
- • Component parts or accessories
- U B62D 65/00**
- Designing, manufacturing, e.g. assembling, facilitating disassembly, or structurally modifying motor vehicles or trailers, not otherwise provided for**
- U B62D 65/02
- Joining sub-units or components to, or positioning sub-units or components with respect to, body shell or other sub-units or components

- B62D 65/04
 - • Joining preassembled modular units composed of sub-units performing diverse functions, e.g. engine and bonnet (~~B62D 65/06 to B62D 65/16 take precedence~~)
- B62D 65/06
 - • the sub-units or components being doors, windows, openable roofs, lids, bonnets, or weather strips or seals therefor (~~assembling sealing arrangements with vehicle parts, e.g. doors, windows B60J 10/0088~~)
- B62D 65/18
 - • Transportation, conveyor or haulage systems specially adapted for motor vehicle or trailer assembly lines (~~conveyers and haulage in general B65G~~)
- B62D 67/00**

Systematic disassembly of vehicles for recovery of salvageable components, e.g. for recycling (~~for disposal of vehicles by destroying or transformation B09B 3/00 , B09B 5/00 { ; General arrangement of separating plants B03B 9/00 ; Recovery of plastics B29B 17/00 }~~)

Project: N/A (B62H)

- U B62H 5/00**

Appliances preventing or indicating unauthorized use or theft of cycles; Locks integral with cycles (fittings for preventing or indicating use or theft of vehicles in general B60R; general features of locks E05B)
- U B62H 5/14
 - preventing wheel rotation {B62H 5/003 takes precedence}
- B62H 5/145
 - • {by means of removable bolts}

Project: N/A (B62J)

- U B62J 1/00**

Saddles or other seats for cycles; Arrangement thereof; Component parts (arrangements or adaptations of vehicle seats in general B60N)
- B62J 1/002
 - {Saddles having a seating area with a central cavity or depression}
- B62J 1/005
 - {Saddles having a seating area with multiple separate weight bearing surfaces}
- B62J 1/007
 - {Saddles with specific anatomical adaptations}
- U B62J 1/02
 - Saddles resiliently mounted on the frame; Equipment therefor, e.g. springs (springs in general F16F)
- U B62J 1/06
 - • Saddles capable of parallel motion up and down
- B62J 1/065
 - • • {Saddles supported on a parallelogram linkage}
- U B62J 1/14
 - Separate pillions
- U B62J 1/16
 - • for children
- B62J 1/162
 - • • {Child seats specially adapted for motorcycles}
- B62J 1/165
 - • • {Child seats attachable to handlebars}
- B62J 1/167
 - • • {Child seats attachable in front of the driver saddle}
- U B62J 17/00**

Weather guards for riders; Fairings or stream-lining parts not otherwise provided for (protective garments A41D 13/00; crash helmets A42B 3/00; hoods or fairings for sidecars B62K)
- U B62J 17/02
 - shielding only the rider`s front
- U B62J 17/06
 - • Leg guards
- B62J 17/065
 - • • {Apron-like covers for rider protection}
- U B62J 99/00**

Subject matter not provided for in other groups of this subclass
- B62J 2099/002
 - {Sensors specially adapted for cycles (for control of electrically propelled cycles B62M 6/50) Mounting thereof}
- B62J 2099/004
 - {Other electrical equipment specially adapted for use on a cycle not provided for in groups B62J 2099/0006 to B62J 2099/0026 e.g. solar cells}
- U B62J 2300/00**

Aspects relating to cycles not covered by the other groups of this subclass

- B62J 2300/002 · Sensors specially adapted for cycles (for control of electrically propelled cycles [B62M 6/50](#)); -Mounting thereof
- B62J 2300/0026 · Displays specially adapted for cycles (for audio equipments [B62J 2300/0006](#); arrangement or adaptations of instruments in vehicles [B60K 35/00](#)-)

Project: N/A (B62K)

- U B62K 3/00 Bicycles**
 - B62K 3/007 · {-Automatic balancing machines supporting a rider, e.g. "Segways"}
- U B62K 13/00 Cycles convertible to, or transformable into, other type of cycle or land vehicle (cycle supports or stands equipped with additional wheels for ride stabilisation [B62H 1/12](#))**
 - U B62K 13/02 · to a tandem
 - B62K 13/025 · · {-from two or more cycles}
- U B62K 21/00 Steering devices (steering devices specially adapted for one particular kind of cycle specified in groups [B62K 1/00](#) to [B62K 17/00](#), see the relevant group)**
 - B62K 21/005 · {-Steering pivot axis arranged within the wheel e.g. for a hub center steering arrangement}
 - U B62K 21/12 · Handle-bars; Handle-bar stems
 - U B62K 21/14 · · having resilient parts therein
 - B62K 21/145 · · · {-the handlebar itself being flexible}
- U B62K 27/00 Sidecars; Forecars; { Trailers or the like specially adapted to be attached to cycles}(trailers [B60P](#); [B62D](#); characterised by carrying propulsion engine { [B62M 7/14](#)})**
 - B62K 27/003 · {-Trailers}
 - WARNING
This group and its subgroups are not complete pending a reclassification; see also [B62K 27/00](#) and subgroups
 - B62K 27/006 · · {-having a single wheel}

Project: N/A (B62L)

- U B62L 5/00 Brakes, or actuating mechanisms therefor, controlled by back-peddalling (free-wheel devices specially adapted for cycles [F16D 41/00](#))**
 - B62L 5/006 · {-Details}

Project: N/A (B62M)

- U B62M 7/00 Motorcycles characterised by position of motor or engine (rider propulsion with addition source of power, e.g. auxiliary combustion engine or electric motor [B62M 6/00](#); frames characterised by position of engine [B62K 11/00](#))**
 - U B62M 7/14 · with the engine on an auxiliary wheeled unit, e.g. trailer, sidecar (trailers [B60P](#), [B62D](#); sidecars [B62K 27/00](#))
 - B62M 7/16 · · with wheel of unit driven by the engine
- U B62M 9/00 Transmissions characterised by use of an endless chain, belt, or the like (cycle chain guards [B62J 13/00](#))**
 - NOTE
In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

- U B62M 9/04 · of changeable ratio
- U B62M 9/06 · · using a single chain, belt, or the like
- U B62M 9/10 · · · involving different-sized wheels, {e.g. rear sprocket chain wheels} selectively engaged by the chain, belt, or the like {(bicycle hubs rotatably arranged on axle [B60B 27/023](#))}
- B62M 9/105 · · · · {-involving front sprocket chain-wheels engaged by the chain, belt or the like}
- U B62M 11/00** **Transmissions characterised by the use of inter-engaging toothed wheels or frictionally-engaging wheels (with roller engaging the periphery of ground wheel [B62M 13/00](#))**
- U B62M 11/04 · of changeable ratio
- U B62M 11/06 · · with spur gear wheels ([B62M 11/14](#) takes precedence)
- B62M 11/08 · · · with a radially-shiftable intermediate gear wheel

Project: N/A (B63B)**B63B**

SHIPS OR OTHER WATERBORNE VESSELS; EQUIPMENT FOR SHIPPING ({ amphibious vehicles [B60F 3/00](#) ; } air-cushion vehicles [B60V](#); arrangements of vessel ventilation, heating, cooling or air conditioning [B63J 2/00](#)-)

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) to [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

B63B 1/00

Hydrodynamic or hydrostatic features of hulls or of hydrofoils (-keels [B63B 3/38](#) ; determining hydrodynamic or hydrostatic features [B63B 9/00](#) ; hulls peculiar to submarines [B63B 3/13](#) ; decreasing pitch, roll or like unwanted vessel movements by using foils or acting on ambient water [B63B 39/06](#)-)

- B63B 1/02 · deriving lift mainly from water displacement (-[B63B 1/16](#) takes precedence-)
- U B63B 1/04 · · with single hull
- B63B 1/047 · · · {with spherical hull or hull in the shape of a vertical ring (-~~Freely movable rolling hoops, e.g. gyro wheels for exercising A63B 19/02~~ ~~Freely movable rolling hoops, e.g. gyro wheels for exercising A63B 19/02~~)}
- U B63B 1/10 · · with multiple hulls
- B63B 1/12 · · · the hulls being interconnected rigidly{(-[B63B 1/107](#) takes precedence-)}
- B63B 1/121 · · · · {comprising two hulls (-[B63B 1/107](#) takes precedence-)}
- B63B 1/125 · · · · {comprising more than two hulls (-[B63B 1/107](#) takes precedence-)}
- B63B 1/14 · · · the hulls being interconnected resiliently {or having means for actively varying hull shape or configuration (-collapsible, foldable, inflatable or like vessels [B63B 7/00](#)-)}

WARNING

Not complete, pending a reorganisation, see [B63B 1/12](#) and subgroups

- U B63B 1/16 · deriving additional lift from hydrodynamic forces
- U B63B 1/18 · · of hydroplane type
- B63B 1/20 · · · having more than one planing surface (-[B63B 1/22](#) takes precedence-)

WARNING

Not complete, pending a reorganisation, see [B63B 1/042](#)

- B63B 1/24
- • of hydrofoil type{(-controlling attitude or depth of underwater vessels by hydrofoils or the like [B63G 8/18-](#))}
- WARNING**
This group is pending a reorganisation, also documents covered by group [B63B 1/26](#) are within this group
- B63B 1/242
- • • {Mounting, suspension of the foils (-[B63B 1/30](#) takes precedence-)}
- B63B 1/246
- • • {Arrangements of propulsion elements (-propulsion elements in general [B63H 5/00](#) , propulsion by jets in general [B63H 11/00-](#))}
- B63B 1/26
- • • having more than one hydrofoil (-[B63B 1/28](#) takes precedence-)
- WARNING**
Not complete, pending a reorganisation, see [B63B 1/24](#) and subgroups
- U B63B 1/28
- • • with movable hydrofoils
- B63B 1/30
- • • • retracting or folding{ [B63B 1/244](#) takes precedence-}
- U B63B 1/32
- Other means for varying the inherent hydrodynamic characteristics of hulls
- B63B 1/322
- • {using aerodynamic elements, e.g. aerofoils producing a lifting force (-flying boats [B64C 35/00-](#))}
- U B63B 1/34
- • by reducing surface friction
- B63B 1/38
- • • using air bubbles or air layers {gas filled volumes (-waterborne vessels travelling on air cushions [B60V 3/06-](#))}
- B63B 3/00**
- Constructions of hulls (-non-metallic hulls [B63B 5/00](#) ; designing, building, maintaining or repairing methods [B63B 9/00-](#))**
- B63B 3/14
- Hull parts (-hull armour [B63B 3/10-](#))
- B63B 3/16
- • Shells (-ports or closures therefor [B63B 19/00-](#))
- B63B 3/38
- • Keels (-movable keels [B63B 41/00-](#))
- B63B 3/44
- • Bilge keels (-stabilising aspect [B63B 39/06-](#))
- B63B 3/48
- • Decks (-planking [B63B 5/06-](#))
- B63B 3/56
- • Bulkheads; Bulkhead reinforcements (-arrangements of water-tight doors [B63B 43/24-](#))
- U **B63B 5/00**
- Hulls characterised by their construction of non-metallic material**
- U B63B 5/02
- made predominantly of wood
- U B63B 5/06
- • Decks; Shells
- B63B 5/065
- • • {caulking decks (-mortise chisels for wood [B25D 3/00-](#))}
- B63B 5/24
- made predominantly of plastics{(-surf boards [B63B 35/7909-](#))}
- B63B 7/00**
- Collapsible, foldable, inflatable or like vessels (-foldable pontoons [B63B 35/36-](#))**
- B63B 9/00**
- Methods of designing, building, maintaining, converting, refitting, repairing, or determining properties of vessels, not otherwise provided for (-shuttering for building concrete vessels [E04G](#))**
- B63B 9/02
- Using towing tanks or model basins for designing{(-arrangements in or on ship testing tanks or water tunnels [G01M 10/00-](#))}
- U B63B 9/06
- Methods of building hulls
- B63B 9/062
- • {by folding (-foldable vessels [B63B 7/00-](#))}
- B63B 9/065
- • {for floating offshore platforms (-grounded platforms [E02B 17/00-](#))}
- WARNING**
Not complete, see [B63B 21/50](#) , [B63B 35/003](#), [B63B 35/44](#)

- B63B 11/00** Interior subdivision of hulls (~~bulkhead space construction~~ [B63B 3/56](#))
- B63B 11/04
- Constructional features of bunkers, {e.g. structural fuel tanks,} or ballast tanks, e.g. with elastic walls ({ tanks for fuel or the like not forming subdivisions of the hull [B63B 17/0027](#) ; } cleaning of tanks [B63B 57/00](#)-)
- WARNING
- Not complete pending reclassification; see also [B63B 25/08](#) and subgroups
- B63B 13/00** Conduits for emptying or ballasting; Self-bailing equipment; Scuppers (~~draining means for hatches~~ [B63B 19/26](#) ; centrifugal bilge-water separators [B04](#); { arrangements of installations for treating ballast water [B63J 4/002](#) ; } pipes in general [F16L](#))
- B63B 13/02
- Ports for passing water through vessels` sides ({-jet propulsors with clogging prevention means [B63H 11/01](#)-})
- B63B 15/00** Superstructures {, deckhouses, wheelhouses or the like}; Arrangements or adaptations of masts {or spars, e.g. bowsprits} (~~loading or unloading equipment~~ [B63B 27/00](#) ; masts and staying in general [E04H](#); sails, running rigging [B63H](#); { mounting ladders or the like on masts [B63B 29/205](#) })
- B63B 17/00** Vessel parts, details, or accessories, not otherwise provided for ({-vehicle fittings for preventing or indicating unauthorised use or theft of vehicles in general [B60R 25/00](#) ; propeller guards, line cutters or other means for protecting propellers or rudders [B63H 5/165](#) ; protection of power legs of outboard propulsion units [B63H 20/36](#) ; locking devices for boats, surfboards or parts or accessories thereof [E05B 73/007](#)-})
- WARNING
- Not complete pending a reorganisation; for documents concerning protective caps, or anti-theft devices other than using keys, see [B63J 99/00](#)
- B63B 17/0018
- {Arrangements or devices specially adapted for facilitating access to underwater elements, e.g. to propellers (~~retractable propellers~~ [B63H 5/125](#) ; tilting outboard propulsion units [B63H 20/08](#)-); Externally attached cofferdams or the like (~~caissons adapted to laying foundations~~ [E02D 23/00](#) to [E02D 27/00](#)-)}
- WARNING
- Documents concerning "externally attached cofferdams or the like" are not complete, pending a reorganisation; see also [B63B 9/00](#)
- B63B 17/0027
- {Tanks for fuel or the like (~~constructional features of bunkers~~ [B63B 11/04](#)-); Accessories therefor, e.g. tank filler caps (~~fuel tanks for vehicles in general~~ [B60K 15/03](#) ; cargo tanks [B63B 25/08](#) ; cleaning of tanks [B63B 57/00](#) ; handling of liquids for use in power plants [B63H 21/38](#)-)}
- WARNING
- Not complete pending reclassification; see also [B63B 25/08](#) and subgroups
- B63B 17/0036
- {Arrangements for minimizing pollution by accidents (~~associated with cargo tanks~~ [B63B 25/082](#)-)}
- B63B 17/0081
- {Vibration isolation or damping elements or arrangements, e.g. elastic support of deck-houses (~~mounting of propulsion plant or unit~~ [B63H 21/30](#) ; vibration dampers, suppression of vibration in systems [F16F](#)-)}
- B63B 17/06
- Refuse discharge, e.g. for ash ({ arrangements of installations for treating refuse or sludge, e.g. tank washing sludge [B63J 4/00](#) ; } removal of domestic or like refuse [B65F](#))

- B63B 19/00 Arrangements or adaptations of ports, doors, windows, port-holes, or other openings or covers (-scuppers [B63B 13/00](#) ; arrangements of watertight doors in bulkheads [B63B 43/24](#)-)**
- B63B 19/02 • Clear-view screens; {Windshields (-canopies connected to windshields [B63B 17/02](#)-)}
- B63B 19/04 • Air-catching equipment related to windows or port-holes (-ventilation [B63J 2/00](#)-)
- B63B 19/08 • Ports or like openings in vessels' sides {or at the vessels' bow or stern (-forming ramps when open [B63B 27/143](#)-)}
- B63B 19/12 • Hatches; Hatchways (-hatch coamings [B63B 3/54](#)-)
- B63B 19/14 • • Hatch covers (-opening devices in general [E05F](#)-)
- B63B 21/00 Tying-up; Shifting, towing, or pushing equipment; Anchoring ({ of buoys [B63B 22/04](#) } ; dynamic anchoring [B63H 25/00](#) ; equipment for shipping on coasts, in harbours or on other fixed marine structures, e.g. for landing purposes, [E02B](#))**
- WARNING
Group [B63H 21/00](#) is no longer used for classification of adaptations of ropes, hawsers, or the like, or parts thereof. Documents are in the process of being reorganised to [B63B 21/20](#)
- B63B 21/04 • Fastening or guiding equipment for chains, ropes, hawsers, or the like{(-means for fastening cables or ropes in general [F16G 11/00](#)-)}
- B63B 21/08 • • Clamping devices (-in general [F16B](#) ; { means for fastening cables or ropes to one another or to other objects in general [F16G 11/00](#))}
- B63B 21/16 • Using winches (winches per se [B66D](#))
- B63B 21/18 • Stoppers for anchor chains{(-anchor capstans [B66D 1/72](#)-)}
- U B63B 21/24 • Anchors
- B63B 21/30 • • rigid when in use{(-[B63B 21/28](#) takes precedence-)}
- B63B 21/38 • • pivoting when in use{(-[B63B 21/28](#) takes precedence-)}
- B63B 21/50 • Anchoring arrangements {or methods}for special vessels, e.g. for floating drilling platforms or dredgers
- U B63B 21/507 • • {with mooring turrets}
- WARNING
this group and its subgroup are pending a reorganisation, also documents covered by group [B63B 21/34](#) are within this group, and its subgroups
- B63B 21/508 • • • {connected to submerged buoy (-mooring buoys per se [B63B 22/02](#)-)}
- B63B 21/56 • Towing or pushing equipment (-tugs [B63B 35/66](#) ; { towing devices for waterskis or watersledges [B63B 35/815](#))}
- B63B 21/58 • • Adaptations of hooks for towing; Towing-hook mountings (-hooks in general [F16B](#)-)
- B63B 21/62 • • characterised by moving of more than one vessel (-rigid interconnections between pontoons [B63B 35/38](#)-)
- B63B 21/64 • • Equipment for towing or pushing vessels by vehicles or beings moving forward on ground-based paths along water way (-boat-hooks or the like [B63B 21/54](#) ; shore- or ground-based equipment per se, e.g. vehicles, rails, see the relevant classes-)
- B63B 21/66 • • Equipment specially adapted for towing underwater objects or vessels, e.g. fairings for tow-cables ({ paravanes for dragging fishing nets [A01K 73/02](#) ; } salvaging underwater vessels or objects [B63C 7/00](#) ; towed underwater vessels [B63G 8/42](#)-)

- B63B 22/00** Buoy ({{floating decoys, e.g. for waterfowl [A01M 31/06](#);} means for indicating the location of underwater objects [B63C 7/26](#) ; life-buoys, e.g. rings [B63C 9/08](#) ; { mountings of acoustic transducer in underwater equipment, e.g. sonobuoys [G10K 11/006](#) ; electric cables supported on or from floats [H02G 9/12](#) })
- U B63B 22/02 · specially adapted for mooring a vessel
- B63B 22/021 · · {and for transferring fluids, e.g. liquids (-container type buoys having means to selectively release contents, not adapted for mooring a vessel [B63B 22/26](#)-)}
- WARNING
1. Documents concerning container type buoys having means to selectively release contents and not being adapted for mooring a vessel are in the process of being reorganised to [B63B 22/26](#) . 2. This group and its subgroups are pending a reorganisation, also documents covered by groups [B63B 27/30](#) and [B63B 27/34](#) are within this group and its subgroups.
- B63B 22/023 · · · {submerged when not in use (-container type buoys submerged when not in use, not adapted for mooring a vessel [B63B 22/28](#) ; connected to turret [B63B 21/508](#)-)}
- WARNING
- Documents concerning container type buoys submerged when not in use and not being adapted for mooring a vessel are in the process of being reorganised to [B63B 22/28](#)
- B63B 22/026 · · · {and with means to rotate the vessel around the anchored buoy (-turrets [B63B 21/507](#)-)}
- U B63B 22/04 · {Fixations or other}anchoring arrangements
- B63B 22/06 · · with means to cause the buoy to surface in response to a transmitted signal{(-[B63B 22/023](#) takes precedence-)}
- B63B 22/16 · specially adapted for marking a navigational route (-signalling or lighting devices [B63B 45/00](#)-)
- B63B 22/22 · Inflatable buoys with gas generating means (-[B63B 22/12](#) takes precedence-)
- U B63B 22/24 · container type, i.e. having provision for the storage of material
- B63B 22/26 · · having means to selectively release contents, e.g. swivel couplings ({{ [B63B 22/021](#) takes precedence; } arrangements between ships and off-shore structures for loading or unloading, using pipe lines [B63B 27/34](#) ; pipe joints or couplings, in general [F16L](#)-)
- WARNING
- Not complete, pending a reorganisation; see [B63B 22/021](#) and [B63B 22/24](#)
- B63B 22/28 · · submerged when not in use((-[B63B 22/023](#) takes precedence-)}
- WARNING
- Not complete, pending a reorganisation; see [B63B 22/023](#) and [B63B 22/24](#)
- U B63B 23/00** **Equipment for handling lifeboats or the like**
- U B63B 23/02 · Davits, i.e. devices having arms for lowering boat by cables or the like
- U B63B 23/18 · · with arms pivoting on substantially vertical axes
- B63B 23/20 · · · Davits with single arms (-cranes in general [B66C](#)-)
- U B63B 23/40 · Use of lowering or hoisting gear
- B63B 23/48 · · Using winches for boat handling (-winches per se [B66D](#)-)

- B63B 25/00** **Load-accomodating arrangements, e.g. stowing, trimming; Vessels characterised thereby** (-trimming otherwise than by cargo division, e.g. by use of ballast [B63B 43/06](#) , [B63B 43/08](#) ; constructive aspects of cargo spaces [B63B 11/00](#) ; hatches, hatchways [B63B 19/12](#)-)
- B63B 25/002 · {for goods other than bulk goods (-detachable decks [B63B 25/18](#) ; palletised articles [B63B 25/22](#) ; frozen goods [B63B 25/26](#) ; deck loads [B63B 25/28](#)-)}
- B63B 25/004 · · {for containers (-[B63B 25/28](#) takes precedence-)}
- B63B 25/006 · · {for floating containers, barges or other floating cargo (-for transporting marine vessels [B63B 35/40](#)-)}
- B63B 25/008 · · {for wheeled cargo (-[B63B 25/20](#) takes precedence-)}
- U B63B 25/02 · for bulk goods
- B63B 25/08 · · fluid{(-constructional features of bunkers [B63B 11/04](#) ; tanks for fuel or the like not forming bunkers [B63B 17/0027](#)-)}
- WARNING**
Documents in [B63B 25/08](#) and subgroups concerning bunkers and other tanks for fuel or the like are in the process of being reclassified to [B63B 11/04](#) and [B63B 17/0027](#)
- B63B 25/082 · · · {Arrangements for minimizing pollution by accidents (-associated with tanks for fuel or the like not forming bunkers [B63B 17/0036](#)-)}
- U B63B 25/12 · · · closed
- B63B 25/16 · · · · heat-insulated (-insulating panelling [B63B 3/68](#) ; heating or cooling [B63J](#)-)
- B63B 27/00** **Loading or unloading cargo or passengers** (-self-discharging barges or lighters [B63B 35/30](#) ; shore-based [B65G](#) { elevators, escalators or moving walkways per se [B66B](#); floating cranes [B66C 23/52](#) ; loading or unloading devices per se, see the relevant subclasses, e.g. [B65G](#), [B66C](#), [B67D](#))}
- WARNING**
The scope of this group is broader than the scope of the corresponding IPC group, and includes the scope of the IPC2 subgroups [B63B 27/02](#) , [B63B 27/06](#) , and [B63B 27/20](#)
- U B63B 27/02 · with intermittent action
- B63B 27/04 · · Ships` derricks, i.e. employing ships` masts (-derricks in general [B66C](#)-)
- B63B 27/08 · · using winches (-winches per se [B66D](#)-)
- B63B 27/10 · · using cranes (-cranes per se [B66C](#)-)
- B63B 27/14 · · Ramps; Gangways or other outboard ladders (-inboard ladders [B63B 29/20](#) { ; land-based bridges giving access to ships [E01D 15/24](#) }); {Pilot lifts}
- B63B 27/16 · · using lifts or hoists (-elevators per se [B66B](#)-){ Pilot lifts [B63B 27/14](#)-}
- B63B 27/18 · · using cableways, e.g. with breeches-buoys (cableways per se [B65G](#))
- WARNING**
this group is pending a reorganisation, also documents covered by group [B63B 27/32](#) are within this group
- U B63B 27/20 · with continuous action
- B63B 27/22 · · of conveyers, e.g. of endless-belt or screw-type (-arrangements of devices with throwing action [B63B 27/26](#) ; arrangements of chutes [B63B 27/28](#) ; conveyers per se [B65G](#)-)
- B63B 27/26 · · using devices with throwing action (-devices with throwing action per se [B65G](#)-)
- B63B 27/28 · · using chutes (-chutes per se [B65G](#)-)

- U B63B 27/30
- {Arrangement of ship-based loading or unloading equipment}for transfer at sea between ships or between ships and off-shore structures
- WARNING
Not complete, pending a reorganisation, see [B63B 22/021](#), [B63B 35/44](#) , and subgroups
- B63B 27/34
- • using pipe-lines(~~Anchoring arrangements for special vessels with mooring turrets B63B 21/507~~ ; ~~Anchoring arrangements for special vessels with mooring turrets B63B 21/507~~ ; Buoys specially adapted for mooring a vessel and for transferring fluids , e.g. liquids [B63B 22/021](#)-)}
- WARNING
Not complete, pending a reorganisation, see [B63B 21/507](#), [B63B 22/021](#), [B63B 35/44](#) and subgroups
- B63B 27/36
- {Arrangement of ship-based loading or unloading equipment}for floating cargo (~~devices for facilitating retrieval of floating objects per se [B66C 13/02](#)~~-)
- U B63B 29/00** **Accommodation for crew or passengers not otherwise provided for**
- U B63B 29/02
- Cabins or other living spaces; Construction or arrangement thereof
- B63B 29/04
- • Furniture peculiar to vessels (~~floatable furniture [B63C 9/30](#)~~-)
- B63B 29/16
- Soil water discharges(~~arrangements of installations for treating waste water or sewage [B63J 4/006](#)~~-)}
- B63B 29/20
- Arrangements or adaptations of ladders (~~mounting ladders for berths [B63B 29/10](#)~~-)
- B63B 35/00** **Vessels or like floating structures adapted for special purposes (~~vessels characterised by load-accommodating arrangements [B63B 25/00](#) ; fire-fighting vessels [A62C 29/00](#) ; submarines, mine-layers or mine-sweepers [B63G](#); large containers for use in or under water [B65D 88/78](#) ; { Advertising on ships or other floating means [G09F 21/18](#) })~~**
- B63B 35/003
- {for transporting very large loads, e.g. offshore structure modules (~~construction methods for artificial islands mounted on piles [E02B 17/00](#) ; for transporting marine vessels [B63B 35/40](#) ; docks [B63C 1/00](#)~~-)}
- B63B 35/03
- Pipe-laying vessels (~~laying pipes under water [F16L 1/12](#)~~-)
- U B63B 35/08
- Ice-breakers, or other vessels or floating structures for operation in ice-infested waters; Ice-breakers, or other vessels or floating structures having equipment specially adapted therefor
- NOTE
Documents concerning vessels, or floating structures adapted at the same time for an other particular purpose are also classified in the respective other particular groups of [B63B 35/00](#) , e.g. floating buildings, stores, drilling platforms or workshops for operation in ice infested waters are also classified in [B63B 35/44](#)]
- WARNING
1. Not complete, pending a reclassification, see also [B63B 35/00](#) and subgroups, e.g. [B63B 35/44](#) . 2. This group is pending a reorganisation, also documents covered by group [B63B 35/083](#) are within this group
- B63B 35/083
- • {Ice-breakers (~~[B63B 35/10](#) , [B63B 35/12](#) take precedence~~-)}
- WARNING
Not complete, pending a reorganisation, see [B63B 35/08](#)
- B63B 35/086
- • {Vessels for displacing icebergs, or related methods (~~tugs in general [B63B 35/66](#)~~-)}

- B63B 35/14
 - B63B 35/28
 - B63B 35/34
 - B63B 35/40
 - B63B 35/44
 - B63B 35/50
 - B63B 35/54
 - B63B 35/56
 - B63B 35/58
 - B63B 35/66
 - B63B 35/665
 - B63B 35/71
 - U B63B 35/73
 - U B63B 35/79
 - U B63B 35/7906
 - B63B 35/792
 - B63B 35/7923
 - B63B 35/7933
 - B63B 35/7946
 - U B63B 35/7953
 - U B63B 35/7973
 - B63B 35/7976
 - U B63B 35/81
 - U B63B 35/815
 - B63B 35/816
- Fishing vessels (-fishing [A01K 69/00](#) to [A01K 97/00](#)-)
 - Barges or lighters{(-underwater-towed barges [B63G 8/42](#) ; for transporting logs [B63B 35/62](#)-)}
 - Pontoons (-floating bridges [E01D 15/14](#)-)
 - for transporting marine vessels{(-load accomodation for floating barges and the like [B63B 25/006](#)-)}
 - Floating buildings, stores, drilling platforms, or workshops, e.g. carrying water-oil separating devices{(-construction methods for floating offshore platforms [B63B 9/065](#)-)}
 - WARNING
This group and its subgroups are pending a reorganisation, also documents covered by groups [B63B 27/30](#) , [B63B 27/32](#) and [B63B 27/34](#) are within this group and its subgroups.
 - Vessels or floating structures for aircraft (-aircraft carriers [B63G 11/00](#) ; flying-boat hulls, other flotation means for aircraft [B64](#)-)
 - WARNING
1) not complete pending a reorganisation, see for self-levelling landing platforms also [B63B 29/12](#) ; 2) this group and its subgroup [B63B 35/52](#) are pending a reorganisation, also documents covered by group [B63B 35/53](#) are in this group and its subgroups
 - Ferries (-propulsion of chain ferries [B63H](#)-)
 - Lightships (-marking of navigational route [B63B 51/00](#)-)
 - Rafts, i.e. free floating waterborne vessels, of shallow draft, with little or no freeboard, and having a platform or floor for supporting a user (-lifeboats, life-rafts or the like [B63C 9/02](#)-)
 - Tugs (-towing or pushing equipment [B63B 21/56](#)-)
 - {Floating propeller units, i.e. a motor and propeller unit mounted in a floating box (-outboard propulsion units [B63H 20/00](#)-)}
 - {Canoes, kayaks or the like (-collapsible, foldable, inflatable or like vessels [B63B 7/00](#)-)}
 - Other vessels or like floating structures for pleasure or sport
 - • Surf-boards, e.g. sailboards
 - • • {Construction or shape of the boards}
 - • • • {catamaran-shaped (-[B63B 35/7923](#) takes precedence-)}
 - • • • {with hydrofoils (-hydrofoils per se [B63B 1/24](#)-)}
 - • • {Emergency arrangements and equipment; Other accessories (-anti-theft devices using locks [E05B 73/007](#)-)}
 - • • {Stowing or transporting arrangements (-transporting on vehicles [B60R 9/08](#)-)}
 - • • {Winddriven boards}
 - • • • {Sail arrangements}
 - • • • • {Sails pivotally mounted at a mast-tip; Kite-sails (-kites per se [B64C 31/06](#)-)}
 - • Waterskis; Watersledges
 - • • {Towing devices}
 - • • • {Connection of the tow to the boat; using winches (-winches per se [B66D](#)-)}

B63B 38/00	Vessels or like floating structures not otherwise provided for (-vessels characterised by load-accomodating arrangements B63B 25/00 ; fire-extinguishing vessels A62C 29/00 ; submarines, mine-layers or mine-sweepers B63G ; large containers for use in or under water B65D 88/78 -)
B63B 39/00	Equipment to decrease pitch, roll, or like unwanted vessel movements; Apparatus for indicating vessel attitude {(-for amphibious vehicles B60F 3/0038 -)}
B63B 39/005	· {Equipment to decrease ship`s vibrations produced externally to the ship, e.g. wave-induced vibrations (-propulsion mountings for anti-vibration purposes B63H 21/30 ; vibration dampers, suppression of vibration in systems F16F -)}
B63B 39/06	· to decrease vessel movements by using foils acting on ambient water (-constructional aspects of bilge keels B63B 3/44 ; { foils mounted on the housing of outboard motors B63H 20/34 })
B63B 39/062	· · {the foils being mounted on outriggers or the like, e.g. antidrift hydrofoils for sail boats (-hydrofoils B63B 1/24 ; drop keels B63B 41/00 -)}
B63B 39/08	· to decrease vessel movements by using auxiliary jets or propellers (-for steering or dynamic anchoring B63H 25/00 -)
B63B 41/00	Drop keels, e.g. centre boards or side boards {; Collapsible keels, or the like, e.g. telescopically; Longitudinally split hinged keels (-keels integral with hull B63B 3/38 ; foils or keels on surf-boards B63B 35/7906 ; stabilising foils B63B 39/06)}
B63B 43/00	Improving safety of vessels, e.g. damage control, not otherwise provided for (-fire-fighting in ships A62C 3/10 -)
B63B 43/02	· reducing risk of capsizing or sinking (-by means of watertight doors in bulkheads B63B 43/24 -)
U B63B 43/04	· · by improving stability
B63B 43/06	· · · using ballast tanks (-conduits for emptying or ballasting B63B 13/00 -)
B63B 43/10	· · by improving buoyancy{(-amphibious cycles B60F 3/0038 -)}
B63B 43/12	· · · using inboard air containers {or inboard floating members}
B63B 43/18	· preventing collision {or grounding}; reducing collision damage{(-reducing pollution by collision B63B 25/082 -)}
B63B 45/00	Arrangement or adaptation of signalling or lighting devices (-arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general B60Q ; life-buoys, -belts, -jackets, -suits or the like, characterised by signalling means B63C 9/20 ; lighting devices or systems therefor F21L , F21S -) <u>WARNING</u> Not complete, pending a reorganisation; see B63C 9/21
B63B 49/00	Arrangements of nautical instruments or navigational aids (nautical measuring instruments G01C ; radio navigation, analogous arrangements using other waves G01S)
B63B 57/00	Tank {or cargo hold}cleaning specially adapted for vessels (-tank cleaning in general B08B 9/08 -)
B63B 59/00	Hull protection peculiar to vessels; Cleaning devices peculiar to vessels and integral therewith (-cleaning of vehicles in general B60S ; other cleaning in general B08B ; inhibiting corrosion of metals by anodic or cathodic protection C23F 13/00 -)

- B63B 59/02
- Fenders integral with waterborne vessels or specially adapted therefor, {e.g. fenders forming part of the hull or incorporated in the hull}; Rubbing-strakes (-fenders on coasts, in harbours or on other fixed marine structures [E02B 3/26](#)-)
- B63B 59/04
- Preventing hull fouling (-anti-fouling paints [C09D 5/16](#)-)
- B63B 59/045
- {by wrapping the submerged hull or part of the hull with an impermeable sheet (-stopping temporarily leaks in hulls with impermeable sheets [B63B 43/16](#)-)}
- U B63B 59/06
- Cleaning devices for hulls
- B63B 59/08
- • of underwater surfaces while afloat (-[B63B 59/10](#) takes precedence-)
- U B63B 2701/00**
- Building of the ship`s hull**
- B63B 2701/08
- Electric and fusion welding for ships (-welding in general [B23K](#)-)
- B63B 2701/22
- Lining and panelling in wood or metal; Movable partition walls within accomodation spaces; Insulating walls; Stairs; Windshields on decks (-internal partitions for buildings [E04B 2/00](#)-)
- U B63B 2702/00**
- Submarines**
- B63B 2702/02
- Equipment for lifting sunken submarines (-**Equipment for salvaging sunken vessels or other objects B63C 7/00** *Equipment for salvaging sunken vessels or other objects B63C 7/00*)
- B63B 2702/06
- Arrangements for the transportation, drydocking, and testing of submarines (-drydocking [B63C 1/00](#)-)
- B63B 2702/14
- Arrangements for detecting and localising submarines (-**Acoustic detection G01S**; **electromagnetic detection G01N** *Acoustic detection G01S*, *electromagnetic detection G01N*)
- B63B 2745/00**
- Propellers for ships in general (-construction of air propellers [B64C](#)-)**
- B63B 2745/02
- Contra-propellers and other water guiding installations in front of or behind the rotating propeller (-rudders with water guiding surfaces [B63H 25/00](#)-)

Project: N/A (B63C)**B63C**

LAUNCHING, HAULING-OUT, OR DRY-DOCKING OF VESSELS; LIFE-SAVING IN WATER; EQUIPMENT FOR DWELLING OR WORKING UNDER WATER; MEANS FOR SALVAGING OR SEARCHING FOR UNDERWATER OBJECTS (-floating nets, floating slipways, or the like for recovering aircraft from the water [B63B 35/52](#)-)

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) to [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

B63C 1/00

Dry-docking of vessels or flying-boats (-storing of vessels on land otherwise than by dry-docking [B63C 15/00](#) ; mooring of vessels [B63B 21/00](#) ; hydraulic-engineering aspects [E02B](#)-)

B63C 1/02

- Floating docks ({ externally attached cofferdams and the like [B63B 17/0018](#) ; } ship transporters with adjustable draught [B63B 35/42](#)-)

B63C 1/08

- Graving docks (-locks [E02C 1/00](#)-)

B63C 3/00

Launching or hauling-out by land-borne slipways; Slipways (-ship-borne guides for handling lifeboats or the like [B63B 23/30](#) ; cranes winches, or the like [B66](#); ship lifting for adapting to different water levels [E02C](#)-)

B63C 3/12

- using cradles (-vehicles in general for transporting boats or the like [B60P](#)-)

- B63C 7/00** **Salvaging of disabled, stranded, or sunken vessels; Salvaging of vessel parts or furnishings, e.g. of safes; salvaging of other underwater objects (-means for searching for underwater objects [B63C 11/48](#)-)**
- NOTE
- in this group the following indexing codes are used: [B63B 2702/02](#) , [B63B 2738/00](#) , [B63B 2738/04](#)
- WARNING
this group is pending a reorganisation; also documents covered by groups [B63C 7/006](#) are within this group
- B63C 7/003
- {Righting capsized vessels, e.g. sailing vessels (-self-righting life boats, life rafts or the like [B63C 9/02](#)-)}
- B63C 7/006
- {Emptying the contents of sunken, stranded, or disabled vessels, e.g. by engaging the vessel, or collecting underwater buoyant, e.g. liquid or particulate, or gaseous contents escaping from sunken vessels, e.g. using funnels, or tents for recovery of escaping hydrocarbons (-~~Cleaning or keeping clear the surface of open water in general E02B 15/00~~ *Cleaning or keeping clear the surface of open water in general E02B 15/00*)}
WARNING
[B63C 7/006](#) is not complete pending a reclassification; see also groups [B63C 7/00](#) and [B63C 7/16](#)
- B63C 7/16
- Apparatus engaging vessels or objects{(-[B63C 7/006](#) takes precedence-)}
- B63C 7/20
- using grabs{(-cable grapnels with grabs [B63C 11/50](#)-)}
- B63C 7/26
- Means for indicating the location of underwater objects, e.g. sunken vessels (-means for searching for underwater objects [B63C 11/48](#) ; buoys in general [B63B 22/00](#)-)
- B63C 7/30
- Floatable safes (-safes in general [E05G](#)-)
- B63C 9/00** **Life-saving in water (-life-saving in general [A62B](#); arrangement or adaptation of signalling or lighting devices for ships, other waterborne vessels or for equipment for shipping [B63B 45/00](#) ; rescue equipment specially adapted for submarine personnel [B63G 8/40](#)-)**
- NOTE
- in this group the following indexing code is used: [B63B 2729/00](#)
- WARNING
this group is pending a reorganisation; also documents covered by group [B63C 9/065](#) are within this group
- B63C 9/0005
- {by means of alarm devices for persons falling into the water, e.g. by signalling, by controlling the propulsion or manoeuvring means of the boat (-~~Alarms responsive to presence of persons in a body of water in general G08B 21/08~~ *Alarms responsive to presence of persons in a body of water in general G08B 21/08*)}
WARNING
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63C 9/00](#)
- B63C 9/01
- Air-sea rescue devices, i.e. equipment carried by, and capable of being dropped from, an aircraft (-inflatable vessels [B63B 7/00](#) ; inflatable buoys [B63B 22/22](#)-)
- WARNING
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63C 9/00](#)

- B63C 9/02
- Lifeboats, life-rafts or the like, specially adapted for life-saving (-floatable furniture [B63C 9/30](#) ; boats in general [B63B](#) ; inflatable vessels [B63B 7/00](#) ; equipment for handling lifeboats or the like [B63B 23/00](#) ; rafts [B63B 35/58-](#))
- NOTE
- in this group the following indexing code is used: [B63B 2728/00](#)
- WARNING
- this group is pending a reorganisation; also documents covered by group [B63C 9/065](#) are within this group
- B63C 9/05
- Shark screens, e.g. buoyant means combined with means to surround or otherwise enclose the user (-[B63C 9/06](#) takes precedence-)
- WARNING
- This group is not complete pending a reclassification; for documents published before 01.01.2012 see also group [B63C 9/00](#)
- B63C 9/06
- Floatable closed containers with accommodation for one or more persons inside (-[B63C 9/01](#) takes precedence-)
- WARNING
- this group is pending a reorganisation; also documents covered by group [B63C 9/065](#) are within this group
- B63C 9/08
- Life-buoys, e.g. rings; Life-belts, jackets, suits, or the like ({ non-sinkable swimsuits, drawers or trunks [A41D 7/001](#) } ; equipment for swimming [A63B](#) , e.g. swimming aids {other than life-buoys or life-belts} [A63B 31/00](#) , { teaching frames for swimming, swimming boards [A63B 69/14](#) })
- B63C 9/087
- Body suits, i.e. substantially covering the user's body {Immersion suits, i.e. substantially completely covering the user}{ Professional, industrial, or sporting protective garments [A41D 13/00](#) for aquatic activities e.g. with buoyancy aids [A41D 13/012](#) } diving suits [B63C 11/04](#) , [B63C 11/10](#) { [B63C 9/081](#) takes precedence }
- B63C 9/105
- having gas-filled compartments (-connection of valves to inflatable elastic bodies [B60C 29/00-](#))
- B63C 9/11
- covering the torso, e.g. harnesses{ [B63C 9/081](#) takes precedence }
- B63C 9/125
- having gas-filled compartments (-connection of valves to inflatable elastic bodies [B60C 29/00-](#))
- B63C 9/13
- attachable to body member, e.g. arm, neck, head or waist ({ [B63C 9/081](#) takes precedence }
- B63C 9/15
- having gas-filled compartments (-connection of valves to inflatable elastic bodies [B60C 29/00-](#))
- B63C 9/18
- Inflatable equipment characterised by the gas-generating {or inflation}device
- WARNING
- This group is not complete pending a reorganisation; see also group [B63C 9/24](#) ; this group is pending a reorganisation; also documents covered by group [B63C 9/19](#) are within this group]
- B63C 9/20
- characterised by signalling means, e.g. lights (-arrangement or adaptation of signalling or lighting devices for ships or other waterborne vessels [B63B 45/00-](#))
- WARNING
- Not complete, pending a reorganisation; see [B63C 9/21](#)

- B63C 9/21
- Boats, rafts, buoys or the like, characterised by signalling means, e.g. lights, reflectors (~~B63C 9/08~~ takes precedence)
- WARNING
Group [B63C 9/21](#) is no longer used for classification. Documents are in the process of being reorganised to [B63B 45/00](#) and subgroups, and to [B63C 9/20](#)
- B63C 9/22
- Devices for holding or launching life-buoys, inflatable life-rafts, or other floatable life-saving equipment (~~equipment for handling life-boats or the like [B63B 23/00](#)~~)
- WARNING
This group is pending a reorganisation; also documents covered by group [B63C 9/23](#) are within this group
- B63C 9/24
- Arrangements of inflating valves or of controls thereof (~~connecting inflating valves to elastic bodies [B60C 29/00](#)~~)
- WARNING
this group is pending a reorganisation; also documents covered by group [B63C 9/18](#) , and subgroups are within this group
- B63C 9/26
- Cast or life lines; Attachments thereto; Containers therefor; {Rescue nets or the like} (~~adaptations of aerial cableways to shipboard use [B63B 27/18](#) ; guns for line throwing [F41F](#); line-carrying missiles [F42B 12/68](#)~~)
- B63C 11/00** **Equipment for dwelling or working underwater; Means for searching for underwater objects (~~composition of chemical substances for use in breathing apparatus [A62D 9/00](#) ; swimming aids or equipment [A63B 31/00](#) to [A63B 35/00](#) ; submarines [B63G 8/00](#)~~)**
- U B63C 11/02
- Divers` equipment
- B63C 2011/027
- {Shells for diving equipment, i.e. substantially rigid housings or covers, e.g. streamlined shells (~~diving computer with shells [B63C 2011/021](#) , shells for containers for goods or personal belongings of the diver [B63C 11/02](#)~~)}
- B63C 11/12
- {Diving masks(~~swimming helmets, swimming goggles [A63B 33/00](#)~~)}
- B63C 11/18
- {Air supply (~~for diving masks [B63C 11/14](#) , [B63C 11/16](#) ; respiratory apparatus in general [A62B](#)~~)}
- U B63C 11/20
- {from water surface
- B63C 11/202
- {with forced air supply (~~[B63C 11/14](#) takes precedence~~)}
- B63C 11/205
- {with air supply by suction from diver, e.g. snorkels (~~[B63C 11/16](#) takes precedence~~)}
- U B63C 11/22
- {carried by diver
- B63C 11/2209
- {First-stage regulators (~~[B63C 11/2245](#) takes precedence~~)}
- B63C 11/2227
- {Second-stage regulators (~~[B63C 11/2245](#) takes precedence~~)}
- B63C 11/2236
- {Functionally interdependent first/second-stage regulators (~~[B63C 11/2245](#) takes precedence~~)}
- B63C 11/30
- {Ballast(~~weights worn on user`s body for exercising [A63B 21/065](#)~~)}
- B63C 11/34
- Diving chambers {or underwater vessels, e.g. unmanned,}with mechanical link, e.g. cable, to a base {manipulators [B25J](#) ;{ externally attached cofferdams and the like [B63B 17/0018](#) ; } diving chambers without mechanical link to a base [B63G 8/00](#) ; caissons adapted to laying foundations [E02D 23/00](#) to [E02D 27/00](#))}
- U B63C 11/36
- {of closed type

- B63C 11/42
- • • with independent propulsion or direction control{(underwater vessels adapted for special purposes [B63G 8/001](#)-)}
- WARNING
this group is pending a reorganisation; also documents covered by group [B63G 8/001](#) are within this group
- B63C 11/46
- Divers` sleds or like craft, i.e. craft on which man in diving-suit rides{(devices fixed to the body of a swimmer, e.g. diver, or held in his hands, and propelling the swimmer by muscle power or by a motor [A63B 35/00](#)-)}
- B63C 11/48
- Means for searching for underwater objects (-means for indicating the location of sunken objects [B63C 7/26](#) ; locating by use of the reflection or reradiation of radio or other waves [G01S](#); { mountings of acoustic transducers in underwater equipment [G10K 11/006](#) })
- B63C 11/49
- • Floating structures with underwater viewing devices, e.g. with windows; {Arrangements on floating structures of underwater viewing devices, e.g. on boats (-arrangement of visual equipment on submarines [B63G 8/38](#)-)}
- B63C 13/00**
- Equipment forming part of or attachable to vessels facilitating transport over land (-amphibious craft, land vehicles convertible for use on water [B60F](#) ; land vehicles for carrying boats [B60P](#) ; { hand carts for transporting boats [B62B](#) ; } harnesses attachable to vessels for personal carrying [A45F](#)-)**

Project: N/A (B63G)

- U B63G 8/00**
- Underwater vessels, e.g. submarines; { Equipment specially adapted therefor}(submarine hulls [B63B 3/13](#); diving chambers with mechanical link, e.g. cable, to a base [B63C 11/34](#); divers' sleds [B63C 11/46](#); torpedoes [F42B 19/00](#))**
- B63G 8/001
- {-Underwater vessels adapted for special purposes, e.g. unmanned, underwater vessels; Equipment specially adapted therefor, e.g. docking stations (self-propelled or direction controlled diving chambers with mechanical link to a base [B63C 11/42](#))}
- WARNING
[B63G 8/001](#) is not complete pending a reclassification; see also group [B63C 11/42](#)

Project: N/A (B63H)

- B63H**
- MARINE PROPULSION OR STEERING ({ arrangement of propulsion or steering means on amphibious vehicles [B60F 3/0007](#) ; } propulsion of air-cushion vehicles [B60V 1/14](#) ; peculiar to submarines, other than nuclear propulsion, [B63G](#); peculiar to torpedoes [F42B 19/00](#)-)**
- NOTE
In this subclass, the indexing codes [B63B 2201/00](#) to [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means
- B63H 1/00**
- Propulsive elements directly acting on water (-jet propulsion [B63H 11/00](#) ; attachment of propellers on shafts [B63H 23/34](#)-)**
- B63H 1/02
- of rotary type (-endless-track type [B63H 1/34](#)-)
- U B63H 1/12**
- • with rotation axis substantially in propulsive direction

- B63H 1/14
- • • Propellers (-pitch changing [B63H 3/00-](#))
- WARNING
this group is pending a reorganisation; also documents covered by group [B63H 1/15](#) are within this group]
- B63H 1/15
- • • • having vibration damping means (-anti-vibration mounting of propulsion plant [B63H 21/30](#) ; means for damping vibration in general [F16F-](#))
- WARNING
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63H 1/14](#)
- B63H 1/28
- • • • Other means for improving propeller efficiency (-water-guiding elements formed by shape of hull [B63H 5/00-](#))
- B63H 3/00** **Propeller-blade pitch changing**{(-**Aircraft propellers B64C 11/30** ; **Aircraft propellers B64C 11/30** ; **Rotors of turbines F01D 7/00** ; **Axial wind motors F03D 7/022** ; **Axial-flow pumps F04D 29/00-**)}
- B63H 3/02
- actuated by control element coaxial with propeller shaft, e.g. the control element being rotary{(-[B63H 3/002](#) takes precedence, fluid actuated [B63H 3/081-](#))}
- B63H 3/06
- characterised by use of non-mechanical actuating means, e.g. electrical (-[B63H 3/002](#) takes precedence-)
- B63H 3/12
- the pitch being adjustable only when propeller is stationary (-[B63H 3/002](#) takes precedence-)
- U B63H 5/00** **Arrangements on vessels of propulsion elements directly acting on water**
- B63H 5/07
- of propellers (forming part of outboard units{or Z-drives} [B63H 20/00-](#))
- B63H 5/125
- • movably mounted with respect to hull, e.g. adjustable in direction {e.g. podded azimuthing thrusters}{outboard units or Z-drives [B63H 20/00](#) ; }movably mounted for steering purposes only,{rudders carrying propellers} [B63H 25/42-](#))
- WARNING
- [B63H 5/125](#) and subgroups are not complete pending a reorganisation; see also groups [B63H 21/26](#) and [B63H 25/42](#) - this group is pending a reorganisation; also documents covered by groups [B63H 20/00](#) , and subgroups, and by [B63H 25/42](#) are within this group]
- B63H 5/14
- • characterised by being mounted in non-rotating ducts or rings, e.g. adjustable for steering purpose (-shrouding ring attached to blades [B63H 1/16](#) ; jet propulsion [B63H 11/00-](#))
- B63H 5/16
- • characterised by being mounted in recesses; with stationary water-guiding elements; Means to prevent fouling of the propeller, e.g. guards, cages or screens (-anti-fouling paints [C09D 5/16-](#))
- U B63H 5/18**
- • of emergency propellers, e.g. arranged at the side of the vessel
- WARNING
this group is pending a reorganisation; also documents covered by group [B63H 5/20](#) are within this group]

- B63H 5/20
- • • movable from a working position to a non-working position{(movable arrangements of propellers in general [B63H 5/125](#) ; outboard propulsion units in general [B63H 20/00](#) ; steering or dynamic anchoring by propellers used therefore only, or by rudders carrying propellers [B63H 25/42-](#))}
- WARNING
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63H 5/18](#)
- B63H 7/00** **Arrangements of propulsive devices directly acting on air (-jet propulsion [B63H 11/00-](#))**
- B63H 7/02
- using propellers{(-air-screws of aircraft type [B64C-](#))}
- B63H 9/00** **Propulsive devices directly acted on by wind; Arrangements thereof (-air driven propellers driving underwater propulsive elements [B63H 13/00-](#))**
- B63H 9/04
- using sails or like wind-catching surfaces{(-sailing sledges or ice boats [B62B 15/00](#) ; { masts for sailing boats [B63B 15/0083](#) ; sail arrangements for wind-driven boards [B63B 35/7973](#))}
- U B63H 9/06
- • Construction or types of sails; Arrangements thereof on vessels
- B63H 9/0657
- • • {Construction of sails (-sails with detachable sections [B63B 35/7983-](#))}
- B63H 9/0685
- • • {Sails pivotally mounted at a mast-tip; Kite sails (-[B63B 35/7976](#) takes precedence-)}
- U B63H 9/08
- • Connections of sails to masts, spars, or the like
- B63H 9/10
- • • Running rigging, e.g. reefing equipment (-staying of masts [B63B 15/02-](#))
- WARNING
this group is pending a reorganisation; also documents covered by group [B63H 9/1092](#) are within this group
- B63H 9/1007
- • • • {Trapeze systems (-harnesses for windsurfers [B63B 35/7993-](#))}
- B63H 9/1092
- • • • {Means for stowing, or securing sails when not in use (-[B63H 9/1021](#) takes precedence-)}
- WARNING
[B63H 9/1092](#) is not complete pending a reorganisation; see also group [B63H 9/10](#)
- B63H 11/00** **Effecting propulsion by jets, i.e. reaction principle (steering by{auxiliary}jet action,{rudders carrying jets} [B63H 25/46](#) ; power plant per se, see the relevant classes-)**
- U B63H 11/02
- the propulsive medium being ambient water
- U B63H 11/10
- • having means for deflecting jet or influencing cross-section thereof
- WARNING
Documents concerning deflection of the jet into a direction substantially parallel to the plane of the pump outlet are in the process of being reorganised to [B63H 11/101](#)
- B63H 11/107
- • • Direction control of propulsive fluid{(-[B63H 11/101](#) takes precedence-)}
- WARNING
Documents concerning means for deflecting jet into a propulsive direction substantially parallel to the plane of the pump outlet opening are in the process of being reorganized to [B63H 11/101](#)

- B63H 16/00** **Effecting propulsion by muscle power (swimming frameworks, {i.e. apparatus fixed to or held by the swimmer or diver} with swimmer-operated driving mechanism [A63B 35/00](#) ; land-based training equipment for rowing or sculling [A63B 69/06](#)-)**
- B63H 16/08 · Other apparatus for converting muscle power into propulsive effort (general features of propulsion elements, see the relevant groups)
- B63H 16/18 · · using sliding {or pivoting} handle or pedal, i.e. the motive force being transmitted to a propelling means by means of a lever operated by the hand or foot of the occupant
- WARNING
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also groups [B63H 16/12](#) and [B63H 16/14](#)
- U B63H 19/00** **Effecting propulsion of vessels, not otherwise provided for**
- B63H 19/06 · by discharging gas into ambient water (-with jet action [B63H 11/12](#) ; for reducing surface friction [B63B 1/38](#)-)
- U B63H 20/00** **Outboard propulsion units, i.e. propulsion units having a substantially vertical power leg mounted outboard of a hull and terminating in a propulsion element, e.g. "outboard motors", Z-drives {with level bridging shaft arranged substantially outboard}(power plants per se, see the relevant classes); Arrangements thereof on vessels {(transom panels for outboard motors on inflatable boats [B63B 7/087](#); tug-type floating propeller units [B63B 35/665](#); rudders carrying propellers [B63H 25/42](#); rudders carrying jets [B63H 25/46](#); engines of outboard propulsion units [F02B 61/045](#))}**
- WARNING
Not complete pending a reclassification; see also [B63H 5/1252](#), as well as [B63H 21/26](#) and subgroups
- B63H 20/001 · {Arrangements, apparatus and methods for handling fluids used in outboard drives (-for handling exhaust gas [B63H 20/24](#) ; for handling cooling-water [B63H 20/28](#) ; cooling outboard marine engines [F01P 3/202](#) ; air intakes for outboard marine engines [F02M 35/167](#)-)}
- WARNING
This group and its subgroups are not complete, pending a reorganisation; see [B63H 21/38](#) and [B63B 2770/00](#)
- B63H 20/002 · · {for handling lubrication liquids (in engines, e.g. outboard marine engines, [F01M](#))}
- B63H 20/007 · {Trolling propulsion units (-trolling plates for slowing down [B63H 25/50](#) ; dynamo-electric machines of trolling units [H02K](#)-)}
- B63H 20/02 · Mounting of propulsion units (-[B63H 20/08](#) takes precedence-)
- B63H 20/08 · Means enabling movement of the position of the propulsion element, e.g. for trim, tilt, or steering (-transmissions allowing movement of the propulsion element [B63H 20/14](#)-); Control of trim or tilt (-initiating means for steering [B63H 25/02](#)-)
- U B63H 20/14** · Transmission between propulsion power unit and propulsion element
- B63H 20/18 · · allowing movement of the propulsion element about a longitudinal axis, e.g. the through transom shaft (-[B63H 20/22](#) takes precedence-)

- U B63H 20/24
- {Arrangements, apparatus and methods for handling exhaust gas in outboard drives, e.g.}exhaust gas outlets{(in engines, e.g. outboard marine engines, [F01N](#))}
- WARNING
This group and its subgroups are not complete, pending a reorganisation; see [B63H 21/32](#) , [B63H 21/38](#) and [B63B 2770/00](#)
- B63H 20/245
- • {Exhaust gas outlets (-[B63H 20/26](#) takes precedence-)}
- B63H 20/28
- {Arrangements, apparatus and methods for handling cooling-water in outboard drives, e.g.}cooling-water intakes{(-cooling circuits for outboard marine engines [F01P 3/202-](#))}
- WARNING
This group and its subgroups are not complete, pending a reorganisation; see [B63H 21/38](#) and [B63B 2770/00](#)
- B63H 20/285
- • {Cooling-water intakes (-[B63H 20/28](#) takes precedence-)}
- B63H 20/30
- • {Cooling-water intakes}for flushing{(-circuits for flushing outboard marine engines [F01P 3/205-](#))}
- B63H 20/32
- Housings{(-air intakes for outboard engines [F02M 35/167-](#))}
- B63H 20/34
- • comprising stabilising fins,{foils, anticavitation plates, splash plates, or rudders (-rudders carrying propellers [B63H 25/42](#) ; rudders carrying jets [B63H 25/46-](#))}
- B63H 20/36
- Transporting or testing stands{(-hand carts for transporting outboard units [B62B](#); measuring torque [G01L 3/00](#) , measuring thrust of propellers [G01L 5/133](#) , testing in general [G01M-](#)); Use of outboard propulsion units as pumps}; Protection of power legs {e.g. when not in use}
- B63H 21/00**
- Use of propulsion power plant or units on vessels (-use of outboard propulsion units [B63H 20/00](#) ; hull reinforcements for carrying propulsion power plant or units [B63B 3/70](#) ; { propulsion of submarines [B63G 8/08](#) ; }propulsion power plant or units per se, see the relevant classes)**
- NOTE
This group comprises arrangements of propulsion power plant or units on vessels and to some extent it includes adaptations of such plant or units to facilitate such arrangements
- WARNING
this group is pending a reorganisation; also documents covered by group [B63H 21/36](#) are within this group
- B63H 21/02
- the vessels being steam-driven (-[B63H 21/18](#) takes precedence-)
- B63H 21/12
- the vessel being motor-driven (-[B63H 21/175](#) , [B63H 21/18](#) take precedence; { cooling circuits with liquid-to-liquid heat-exchange relative to marine vessels [F01P 3/207](#) })
- WARNING
Group [B63H 21/12](#) is no longer used for classification of vessels being motor-driven by electric motor, powered by land vehicle supported by vessel, and powered by nuclear energy. These documents are in the process of being reorganised to groups [B63H 21/17](#) , [B63H 21/175](#) , and [B63H 21/18](#) respectively
- B63H 21/14
- • relating to internal-combustion engines{(-of outboard type [B63H 20/00-](#))}

- B63H 21/165
- by hydraulic fluid motor, i.e. wherein a liquid under pressure is utilised to rotate the propelling means{(transmission from power plant or unit to propeller using fluid gearing per se [B63H 23/26](#)-)}
- WARNING
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63H 21/12](#)
- B63H 21/17
- by electric motor (electrically-propelled vehicles [B60L](#) ; { Transmitting power from propulsion power plant to propulsive elements with electric gearing [B63H 23/24](#) })
- WARNING
Not complete. See [B63H 21/12](#) , [B63H 23/24](#)
- B63H 21/22
- the propulsion power units being controlled from exterior of engine room, e.g. from navigation bridge; Arrangements of order telegraphs (conjoint control of specific features of internal combustion engines and of propelling elements [F02D](#)) ; order telegraphs per se [G08B 9/00](#)-)
- WARNING
This group is not complete pending a reorganisation; also documents covered by group [B63H 21/21](#) are within this group
- U B63H 21/24
- the vessels being small craft, e.g. racing boats
- B63H 21/26
- of outboard type; Outboard propulsion power units movably installed for steering, reversing, tilting, or the like{(transom panels for outboard motors for inflatable boats [B63B 7/087](#) ; floating propeller units [B63B 35/665](#)-)}
- WARNING
Group [B63H 21/26](#) and subgroups are no longer used for classification. Documents are in the process of being reorganised to [B63H 5/125](#) , and subgroups, to [B63H 20/00](#) , and subgroups, and to [B63H 25/42](#)
- B63H 21/265
- {Steering or control devices for outboards (steering by rudders [B63H 25/06](#) ; control handles for boats [B63H 21/213](#)-)}
- B63H 21/30
- Mounting of propulsion plant or unit, e.g. for anti-vibration purposes (hull reinforcements therefor [B63B 3/70](#) ; { of outboard propulsion units [B63H 20/02](#) ; }vibration in systems [F16F](#); engine beds [F16M](#))
- B63H 21/32
- Arrangements of propulsion-unit exhaust uptakes; Funnels peculiar to vessels; {Small watercraft exhaust arrangements, e.g. under-water},(engine exhausts in general [F01N](#) ; flue devices for furnaces in general [F23J](#) ; { exhaust gas outlets forming part of outboard propulsion units or Z-drives [B63H 20/24](#) })
- WARNING
Group [B63H 21/32](#) is no longer used for classification of documents dealing with gas exhaust outlets forming part of outboard propulsion units or Z-drives. Respective documents are in the process of being reorganised to groups [B63H 20/24](#) and [B63H 20/26](#)
- B63H 21/36
- Covers or casing arranged to protect plant or unit from marine environment (Housings of outboard propulsion units [B63H 20/32](#)) hull construction [B63B 3/00](#)-)
- WARNING
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63H 21/00](#)

- B63H 21/38
- Apparatus or methods specially adapted for use on marine vessels, for handling power plant or unit liquids, e.g. lubricants, coolants, fuels or the like ({ in outboard drives [B63H 20/001](#) ; } lubricating or cooling machines or engines in general [F01](#) to [F04](#))
- WARNING
This group and its subgroups are
- systematically used for classification of documents published from 01.06.2010 onwards
 - not complete; for documents published before 01.06.2010, see [B63B 2770/00](#)
- B63H 21/383
- • {for handling cooling-water (in outboard drives [B63H 20/28](#) ; in machines or engines in general [F01P 3/00](#)-)}
- B63H 21/386
- • {for handling lubrication liquids (in machines or engines in general [F01M](#))}
- B63H 23/00**
- Transmitting power from propulsion power plant to propulsive elements (-changing pitch or propellers [B63H 3/00](#) ; adaptation of transmission to allow adjustment in location or direction of propellers [B63H 5/125](#) ; transmission between wind motors and propulsive elements [B63H 13/00](#) ; in outboard propulsion units [B63H 20/14](#) ; adaptation of transmission to allow adjustment of location of propeller [B63H 20/08](#) ; { adaptations of transmissions to allow steering or dynamic anchoring by propellers carried on rudders [B63H 25/42](#) ; } for vehicles in general [B60K](#) ; driving auxiliary machinery [B63J](#) ; transmission elements per se [F16](#))**
- U B63H 23/02
- with mechanical gearing
- B63H 23/10
- • for transmitting drive from more than one propulsion power unit (-for synchronisation of propulsive elements [B63H 23/28](#)-)
- U B63H 23/32
- Other parts
- B63H 23/34
- • Propeller shafts; Paddle-wheel shafts; Attachment of propellers on shafts (-shafts in general [F16C](#); attachment of a member on a shaft in general [F16D 1/06](#)-)
- B63H 23/36
- • Shaft tubes (-propeller-shaft tunnels [B63B 11/06](#) ; shaft-tube seals [F16J](#)-)
- B63H 25/00**
- Steering; Slowing-down otherwise than by use of propulsive elements (-using adjustably-mounted propeller ducts or rings for steering [B63H 5/14](#) ; using movably-installed outboard propulsion units [B63H 20/00](#)-); Dynamic anchoring, i.e. positioning vessels by means of main or auxiliary propulsive elements (-anchoring, other than dynamic [B63B 21/00](#) ; equipment to decrease pitch, roll or like unwanted vessel movements by auxiliary jets or propellers [B63B 39/08](#) ; { systems for waterborne vessel position control [G05](#), e.g. [G05D 1/00](#) })**
- WARNING
This group is pending a reorganisation; also documents covered by group [B63H 25/02](#) , and subgroups are within this group
- B63H 25/06
- Steering by rudders (-by rudders carrying propellers [B63H 25/42](#)-)
- B63H 25/38
- • Rudders (-stern posts [B63B 3/40](#) ; { rudders mounted on housing of outboard motors [B63H 20/34](#) ; rudders carrying propellers [B63H 25/42](#) ; rudders carrying jets [B63H 25/46](#) })
- B63H 25/42
- Steering or dynamic anchoring by propulsive elements (-by jets [B63H 25/46](#)-); Steering or dynamic anchoring by propellers used therefor only; Steering or dynamic anchoring by rudders carrying propellers
- WARNING
This group is not complete as to rudders carrying propellers, pending a reorganisation; see also [B63H 5/125](#) , and [B63H 21/26](#) and subgroups - this group is pending a reorganisation; also documents covered by groups

[B63H 5/125](#) , and subgroups, and by [B63H 20/00](#) , and subgroups are within this group]

B63H 25/46

- Steering or dynamic anchoring by jets {or by rudders carrying jets (-steering or dynamic anchoring by deflecting or directing main propulsion jets [B63H 11/00](#)-)}

WARNING

This group is no complete as to rudders carrying jets, pending a reclassification; see also [B63H 20/00](#) and subgroups

Project: N/A (B63J)

U B63J 4/00

Arrangements of installations for treating { ballast water,} waste water, sewage, { sludge, or refuse}, or for preventing environmental pollution not otherwise provided for; ({ centrifugal bilge-water separators [B04](#); discharge of refuse, e.g. for ash [B63B 17/06](#) ; arrangements on tanks for fuel or the like for minimizing pollution by accidents [B63B 17/0036](#), associated with cargo tanks [B63B 25/082](#); vessels for collecting pollution from open water [B63B 35/30](#);} soil-water discharges [B63B 29/16](#) ; { treating waste water, sewage, or sludge, in general, [C02F](#); cleaning or keeping clear the surface of open water, in general [E02B 15/00](#)})

WARNING

[B63J 4/00](#) is not complete pending a reclassification; see also groups [B63B 13/00](#), [B63B 17/00](#), [B63B 29/16](#), [B63J 99/00](#)

B63J 4/002

- {-for treating ballast water}

B63J 4/004

- {-for treating sludge, e.g. tank washing sludge}

B63J 4/006

- {-for treating waste water or sewage}

Project: N/A (B64C)

B64C

AEROPLANES; HELICOPTERS (air-cushion vehicles [B60V](#))

NOTE

As far as possible, classification is made according to constructional features; classification according to particular kinds of aircraft is normally regarded as being of secondary importance, except in cases where this is considered to be the characteristic feature.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [B64C 35/02](#) covered by [B64C 35/00](#)

B64C 1/00 -
B64C 19/00

Aircraft structures or fairings (-boundary-layer controls [B64C 21/00](#)-)

B64C 1/00

Fuselages; Constructional features common to fuselages, wings, stabilising surfaces and the like (-aerodynamical features common to fuselages, wings, stabilising surfaces, and the like [B64C 23/00](#) ; flight-deck installations [B64D](#)-)

U B64C 1/06

- Frames; Stringers; Longerons;{Fuselage sections}

U B64C 1/061

- · {Frames}

B64C 1/063

- · · {Folding or collapsing to reduce overall dimensions, e.g. foldable tail booms (-folding or collapsing wings [B64C 3/56](#)-)}

- B64C 1/14
 - Windows; Doors; Hatch covers or access panels; Surrounding frame structures; Canopies; Windscreens {accessories therefor, e.g. pressure sensors, water deflectors, hinges, seals, handles, latches, windscreen wipers}{-fairings movable in conjunction with undercarriage elements [B64C 25/16](#) ; bomb doors [B64D 1/06-](#)}
- U B64C 1/1407
 - • {Doors; surrounding frames}
- B64C 1/1446
 - • • {Inspection hatches {-for engine cowls [B64D 29/08-](#)}
- U B64C 1/1476
 - • {Canopies; Windscreens or similar transparent elements}
- B64C 1/1484
 - • • {Windows {-[B64C 1/1492](#) takes precedence-}}
- B64C 1/22
 - Other structures integral with fuselages to facilitate loading {e.g. cargo bays, cranes{-cargo door type ramps [B64C 1/1415-](#)}
- B64C 1/24
 - Steps mounted on, and retractable within, fuselages {-readily removable [B64D 9/00-](#)}
- B64C 1/32
 - Severable or jettisonable parts of fuselage facilitating emergency escape {-ejector seats [B64D 25/10-](#)}
- B64C 1/34
 - comprising inflatable structural components {-connection of valves to inflatable elastic bodies [B60C 29/00-](#)}
- B64C 1/36
 - adapted to receive aerials or radomes {-aerials or radomes per se [H01Q-](#)}
- B64C 1/38
 - Constructions adapted to reduce effects of aerodynamic or other external heating{{-cooling structural parts of aircrafts with air flow [B64D 13/006-](#)}
- B64C 1/40
 - Sound or heat insulation,{e.g. using insulation blankets{-insulating elements for vehicles, in general [B60R 13/08-](#)}
- B64C 1/403
 - • {Arrangement of fasteners specially adapted therefor, e.g. of clips {-in vehicles in general [B60R 13/0206-](#)}
- B64C 1/406
 - • • {in combination with supports for lines, e.g. for pipes or cables {-arrangement of elements of electric or fluid circuits specially adapted for vehicles, in general [B60R 16/00](#) ; supports for pipes, cables or protective tubing [F16L 3/00](#) ; installations of electric cables or lines in vehicles [H02G 3/00-](#)}
- B64C 3/00**
 - Wings {-stabilising surfaces [B64C 5/00](#) ; ornithopter wings [B64C 33/02-](#)}**
- B64C 3/18
 - Spars; Ribs; Stringers {-attaching wing unit to fuselage [B64C 1/26-](#)}
- B64C 3/20
 - Integral or sandwich constructions {layered products or sandwich constructions in general [B32B](#)}
- B64C 3/30
 - comprising inflatable structural components {-connection of valves to inflatable elastic bodies [B60C 29/00-](#)}
- B64C 3/34
 - Integrally-constructed tanks, e.g. for fuel {-other aircraft fuel tanks or fuel systems [B64D-](#)}
- B64C 3/36
 - Structures adapted to reduce effects of aerodynamic or other external heating{{-cooling structural parts of aircrafts with air flow [B64D 13/006-](#)}
- U B64C 3/38
 - Adjustment of complete wings or parts thereof
- U B64C 3/44
 - • Varying camber
- B64C 3/46
 - • • by inflatable elements {-connection of valves to inflatable elastic bodies [B60C 29/00-](#)}
- B64C 3/50
 - • • by leading or trailing edge flaps {-ailerons [B64C 9/00-](#)}
- B64C 3/54
 - • Varying in area {-flaps extendable to increase camber [B64C 3/44-](#)}
- B64C 3/58
 - provided with fences or spoilers {-adjustable for control purposes [B64C 9/00-](#)}
- B64C 5/00**
 - Stabilising surfaces {-attaching stabilising surfaces to fuselage [B64C 1/26-](#)}**
- B64C 5/02
 - Tailplanes {-fins [B64C 5/06-](#)}
- B64C 5/06
 - Fins {-specially for wings [B64C 5/08-](#)}

- U B64C 5/10 · adjustable
B64C 5/18 · · in area (-attaching stabilising surfaces to fuselage [B64C 1/26-](#))
- U B64C 7/00** **Structures or fairings not otherwise provided for**
B64C 7/02 · Nacelles
- B64C 9/00** **Adjustable control surfaces or members, e.g. rudders (-trimming stabilising surfaces [B64C 5/10-](#))**
- B64C 9/08 · bodily displaceable (-varying camber of wings [B64C 3/44-](#))
B64C 9/10 · one surface adjusted by movement of another, e.g. servo tabs (-[B64C 9/04](#) takes precedence; adjusting surfaces of different type or function [B64C 9/12-](#))
B64C 9/14 · forming slots (-boundary-layer control [B64C 21/00-](#))
B64C 9/146 · · {at an other wing location than the rear or the front (-wings provided with fixed fences or spoilers [B64C 3/58-](#))}
B64C 9/32 · Air braking surfaces (-braking by parachutes [B64D 17/80-](#))
- B64C 11/00** **Propellers, e.g. of ducted type; Features common to propellers and rotors for rotorcraft (-rotors specially adapted for rotorcraft [B64C 27/32-](#))**
- NOTE
Documents classified in [B64C 11/001](#) - [B64C 11/008](#) which also contain relevant information, covered by other subgroups of [B64C 11/00](#) , are also classified in the appropriate subgroup of [B64C 11/00](#)
- B64C 11/008 · {characterised by vibration absorbing or balancing means (-for rotorcraft [B64C 27/001-](#))}
B64C 11/46 · Arrangements of or constructional features peculiar to multiple propellers{(-[B64C 11/306](#) takes precedence-)}
- U B64C 13/00** **Control systems or transmitting systems for actuating flying-control surfaces, lift-increasing flaps, air brakes, or spoilers**
- U B64C 13/02 · Initiating means
U B64C 13/04 · · actuated personally
B64C 13/14 · · · lockable (-locking in position to suit individual persons [B64C 13/06-](#))
- U B64C 15/00** **Attitude, flight direction, or altitude control by jet reaction**
B64C 15/14 · the jets being other than main propulsion jets (-jet flaps [B64C 9/38-](#))
- U B64C 17/00** **Aircraft stabilisation not otherwise provided for**
- U B64C 17/02 · by gravity or inertia-actuated apparatus
B64C 17/06 · · by gyroscopic apparatus (-automatic pilot control [B64C 13/18-](#))
B64C 17/08 · by ballast supply or discharge (-for lighter-than-air aircraft [B64B-](#))
- U B64C 19/00** **Aircraft control not otherwise provided for**
B64C 19/02 · Conjoint controls
- B64C 21/00** **Influencing air-flow over aircraft surfaces by affecting boundary-layer flow (-boundary-layer control in general [F15D-](#))**
- U B64C 21/02 · by use of slot, ducts, porous areas, or the like
B64C 21/04 · · for blowing (-[B64C 21/08](#) takes precedence-)
B64C 21/06 · · for sucking (-[B64C 21/08](#) takes precedence-)
- U B64C 23/00** **Influencing air-flow over aircraft surfaces, not otherwise provided for**

- B64C 23/005 · {-by other means not covered by groups [B64C 23/02](#) to [B64C 23/08](#) , e.g. by electric charges, magnetic panels, piezoelectric elements, static charges or ultrasounds-}
- B64C 23/08 · using Magnus effect
- B64C 25/00 Alighting gear (-air-cushion alighting gear [B60V 3/08](#)-)**
- B64C 25/001 · {-Devices not provided for in the groups [B64C 25/02](#) to [B64C 25/68](#)-}
- B64C 25/32 · characterised by the ground or like engaging elements (-arrestor hooks [B64C 25/68](#)-)
- U B64C 25/34 · · wheeled type, e.g. multi-wheeled bogies
- B64C 25/36 · · · Arrangements or adaptations of wheels, tyres, or axles in general (-construction of wheels or axles [B60B](#) ; construction of tyres in general [B60C](#)-)
- B64C 25/42 · · Arrangements or adaptations of brakes (-the ground braking force being regulated, at least in part, by a speed condition, e.g. acceleration or deceleration of the ground engaging alighting gear, [B60T 8/32](#)-)
- B64C 25/423 · · · {Braking devices acting by reaction of gaseous medium (-[B64C 25/426](#) takes precedence; using rockets [B64D 27/023](#)-)}
- U B64C 25/44 · · · Actuating mechanisms
- B64C 25/46 · · · · Brake regulators for preventing skidding or aircraft somersaulting((-anti-skidding regulators; electric or electronic controllers therefor [B60T 8/1703](#)-)}
- B64C 25/50 · · Steerable undercarriages; Shimmy damping (-steering devices applicable to land vehicles [B62D](#)-)
- U B64C 25/54 · · Floats
- B64C 25/56 · · · inflatable (-connection of valves to inflatable elastic bodies [B60C 29/00](#)-)
- B64C 25/58 · · Arrangements or adaptations of shock-absorbers or springs (-shimmy dampers [B64C 25/50](#) ; vehicle suspension arrangements in general [B60G](#) ; shock absorber per se [F16F](#)-)
- B64C 25/68 · Arrestor hooks (-arresting gear, e.g. on aircraft carriers [B64F](#)-)
- B64C 27/00 Rotorcraft; Rotors peculiar thereto (-alighting gear [B64C 25/00](#)-)**
- U B64C 27/02 · Gyroplanes
- B64C 27/021 · · {Rotor or rotor head construction (-for helicopters [B64C 27/32](#)-)}
- B64C 27/32 · Rotors (-features common to rotors and propellers [B64C 11/00](#)-)
- B64C 27/37 · · having articulated joints (-[B64C 27/33](#) , [B64C 27/35](#) take precedence-)
- U B64C 27/46 · · Blades
- B64C 27/467 · · · Aerodynamic features((-[B64C 27/463](#) takes precedence-)}
- B64C 27/473 · · · Constructional features((-[B64C 27/463](#) takes precedence-)}
- B64C 27/52 · Tilting of rotor bodily relative to fuselage (-of see-saw type construction [B64C 27/43](#)-)
- B64C 29/00 Aircraft capable of landing or taking-off vertically (-attitude, flight direction, or altitude control by jet reaction [B64C 15/00](#) ; rotorcraft [B64C 27/00](#) ; air-cushion vehicles [B60V](#)-)**
- U **B64C 31/00 Aircraft intended to be sustained without power plant; Powered hang-glider-type aircraft; Microlight-type aircraft**
- B64C 31/02 · Gliders, e.g. sailplanes (-hang-gliders [B64C 31/028](#)-)
- U B64C 31/028 · Hang-glider-type aircraft; Microlight-type aircraft
- B64C 31/036 · · having parachute-type wing (-parachutes [B64D 17/00](#)-)

- B64C 31/04 · Man-powered aircraft (-ornithopters [B64C 33/00-](#))
- B64C 31/06 · Kites (-hang-gliders [B64C 31/028](#) ; toy aspects [A63H 27/08](#) ; towed targets [F41J](#) { for propelling boats [B63H 9/0685](#) ; for propelling wind driven boards, control means and harnesses therefor [B63B 35/7976](#) })
- B64C 35/00 Flying-boats; Seaplanes (-alighting gear [B64C 25/00-](#))**
- B64C 37/00 Convertible aircraft (-vehicles capable of travelling in or on different media [B60F-](#))**
- B64C 37/02 · Flying units formed by separate aircraft (-towing, air-refuelling, or aircraft-carrying aircraft [B64D-](#))
- U B64C 39/00 Aircraft not otherwise provided for**
- B64C 39/003 · {with wings, paddle wheels, bladed wheels, moving or rotating in relation to the fuselage (-rotorcraft [B64C 27/00](#) , ornithopters [B64C 33/00-](#))}
- B64C 39/06 · having disc- or ring-shaped wings((-[B64C 39/001](#) takes precedence-))
- B64C 39/08 · having multiple wings((-[B64C 39/06](#) takes precedence-))
- B64C 39/10 · All-wing aircraft((-[B64C 39/001](#) takes precedence-))
- U B64C 2201/00 Unmanned aerial vehicles; Equipment therefor**
- U B64C 2201/08 · characterised by the launching method
- B64C 2201/088 · · Vertical take-off using special means (-for helicopters [B64C 2201/024](#) ; for balloons [B64C 2201/022-](#))
- U B64C 2700/00 Codes corresponding to the former IdT classification**
- U B64C 2700/62 · Codes corresponding to the former IdT classification of class 62
- U B64C 2700/6201 · · Airplanes, helicopters, autogyros
- U B64C 2700/6202 · · · Characteristics not limited to an aircraft type
- U B64C 2700/6207 · · · · Stabilisation
- U B64C 2700/6208 · · · · · Longitudinal and transversal stability
- U B64C 2700/6209 · · · · · automatically controlled
- B64C 2700/6216 · · · · · · by gyroscopical effect (*also in combination with pendulum*)(~~also in combination with pendulum~~)
- U B64C 2700/6221 · · · · · · manually controlled
- B64C 2700/6225 · · · · · · by gyroscopical effect (*also in combination with pendulum*)(~~also in combination with pendulum~~)

Project: N/A (B64D)

- B64D 1/00 Dropping, ejecting, releasing, or receiving articles, liquids, or the like, in flight (-with respect to weapon sights devices [F41G](#) takes precedence, parachutes per se [B64D 17/00](#) ; ejectable seats [B64D 25/10](#) ; ejectable capsules [B64D 25/12](#) ; refuelling during flight [B64D 39/00](#) ; launching apparatus for projecting projectiles or missiles [F41F 1/00](#) , [F41F 7/00](#) ; rocket or torpedo launchers [F41F 3/00-](#))**
- B64D 1/02 · Dropping, ejecting, or releasing articles (-jettisonable fuel reservoirs [B64D 37/12-](#))
- B64D 1/04 · · the articles being explosive, e.g. bombs (-arming or setting bomb fuzes [F42C-](#))
- B64D 1/16 · Dropping or releasing powdered, liquid, or gaseous matter, e.g. for fire-fighting (-jettisoning fuel [B64D 37/26-](#))
- B64D 1/18 · · by spraying, e.g. insecticides (-spraying apparatus per se [B05B-](#))

- B64D 3/00** Aircraft adaptations to facilitate towing or being towed (-[B64D 39/00](#) takes precedence; ground installations for launching or towing aircraft [B64F](#) ; towing ropes per se [D07B](#)-)
- B64D 3/02 · for towing targets (-towed targets per se [F41J](#)-)
- B64D 5/00** Aircraft transported by aircraft, e.g. for release or reberthing during flight (-flying units formed by separate aircraft [B64C 37/02](#)-)
- B64D 7/00** Arrangements of military equipment, e.g. armaments, armament accessories, or military shielding, in aircraft; Adaptations of armament mountings for aircraft (-dropping bombs or the like [B64D 1/00](#) ; armaments or mountings therefor per se [F41](#)-)
- B64D 7/08 · Arrangements of rocket launchers {or releasing means}(-rocket launchers per se, e.g. rocket pods, [F41F 3/06](#)-)
- B64D 9/00** Equipment for handling freight; Equipment for facilitating passenger embarkation or the like (-emergency equipment [B64D 17/00](#), [B64D 19/00](#), [B64D 25/00](#); structures integral with fuselage to facilitate loading, fuselage floors specially adapted for freight, steps mounted on and retractable within aircraft [B64C](#) ; ground installations [B64F](#)-)
- B64D 9/003 · {Devices for retaining pallets or freight containers (-securing freight containers on vehicles [B60P 7/00](#)-)}
- B64D 10/00** {Flying suits (-helmets in general [A42B 3/00](#) ; breathing helmets [A62B 18/00](#)-)}
- U B64D 11/00** Passenger or crew accomodation; Flight-deck installations not otherwise provided for
- B64D 11/0023 · {Movable or removable cabin dividers, e.g. for class separation (-bulkheads [B64C 1/10](#)-)}
- B64D 11/02 · Toilet fittings (-of general application [A47K](#)-)
- B64D 13/00** Arrangements or adaptations of air-treatment apparatus for aircraft crew or passenger, or freight space; {or structural parts of the aircraft} (-treatment rooms with artificial climate for medical purposes [A61G 10/02](#) ; respiratory apparatus in general [A62B](#) ; for for vehicles in general [B60H](#)-)
- B64D 13/06 · the air being conditioned (-pressurising [B64D 13/02](#)-)
- B64D 15/00** De-icing or preventing icing on exterior surfaces of aircraft (-motor vehicles specially adapted for carrying de-icing equipment [B60P](#) ; { Ground-installations for de-icing aircraft [B64F 5/0036](#) })
- U B64D 15/02** · by ducted hot gas or liquid
- B64D 15/06 · · Liquid application (-in general [B05](#)-)
- B64D 15/12 · by electric heating (-electric heating elements in general [H05B](#)-)
- B64D 17/00** Parachutes (-non canopied parachutes [B64D 19/00](#)-)
- U B64D 17/22** · Load suspension
- B64D 17/30 · · Harnesses (-harnesses per se [A62B](#)-)
- B64D 17/36 · · incorporating friction devices or frangible connections to reduce shock loading of canopy{(-[B64D 17/343](#) , [B64D 17/346](#) take precedence)}

B64D 25/00	Emergency apparatus or devices, not otherwise provided for (-parachutes B64D 17/00 , B64D 19/00 ; jettisoning of fuel tanks or fuel per se B64D 37/00 ; { specially adapted for protection against criminal attack, e.g. anti-hijacking systems B64D 45/0015 } ; safety belts or body harnesses in general A62B 35/00 ; safety belts or body harnesses for land vehicles B60R 22/00 ; jettisonable parts of fuselage facilitating emergency escape B64C-)
B64D 25/08	· Ejecting or escaping means (-escape apertures B64C-)
B64D 25/18	· · Flotation gear (-aircraft alighting gear B64C-)
B64D 27/00	Arrangement or mounting of power plant in aircraft; Aircraft characterised thereby (-attitude, flight direction, or altitude control of aircraft by jet reaction B64C-)
B64D 27/02	· Aircraft characterised by the type or position of power plant (-fuselages or wings adapted for mounting power plant B64C-)
B64D 27/10	· · of gas-turbine type (- B64D 27/16 takes precedence-)
B64D 27/24	· · using steam, electricity, or spring force (- B64D 27/16 takes precedence-)
B64D 29/00	Power-plant nacelles, fairings, or cowlings (-nacelles not otherwise provided for B64C-)
B64D 29/02	· associated with wings (-wings adapted for mounting power plant B64C-)
B64D 31/00	Power plant control; Arrangement thereof (-flying controls B64C-){ F02 takes precedence-}
U B64D 31/02	· Initiating means
U B64D 31/06	· · actuated automatically
B64D 31/08	· · · for keeping cruising speed constant (-conjoint control of power plant and propeller B64C-)
U B64D 33/00	Arrangements in aircraft of power plant parts or auxiliaries not otherwise provided for
B64D 33/02	· of combustion air intakes (-air intakes for gas-turbine plants or jet-propulsion plants per se F02C 7/04 ; air intakes for combustion engines in general F02M 35/00-)
B64D 33/04	· of exhaust outlets or jet pipes (exhaust outlets for combustion engines in general F01N ; jet pipes or nozzles for jet-propulsion plants per se F02K ; plants characterised by the form or arrangement of the jet pipe or nozzle F02K) {attitude, flight direction, or altitude control by jet reaction B64C }
B64D 33/06	· · Silencing exhaust or propulsion jets (-ground installations B64F-)
B64D 33/08	· of power plant cooling systems (-cooling of internal-combustion engines per se F01P ; cooling of gas-turbine plants or jet-propulsion plants per se F02C , K F02K)
B64D 35/00	Transmitting power from power plant to propellers or rotors; Arrangements of transmissions (-propellers or rotors per se, helicopter transmissions B64C-)
B64D 37/00	Arrangements in connection with fuel supply for power plant (-refuelling during flight B64D 39/00-)
B64D 37/005	· {-Accessories not provided for in the groups B64D 37/02 to B64D 37/28 -}
B64D 37/02	· Tanks (-tanks constructed integrally with aircraft wings B64C ; shape or construction of tanks per se B65D-)
B64D 37/14	· · Filling or emptying (-transferring fuels to adjust aircraft trim B64C-)
B64D 37/16	· · · Filling systems (-ground installations for fuelling aircraft B64F-)

- B64D 37/32 · Safety measures not otherwise provided for, e.g. preventing explosive conditions (~~-extinguishing or preventing fires in aircraft [A62C-](#)~~)
- B64D 37/34 · Conditioning fuel, e.g. heating (~~-during filling [B64D 37/18-](#)~~)
- B64D 39/00 Refuelling during flight (~~-filling or emptying fuel tanks [B64D 37/14-](#)~~)**
- B64D 39/04 · Adaptations of hose construction (~~-pipes in general [F16L-](#)~~)
- B64D 43/00 Arrangements or adaptations of instruments (~~-arrangements of cameras [B64D 47/08;](#) aeronautical measuring instruments per se [G01C-](#)~~)**
- B64D 45/00 Aircraft indicators or protectors not otherwise provided for (~~-camouflage [F41H 3/00-](#)~~)**
- B64D 45/02 · Lightning protectors; Static dischargers (~~-in general [H01T-](#)~~)

Project: N/A (B64F)

- U B64F 1/00 Ground or aircraft-carrier-deck-installations (specially adapted for captive aircraft [B64F 3/00;](#) aircraft-carriers [B63;](#) fog-dispersal installations [E01H;](#) wind tunnels [G01M;](#) grounded flight trainers [G09B](#))**
- B64F 1/007 · ~~{~~Helicopter portable landing pads (landing platforms for helicopters [E01F 3/00,](#) paving take-off areas for vertically starting aircraft [E01C 9/008](#))~~}~~
- U B64F 1/02 · Arresting gear; Liquid barriers
- B64F 1/025 · ~~-~~using decelerating or arresting beds
- U B64F 1/18 · Visual or acoustic landing aids (optical or acoustic signalling in general [G08](#))
{([B64F 1/002](#) takes precedence)}
- U B64F 1/20 · Arrangement of optical beacons
- B64F 1/205 · · ~~-~~arranged underground, e.g. underground runway lighting units
- U B64F 1/22 · installed for handling aircraft {([B64F 1/002](#) takes precedence)}
- B64F 1/225 · ~~-~~Towing trucks
- B64F 1/227 · · ~~-~~adapted for directly connecting to aircraft, e.g. trucks without tow-bars
- B64F 1/228 · · ~~-~~remotely controlled, or autonomously operated
- U B64F 1/30 · for embarking or disembarking passengers
- U B64F 1/305 · Bridges extending between terminal building and aircraft, e.g. telescopic, vertically adjustable
- B64F 1/3055 · · ~~-~~with hinged head interface between aircraft and passenger bridge
- U B64F 1/36 · Other airport installations (de-icing installations [B64F 5/0054;](#) construction of, or surfacing for, airfields [E01C](#))
- B64F 1/366 · ~~-~~Check-in counters
- B64F 1/368 · ~~-~~Arrangements and installations for routing, distributing, or loading baggage
- U B64F 5/00 Designing, manufacturing, assembling, cleaning, maintaining, or repairing aircraft, not otherwise provided for**
- B64F 5/0009 · ~~-~~Assembling or manufacturing aircraft, e.g. jigs therefor
- B64F 5/0018 · ~~-~~Cleaning aircraft
- B64F 5/0027 · ~~-~~Polishing window units
- B64F 5/0054 · ~~-~~De-icing aircraft (aircraft-fitted installations for de-icing or preventing icing on exterior surfaces of aircraft [B64D 15/00](#))
- B64F 5/0063 · ~~-~~by liquid application; Spraying installations therefor, e.g. on vehicles (spraying vehicles [B60P 3/30;](#) materials for application to surfaces to minimize adherence of ice, mist or water thereto [C09K 3/18](#))
- B64F 5/0072 · ~~-~~by radiation, e.g. infrared

- B64F 5/0081 · {-Repairing aircraft}
- B64F 5/009 · · {-Methods and equipment for repairing leakages in fuel tanks}

Project: N/A (B64G)**U B64G 1/00****Cosmonautic vehicles**

- U B64G 1/22 · Parts of, or equipment specially adapted for fitting in or to, cosmonautic vehicles
- U B64G 1/40 · · Arrangements or adaptations of propulsion systems ([B64G 1/26](#) takes precedence; propulsion plants per se, see the relevant subclasses e.g. [F02K](#), [F03H](#))
- B64G 1/407 · · · {Solar sailing (*includes also attitude control using solar sailing*)}~~{includes also attitude control using solar sailing}~~

Project: N/A (B65B)**U B65B 9/00****Enclosing successive articles, or quantities of material, e.g. liquids or semi-liquids, in flat, folded, or tubular webs of flexible sheet material; Subdividing filled flexible tubes to form packages**

- B65B 9/06 · Enclosing successive articles, or quantities of material, in a longitudinally-folded web, or in a web folded into a tube about the articles or quantities of material placed upon it

NOTE

If an invention involves both continuous and intermittent web motion, it is classified in both groups [B65B 9/067](#) and [B65B 9/073](#).

- B65B 9/067 · · the web advancing continuously ([B65B 9/08](#) takes precedence)
- B65B 9/073 · · the web having intermittent motion ([B65B 9/08](#) takes precedence)
- B65B 9/08 · · in a web folded and sealed transversely to form pockets which are subsequently filled and then closed by sealing

NOTE

If an invention involves both continuous and intermittent web motion, it is classified in both groups [B65B 9/087](#) and [B65B 9/093](#).

- B65B 9/087 · · · the web advancing continuously
- B65B 9/093 · · · the web having intermittent motion
- U B65B 9/10 · Enclosing successive articles, or quantities of material, in preformed tubular webs, or in webs formed into tubes around filling nozzles, e.g. extruded tubular webs (sausage making [A22C 11/00](#))
- U B65B 9/20 · · the webs being formed into tubes in situ around the filling nozzles

NOTE

If an invention involves both continuous and intermittent web motion, it is classified in both groups [B65B 9/207](#) and [B65B 9/213](#).

- B65B 9/2007 · · · {-Means for stripping or squeezing filled tubes prior to sealing to remove air or products from sealing area}
- B65B 9/2014 · · · {-Tube advancing means}
- B65B 9/2021 · · · · {-combined with longitudinal welding devices}
- B65B 9/2028 · · · · {-Rollers or belts}
- B65B 9/2035 · · · {-Tube guiding means}

- B65B 9/2042
 - • • {-Means for altering the cross-section of the tube filling opening prior to transversal sealing, e.g. tube spreading devices (subdividing filled tubes to form two or more packages by sealing involving displacement of contents [B65B 9/12](#))}
- B65B 9/2049
 - • • {-Package shaping devices acting on filled tubes prior to sealing the filling opening (shaping or reshaping completed packages [B65B 61/24](#))}
- B65B 9/2056
 - • • {-Machines for packages of special type or form}
- B65B 9/2063
 - • • • {-The webs being spirally wound around the filling nozzle}
- B65B 9/207
 - • • the web advancing continuously ([B65B 9/22](#) takes precedence)
- B65B 9/213
 - • • the web having intermittent motion ([B65B 9/22](#) takes precedence)
- U B65B 11/00**

Wrapping, e.g. partially or wholly enclosing, articles, or quantities of material, in strips, sheets or blanks, of flexible material (bundling articles by applying narrow strips or bands of flexible material [B65B 13/00](#); devices for folding or bending wrappers around contents [B65B 49/00](#); devices for gathering or twisting wrappers [B65B 51/00](#))
- B65B 11/004
 - {-in blanks, e.g. sheets precut and creased for folding (devices for folding or bending wrappers around contents [B65B 49/00](#))}
- B65B 11/006
 - {-Helical strip wrapping combined with roping}
- B65B 11/008
 - {-by webs revolving around articles moved along the axis of revolution}
- U B65B 11/04
 - the articles being rotated {(wrapping devices for round bales [A01F 15/071](#))}
- B65B 11/045
 - • {-by rotating platforms supporting the articles}
- U B65B 13/00**

Bundling articles (bundling particular articles presenting special problems using string, wire or narrow tape or band [B65B 27/00](#); { straining wire in general [B21F 9/00](#); connecting wire to wire in general [B21F 15/00](#)})
- U B65B 13/18
 - Details of, or auxiliary devices used in, bundling machines {or bundling tools}
- B65B 13/185
 - • {-Details of tools ([B65B 13/24](#) takes precedence)}
- U B65B 23/00**

Packaging fragile or shock-sensitive articles other than bottles; Unpacking eggs (embedding articles in shock-absorbing media [B65B 55/20](#))
- U B65B 23/02
 - Packaging or unpacking eggs
- U B65B 23/06
 - • Arranging, feeding, or orientating the eggs to be packed; Removing eggs from trays or cartons
- B65B 23/08
 - • • using grippers (testing, sorting, or cleaning eggs [A01K 43/00](#); egg grippers for cooking purposes [A47J 29/06](#)-)
- U B65B 25/00**

Packaging other articles presenting special problems (bundling [B65B 27/00](#))
- U B65B 25/02
 - Packaging agricultural or horticultural products
- U B65B 25/04
 - • Packaging fruit or vegetables (bag or sack-filling devices associated with digging harvesters [A01D 33/10](#))
- B65B 25/048
 - • • {-in nets}
- U B65B 31/00**

Packaging articles or materials under special atmospheric or gaseous conditions; Adding propellants to aerosol containers (auxiliary treatments during loading or unloading in a fluid medium other than air [B65G 69/20](#))
- B65B 31/003
 - {-Adding propellants in fluid form to aerosol containers (in solid form [B65B 31/10](#))}
- B65B 31/006
 - {-Adding fluids for preventing deformation of filled and closed containers or wrappers}

- U B65B 31/02
- Filling, closing, or filling and closing, containers { or wrappers} in chambers maintained under vacuum or super-atmospheric pressure or containing a special atmosphere, e.g. of inert gas
- B65B 31/021
- · {-the containers or wrappers being interconnected}
- B65B 31/022
- · {-the chambers moving in an endless path}
- B65B 31/024
- · {-specially adapted for wrappers or bags ([B65B 31/021](#), [B65B 31/022](#) take precedence)}
- B65B 31/025
- · {-specially adapted for rigid or semi-rigid containers ([B65B 31/021](#), [B65B 31/022](#) take precedence)}
- U B65B 31/04
- Evacuating, pressurising, or gasifying filled containers or wrappers, {or containers or wrappers to be filled,} by means of nozzles through which air or other gas, e.g. an inert gas, is withdrawn or supplied (nozzles for introducing articles or materials into containers [B65B 39/00](#))
- B65B 31/041
- · {-the nozzles acting from above on containers or wrappers open at their top ([B65B 31/044](#) take precedence)}
- B65B 31/042
- · · {-the nozzles being arranged for insertion into, and withdrawal from, the container or wrapper}
- B65B 31/043
- · {-the nozzles acting horizontally between an upper and a lower part of the container or wrapper, e.g. between container and lid}
- U B65B 31/044
- · {the nozzles being combined with a filling device ([B65B 31/043](#) takes precedence)}
- B65B 31/045
- · · {-of Vertical Form-Fill-Seal [VFFS]} machines}
- B65B 31/046
- · {-the nozzles co-operating, or being combined, with a device for opening or closing the container or wrapper ([B65B 31/06](#) takes precedence)}
- B65B 31/047
- · · {-the nozzles co-operating with a check valve in the opening of the container or wrapper}
- B65B 31/048
- · · {-specially adapted for wrappers or bags}
- U B65B 61/00
- Miscellaneous auxiliary devices operating on sheets, blanks, webs, binding material, containers, or packages, and not otherwise provided for (operating on articles or materials to be packaged and not otherwise provided for [B65B 63/00](#))**
- U B65B 61/20
- for adding cards, coupons, or other inserts to package contents {e.g. for adding or applying accessories or inserts to the inside or the outside of a container} (adding unpacking elements [B65B 61/18](#); labelling [B65C](#))
- B65B 61/202
- · {-for attaching articles to the outside of a container ([B65B 61/205](#) takes precedence)}
- U B65B 63/00
- Miscellaneous auxiliary devices operating on articles or materials to be packaged and not otherwise provided for (operating on sheets, blanks, webs, binding material, or packages, and not otherwise provided for [B65B 61/00](#))**
- B65B 63/04
- for folding or winding articles, e.g. gloves, stockings ({ [B65B 63/024](#) takes precedence;} folding or winding webs or filamentary material in general [B65H4w5/00](#), [B65H 54/00](#); folding textile articles in connection with laundering preparatory to packaging [D06F 89/00](#)-)
- U B65B 65/00
- Details peculiar to packaging machines and not otherwise provided for; Arrangements of such details**
- B65B 65/003
- {-Packaging lines, e.g. general layout}
- B65B 65/006
- · {-Multiple parallel packaging lines}
- U B65B 67/00
- Apparatus or devices facilitating manual packaging operations; Sack holders**

- U B65B 67/12 · Sack holders, i.e. stands or frames with means for supporting sacks in the open condition to facilitate filling with articles or materials {(nozzles, funnels or guides adapted to support sacks [B65B 39/06](#))}
- U B65B 67/1222 · · {characterised by means for suspending sacks, e.g. pedal- operated}
- B65B 67/1227 · · · {only by a part of the periphery, e.g. by single points or handles, or by one side or two opposite sides only ([B65B 67/1244](#) takes precedence)}
- U **B65B 69/00** **Unpacking of articles or materials, not otherwise provided for**
- B65B 69/0075 · {-Emptying systems for flexible intermediate bulk containers (FIBC)}

Project: N/A (B65C)

- U **B65C 9/00** **Details of labelling machines or apparatus {(attaching articles to carriers [B65B 15/00](#); cards of samples [G09F 5/04](#))}**
- U B65C 9/08 · Label feeding
- U B65C 9/18 · · Label feeding from strips, e.g. from rolls
- U B65C 9/1803 · · · {the labels being cut from a strip}
- U B65C 9/1815 · · · · {and transferred by suction means}
- B65C 9/1826 · · · · · {-the suction means being a movable vacuum arm or pad}
- B65C 9/1896 · · · {-the labels being torn or burst from a strip}
- U B65C 9/20 · Gluing the labels or articles
- U B65C 9/22 · · by wetting, e.g. by applying liquid glue or a liquid to a dry glue coating
- U B65C 9/2247 · · · {using liquid rollers or bands}
- U B65C 9/2256 · · · · {Applying the liquid on the label}
- B65C 9/226 · · · · · {-discretely, i.e. several points or strips or interrupted films}

Project: N/A (B65D)**B65D**

CONTAINERS FOR STORAGE OR TRANSPORT OF ARTICLES OR MATERIALS, e.g. BAGS, BARRELS, BOTTLES, BOXES, CANS, CARTONS, CRATES, DRUMS, JARS, TANKS, HOPPERS, FORWARDING CONTAINERS; ACCESSORIES, CLOSURES, OR FITTINGS THEREFOR; PACKAGING ELEMENTS; PACKAGES (-containers specially adapted for storing agricultural or horticultural products [A01F 25/14](#) ; containers specially adapted for use in dairies [A01J](#); travelling bags or baskets, suitcases [A45C](#); travelling or camp equipment [A45F](#); { linkable display containers [A47B87/00C](#) } ; household or table equipment [A47G](#); letter-boxes for home use [A47G 29/12](#) ; kitchen equipment [A47J](#); associated with vehicles, see the appropriate subclass of [B60](#) to [B64](#); machines, apparatus, or devices for, or methods of, packaging articles or materials [B65B](#); sack holders [B65B 67/00](#) ; refuse receptacles [B65F 1/00](#) ; handling sheets, webs or filamentary material [B65H](#); load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith for transmitting lifting forces [B66C](#); liquid handling [B67](#); storing gases [F17](#); { packaging for photosensitive or like materials [G03](#), e.g. [G03C 3/00](#) }; making containers, see subclasses dealing with the working of the material concerned)

NOTES

In this subclass, the indexing codes of [B65D 2519/00004](#) - [B65D 2519/00995](#) should be added, if applicable

This subclass covers:

- containers, packaging elements or packages with auxilliary means or provisions for displaying articles or materials;

- methods of packaging which are wholly characterised by the form of the package produced or the form of the container or packaging element used, as distinct from the operations performed or the apparatus employed, which are covered by subclass [B65B](#)

This subclass, which is intended to be as comprehensive as possible, only excludes containers or packages of a nature clearly confined to a single other subclass, which are classified in that subclass

In this subclass, groups [B65D 5/00](#) , [B65D 27/00](#) , [B65D30/00](#) or [B65D 65/00](#) include constructional features of foldable or erectable container or wrapper blanks as well as the containers or wrappers formed by folding or erecting such blanks

Containers, packaging elements or packages classified in group [B65D 85/00](#) , are also classified according to the constructional or functional features, if such features are of interest [6]

In this subclass, the following terms or expressions are used with the meanings indicated:

- "rigid or semi-rigid containers" includes:
 - a. containers not deformed by, or not taking-up the shape of, their contents;
 - b. containers adapted to be temporarily deformed to expel their contents;
 - c. pallets;
 - d. trays;
- "flexible containers" includes:
 - a. containers deformed by, or taking-up the shape of, their contents;
 - b. containers adapted to be permanently deformed to expel their contents;
- "packaging elements" includes:
 - a. elements, other than containers, for covering, protecting, stiffening, or holding together articles or materials to be stored or transported;
 - b. packaging materials of special type or form not provided for in other subclasses;
- "packages" includes:
 - a. combination of containers or packaging elements with articles or materials to be stored or transported;
 - b. articles joined together for convenience of storage or transport;
- "paper" includes materials, e.g. cardboard, plastic sheet materials, laminated materials, or metal foils, worked in a manner analogous to paper;
- "large containers", in groups [B65D 88/00](#) or [B65D 90/00](#) , means containers having about the size of containers used in container traffic, sometimes referred to as freight, forwarding or "ISO" (International Standardization) containers, or larger

containers [3]

Tamper-indicating means for containers or closures are classified in the group appropriate to the type of container or closure, e.g. [B65D5/43](#) , [B65D 5/54](#) , [B65D 17/00](#) , [B65D 27/30](#) , [B65D 27/30](#) , [B65D 27/34](#) , [B65D 33/34](#) , [B65D 41/32](#) , [B65D 47/36](#) , [B65D 49/12](#) , [B65D 51/20](#) , [B65D 55/06](#) [5]

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

B65D 5/34	covered by	B65D 5/325	
B65D 5/35	covered by	B65D 5/32	
B65D 5/355	covered by	B65D 5/0005	
B65D 5/43	covered by	B65D 5/42	
B65D 5/462	covered by	B65D 5/46008	to
B65D 5/46032			
B65D 5/465	covered by	B65D 5/46008	to
B65D 5/46032			
B65D 5/468	covered by	B65D 5/4608	
B65D 5/472	covered by	B65D 5/46048	
B65D 5/475	covered by	B65D 5/46008	
B65D 5/478	covered by	B65D 5/46056	
B65D 5/4805	-	B65D 5/489	covered by
B65D 5/48002			
B65D 5/49	-	B65D 5/499	covered by
B65D 5/48024			
B65D 5/63	covered by	B65D 5/72	
B65D 6/00	-	B65D 6/40	covered by
B65D 7/00	,	B65D 9/00	,
B65D 15/00			
B65D 8/00	-	B65D 8/22	covered by
B65D 7/00	,	B65D 9/00	,
B65D 15/00			
B65D 19/22	covered by	B65D 19/0004	&
subgroups	B65D 19/24	covered by	B65D 19/0004
& subgroups	B65D 19/26	covered by	B65D 19/0004
& subgroups	B65D 19/28	covered by	B65D 19/0004
& subgroups	B65D 19/30	covered by	B65D 19/0004
& subgroups	B65D 19/31	covered by	B65D 19/0004
& subgroups	B65D 19/34	covered by	B65D 19/0004
B65D 17/28	-	B65D 17/48	,
covered by	B65D 17/16	to	B65D 17/26
B65D 19/32	covered by	B65D 19/0002	,
B65D 19/0004			
B65D 21/024	covered by	B65D 21/0201	
B65D 21/028	covered by	B65D 21/0204	
B65D 21/032	covered by	B65D 21/0211	
B65D 21/036	covered by	B65D 21/0217	
B65D 25/26	covered by	B65D 81/02	
B65D 30/00	-	B65D 30/28	covered by
B65D 29/00	,	B65D 31/00	
B65D 33/17	covered by	B65D 33/1633	
B65D 33/36	covered by	B65D 75/58	
B65D 33/38	covered by	B65D 75/5861	
B65D 35/48	-	B65D 35/54	covered by
B65D 47/2018			

B65D 39/18	covered by	B65D 39/00	
+s.gr.			
B65D 41/01	covered by	B65D 41/00	
B65D 43/03	covered by	B65D 43/00	+
B65D 2543/00027			
B65D 47/22	covered by	B65D 47/20	
B65D 47/34	covered by	B05B 11/00	
B65D 50/06	covered by	B65D55/02E	
B65D 50/08	covered by	B65D 55/02	
B65D 50/10	covered by	B65D 55/02	
B65D 50/12	covered by	B65D 55/02	
B65D 50/14	covered by	B65D 55/02	
B65D 65/26	-	B65D 65/32	covered by
B65D 75/58			
B65D 65/34	covered by	B65D 75/66	
B65D 65/36	covered by	B65D 75/58	
B65D 71/52	-	B65D 71/68	covered by
B65D 71/0003	to	B65D 71/0077	
B65D 75/60	-	B65D 75/64	covered by
B65D 75/58			
B65D 81/15	covered by	B65D 81/05	
B65D 81/17	covered by	B65D 81/02	
B65D 83/18	-	B65D 83/74	covered by
B65D 83/14	,	B65D 83/16	
B65D 83/18	covered by	B65D 83/201	
B65D 83/58	covered by	B65D 83/44	
B65D 83/76	covered by	B65D 83/0005	
B65D 85/57	covered by	G11B 23/00	
B65D 85/575	covered by	G11B 23/00	
B65D 85/86	-	B65D 85/90	covered by
H01L21/00S	,	H05K 13/00	
B65D 91/00	covered by	A47G 29/12	

**B65D 1/00 -
B65D 21/00
B65D 1/00**

**General kinds of rigid or semi-rigid containers (-large containers
B65D 88/00-)**

Containers having bodies formed in one piece, e.g. by casting metallic material, by moulding plastics, by blowing vitreous material, by throwing ceramic material, by moulding pulped fibrous material, by deep-drawing operations performed on sheet material (-by winding, bending, or folding paper [B65D 3/00](#) , [B65D 5/00](#) ; specially constructed to be opened by cutting, piercing, or tearing of wall portions [B65D 17/00](#) ; pallets [B65D 19/00](#) ; details of bottles or of jars [B65D 23/00](#) ; bundles of articles held together by packaging elements for convenience of storage or transport, e. g. portable segregating carriers for plural receptacles such as beer cans, pop bottles, [B65D 71/00](#)-)

- B65D 1/02
 - Bottles or similar containers with necks or like restricted apertures, designed for pouring contents (-thermally-insulated containers [B65D 81/38](#) , [A47J 41/00](#) ; { feeding-bottles [A61J 9/00](#) })
- U B65D 1/0207
 - • {characterised by material, e.g. composition, physical features}
- B65D 1/0215
 - • • {multilayered (-[B65D 81/3837](#) takes precedence-)}
- U B65D 1/0223
 - • {characterised by shape}
- B65D 1/0261
 - • • {Bottom construction (-[B65D 1/06](#) takes precedence-)}
- B65D 1/08
 - • adapted to discharge drops (-droppers [B65D 47/18](#)-)
- B65D 1/09
 - Ampoules (-specially adapted for medical or pharmaceutical purposes [A61J 1/06](#)-)

- B65D 1/10 · Jars, e.g. for preserving foodstuffs(~~(-B65D 81/3837 takes precedence-)~~)
- B65D 1/22 · Boxes or like containers with side walls of substantial depth for enclosing contents(~~(-B65D 43/162 , B65D 81/02 , B65D 81/3813 take precedence-)~~)
- B65D 1/26 · · Thin-walled containers, e.g. formed by deep-drawing operations(~~(-B65D 1/165 takes precedence-)~~)
- B65D 1/265 · · · {Drinking cups (~~(-B65D 81/3865 takes precedence, holders for plastic cups A47G 23/0208-)~~)}
- B65D 1/32 · Containers adapted to be temporarily deformed by external pressure to expel contents ({ B65D 47/2018 , B65D 83/0055 take precedence } ; containers for pharmaceutical purposes A61J 1/20 , A61M 5/19 ; containers with disinfecting linings A61L 2/00 ; liquid sprayers B05B ; oil cans F16N 3/00-)
- B65D 1/326 · · {the container comprising an, externally located, integrally formed tube through which the contents pass (~~(-integrally formed suction tubes B65D 77/286-)~~)}
- B65D 1/34 · Trays or like shallow containers{ B65D 81/3813 takes precedence-}
- B65D 1/38 · Baskets or like containers of skeleton or apertured construction,({~~(-crates for bottles or like containers B65D 1/243-)~~)}
- B65D 1/40 · Details of walls (~~(-other container details B65D 23/00 , B65D 25/00-)~~)
- B65D 3/00** **Containers having bodies or peripheral walls of curved or partially curved cross-section made by winding or bending paper without folding along defined lines (~~(-with end walls of different materials B65D 15/00-)~~)**
- B65D 3/22 · with double walls; with walls incorporating air-chambers; with walls made of laminated material(~~(-for thermal insulating purposes B65D 81/3818-)~~)
- B65D 5/00** **Containers of polygonal cross-section, e.g. boxes, cartons, trays, formed by folding or erecting one or more blanks made of paper (~~(-pallets B65D 19/00 ; bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carriers for plural receptacles such as beer cans, pop bottles, B65D 71/00 ; forming foldable or erectable blanks B31B-)~~)**
- B65D 5/0005 · {of variable capacity (~~(-in general B65D 21/08-)~~)}
- B65D 5/001 · {stackable (~~(-in general B65D 21/02-)~~)}
- U B65D 5/0015 · · {the container being formed by folding up portions connected to a central panel}
- B65D 5/002 · · · {having integral corner posts (~~(-B65D 5/0045 and B65D 5/0065 take precedence-)~~)}
- B65D 5/003 · · · {having ledges formed by extensions of the side walls (~~(-B65D 5/0045 and B65D 5/0065 take precedence-)~~)}
- B65D 5/0035 · · · · {the ledges being located between side walls and doubled-over extensions (~~(-B65D 5/0025 takes precedence-)~~)}
- U B65D 5/005 · · {Separate or attached stacking elements}
- B65D 5/0055 · · · {saddling the side walls of the container (~~(-B65D 5/006 takes precedence-)~~)}
- B65D 5/006 · · · {Separate corner posts and like elements (~~(-B65D 5/0065 takes precedence-)~~)}
- B65D 5/0085 · {the container body comprising two mating compartments hinged together (~~(-B65D 77/006 takes precedence-)~~)}
- B65D 5/02 · by folding or erecting a single blank to form a tubular body with or without subsequent folding operations, or the addition of separate elements, to close the ends of the body (~~(-B65D 5/36 takes precedence-)~~)

- B65D 5/0227
 - {with end closures formed by inward folding of flaps and securing them by heat-sealing, adhesive applied to the flaps or staples (~~by adhesive tapes [B65D 5/0236](#)~~)}
- B65D 5/0236
 - {with end closures formed by inward folding of flaps and securing them by adhesive tapes, labels or the like; for decoration purposes (~~B65D 5/4245 , [B65D 5/4262](#) take precedence~~)}
- B65D 5/0245
 - {with end closures formed by inward folding of flaps, to form a sunken or hollow end wall, e.g. for the packaging of books (~~internal supporting elements [B65D 5/50](#)~~)}
- B65D 5/0281
 - {the tubular body presenting double or multiple walls (~~for thermal insulating purposes [B65D 81/3853](#)~~)}
- B65D 5/029
 - {the tubular body presenting a special shape (~~pyramidal [B65D 5/008](#)~~)}
- B65D 5/04
 - the tubular body having no end closures (~~shells of drawer-and-shell type containers [B65D 5/38](#)~~)
- B65D 5/08
 - with end closures formed by inward-folding of portions of body, e.g. flaps, interconnected by, or incorporating, gusset folds (~~by inward-folding of a wall extending continuously around an end of the body and incorporating gusset folds [B65D 5/06](#)~~)
- B65D 5/16
 - the tubular body being formed with an aperture or removable portion arranged to allow removal or insertion of contents through one or more sides (~~contents-dispensing means [B65D 5/72](#)~~)
- B65D 5/18
 - by folding a single blank to U-shape to form the base of the container and opposite sides of the body portion, the remaining sides being formed primarily by extensions of one or more of these opposite sides, e.g. flaps hinged thereto (~~[B65D 5/36](#) takes precedence~~)
- B65D 5/20
 - by folding-up portions connected to a central panel from all sides to form a container body, e.g. of tray-like form (~~[B65D 5/36](#) takes precedence~~)
- U B65D 5/2038
 - {at least two opposed folded-up portions having a non-rectangular shape}
- B65D 5/2047
 - {trapezoidal, e.g. to form a body with diverging side walls (~~[B65D 5/2033](#) takes precedence~~)}
- U B65D 5/2052
 - {characterised by integral closure-flaps}
- B65D 5/2057
 - {Inter-engaging self-locking flaps (~~[B65D 5/4254](#) takes precedence~~)}
- U B65D 5/24
 - with adjacent sides interconnected by gusset folds
- B65D 5/241
 - {and the gussets folds connected to the inside of the container body (~~[B65D 5/247](#) and [B65D 5/248](#) take precedence~~)}
- B65D 5/244
 - {and the gussets folds connected to the outside of the container body (~~[B65D 5/247](#) , [B65D 5/248](#) take precedence~~)}
- B65D 5/247
 - {and being maintained in erected condition by integral mechanical locking means formed on, or coacting with, the gusset folds, e.g. locking tabs, tongue and slit (~~**B65D248/00** takes precedence~~)}
- B65D 5/32
 - having bodies formed by folding and interconnecting two or more blanks {each blank forming a body part, whereby each body part comprises at least one outside face of the box, carton or tray}
- U B65D 5/42
 - Details of containers or of foldable or erectable container blanks
- B65D 5/4208
 - {Means facilitating suspending, lifting, handling, or the like of containers (~~handles [B65D 5/46](#)~~)}
- B65D 5/4212
 - {Information or decoration elements, e.g. content indicators, or for mailing (~~[B65D 5/522](#) takes precedence~~)}
- U B65D 5/4216
 - {Cards, coupons or the like formed integrally with, or printed directly on, the container or lid}

- B65D 5/422 . . . {as an extra panel or panels folded against or inside the container (~~B65D 5/4237~~ takes precedence)}
- B65D 5/4225 . . . {as an extra panel or panels projecting out of the plane of the container (~~B65D 5/4241~~ takes precedence)}
- U B65D 5/4233 . . . {Cards, coupons, labels or the like formed separately from the container or lid}
- B65D 5/4245 . . . {Bands covering at least 3 adjacent faces of a container (~~B65D 5/4262~~ takes precedence)}
- B65D 5/427 . . {Individual packages joined together, e.g. by means of integral tabs (~~B65D 5/5495~~ takes precedence)}
- B65D 5/4279 . . {Joints, seams, leakproof joints or corners, special connections between panels (~~B65D 5/209~~ takes precedence)}
- B65D 5/4283 . . . {Connections formed by separate elements, e.g. clips, bands, straps (~~B65D 5/0227~~ , ~~B65D 5/0236~~ take precedence)}
- B65D 5/44 . . Integral, inserted or attached portions forming internal or external fittings {not used, see subgroups}
- B65D 5/441 . . . {Reinforcements (~~linings B65D 5/56~~)}
- B65D 5/443 . . . {Integral reinforcements, e.g. folds, flaps (~~double walls B65D 5/02~~)}
- U B65D 5/46 . . . Handles
- U B65D 5/46008 . . . {formed separately from the container body}
- B65D 5/46016 {Straps used as handles fixed to the container by glueing, stapling, heat-sealing (~~for packages in wrappers B65D 75/56~~)}
- B65D 5/46032 {Handles with anchoring elements, e.g. formed by folding a blank (~~B65D 5/46064~~ takes precedence; straps ~~B65D 5/46024~~)}
- U B65D 5/48 . . . Partitions
- U B65D 5/48002 . . . {integral}
- U B65D 5/48004 {Squaring, i.e. at least four not aligned compartments}
- B65D 5/48008 {formed by folding extensions hinged to the upper or lower edges of a tubular body (~~B65D 5/48006~~ takes precedence)}
- B65D 5/48014 {formed by folding extensions hinged to the side edges of a tubular body (~~B65D 5/48004~~ takes precedence; partition separated by erecting the body ~~B65D 5/48048~~)}
- B65D 5/48016 {formed by folding extensions hinged to the upper or lower edges of a tubular body (~~B65D 5/48008~~ takes precedence)}
- B65D 5/48018 {formed by folding extensions of side panels of a "cross-like" body blank (~~B65D 5/4801~~ takes precedence)}
- B65D 5/4802 {formed by folding inwardly portions cut in the body (~~B65D 5/48006~~ takes precedence)}
- U B65D 5/48024 {inserted}
- B65D 5/48026 {Squaring or like elements, e.g. honeycomb element, i.e. at least four not aligned compartments (~~B65D 5/48012~~ takes precedence)}
- B65D 5/48028 {formed by folding a single blank (~~B65D 5/48034~~ takes precedence)}
- B65D 5/48044 {Blank provided with cut flaps folded perpendicular to the blank (~~B65D 5/48026~~ takes precedence)}
- B65D 5/48046 {Plain strips not fixed by gluing or other fastening elements (~~B65D 5/48048~~ takes precedence)}
- B65D 5/48048 {Single partition formed by folding one or more blanks and provided with flaps fixed to or maintained by parts of the container body (~~B65D 5/4804~~ takes precedence)}

- B65D 5/50
 - . . . Internal supporting or protecting elements for contents (-elements formed by inward-folding of a wall extending from, and continuously around, an end of a tubular body [B65D 5/06](#) ; partitions [B65D 5/48](#)-)
- U B65D 5/5002
 - {Integral elements for containers having tubular body walls}
- B65D 5/5004
 - {formed as an extension of the end closures (-hollow or recessed end closures [B65D 5/0245](#)-)}
- U B65D 5/5011
 - {formed by folding inwardly of extensions hinged to the upper or lower edges of the body}
- B65D 5/5014
 - {and with an integral end closure (-[B65D 5/5004](#) takes precedence-)}
- U B65D 5/5028
 - {Elements formed separately from the container body}
- B65D 5/503
 - {Tray-like elements formed in one piece (-formed by folding a blank [B65D 5/5038](#)-)}
- B65D 5/5035
 - {Paper elements (-in combination with wooden elements [B65D 5/5095](#)-)}
- B65D 5/5038
 - {Tray-like elements formed by folding a blank and presenting openings or recesses (-without external box [B65D 71/72](#) ; external face of container provided with opening for receiving object in display position [B65D 5/5286](#)-)}
- U B65D 5/5047
 - {Blocks}
- U B65D 5/505
 - {formed by folding up one or more blanks to form a hollow block}
- B65D 5/5052
 - {and provided with slits or recesses in which at least a part of the contents are located (-[B65D 5/504](#) takes precedence-)}
- B65D 5/5059
 - {Paper panels presenting one or more openings or recesses in which at least a part of the contents are located (-[B65D 5/5038](#) , [B65D 5/5052](#) , [B65D 5/5057](#) and [B65D 5/5286](#) take precedence-)}
- B65D 5/5061
 - {the openings or recesses being located in different panels of a single blank (-[B65D 5/5066](#) takes precedence-)}
- B65D 5/5064
 - {Inverted U- or V-shaped paper elements provided with slits or recesses in which at least a part of the contents are located (-[B65D 5/504](#) and [B65D 5/5052](#) takes precedence-)}
- B65D 5/5076
 - {U-shaped elements supporting the articles along substantially their whole length, e.g. a cradle (-[B65D 5/508](#) takes precedence-)}
- B65D 5/5078
 - {Pockets whereby the articles are inserted into the pockets, e.g. inverted U-shaped elements (-[B65D 5/508](#) takes precedence-)}
- B65D 5/5085
 - {the elements forming grooves, ribs, or the like, situated on opposed walls and between which the articles are located (-for rigid containers [B65D 25/107](#)-)}
- B65D 5/5088
 - {Plastic elements (-trays [B65D 5/503](#)-)}
- B65D 5/52
 - . . . External stands or display elements for contents{(-adjustable or foldable display stands made of cardboard, paper or the like, without packaging function [A47F 5/11](#)-)}
- U B65D 5/522
 - {Containers provided with decoration or information elements which are displaced to display the contents}
- B65D 5/5226
 - {formed integrally with the container or lid (-[B65D 5/526](#) takes precedence-)}
- U B65D 5/526
 - {Containers with means for displaying items at different heights}
- B65D 5/5266
 - {in tiered or stepped relationship (-[B65D 5/5206](#) takes precedence-)}
- B65D 5/5273
 - {Containers provided with an inclined surface on which the contents are located (-[B65D 5/5213](#) , [B65D 5/5266](#) take precedence-)}

- B65D 5/54
- • Lines of weakness to facilitate opening of container or dividing it into separate parts by cutting or tearing ({ [B65D 5/06](#) , [B65D 5/5233](#) , [B65D 5/5253](#) take precedence } ; break-in flaps, or members adapted to be torn-off, to provide pouring openings [B65D 5/70](#)-)
- B65D 5/56
- • Linings or internal coatings,{e.g. pre-formed trays provided with a blow- or thermoformed layer} (-to protect the articles from mechanical damage [B65D 81/127](#)-)
- B65D 5/566
- • • {Linings made of relatively rigid sheet material, e.g. carton (-[B65D 5/0281](#) and [B65D 5/58](#) takes precedence; combined with a flexible lining [B65D 5/56](#) , [B65D 5/60](#) ; for thermal insulating purposes [B65D 81/3858](#) ; for shock absorbing purposes [B65D 81/1275](#)-)}
- B65D 5/58
- • • Linings spaced appreciably from container wall{(-for thermal insulating purposes [B65D 81/3853](#)-)}
- B65D 5/60
- • • Loose,{or loosely attached}, linings{(-made only of relatively rigid sheet material [B65D 5/566](#)-)}
- B65D 5/603
- • • • {Flexible linings loosely glued to the wall of the container (-[B65D 5/0272](#) takes precedence-)}
- B65D 5/62
- • External coverings or coatings{(-[B65D 5/4245](#) , [B65D 5/4262](#) take precedence-)}
- U B65D 5/64
- • Lids
- B65D 5/643
- • • {held in closed position by application of separate elements, e.g. clips, straps (-[B65D 5/6611](#) , [B65D 5/6673](#) take precedence-)}
- B65D 5/646
- • • {comprising a slidable panel or wall (-[B65D 5/723](#) takes precedence-)}
- B65D 5/66
- • • Hinged lids ({ [B65D 5/325](#) }takes precedence)
- U B65D 5/6602
- • • • {formed by folding one or more extensions hinged to the upper edge of a tubular container body}
- B65D 5/6617
- • • • • {the container body sliding in an outer sleeve (-[B65D 85/1054](#) takes precedence-)}
- U B65D 5/6626
- • • • • {formed by folding extensions of a side panel of a container body formed by erecting a "cross-like" blank}
- U B65D 5/6629
- • • • • {the lid being formed by two mating halves joined to opposite edges of the container body}
- B65D 5/6632
- • • • • • {the lid-halves being held in closed position by flaps or tabs provided at their side edges only (-[B65D 5/6644](#) , [B65D 5/6647](#) take precedence-)}
- B65D 5/6635
- • • • • • {the lid-halves being held in closed position by flaps or tabs provided at their edge opposite to their hinge (-[B65D 5/6644](#) , [B65D 5/6647](#) take precedence-)}
- U B65D 5/665
- • • • • {the lid being held in closed position by self-locking integral flaps or tabs}
- U B65D 5/6661
- • • • • • {Flaps provided over the total length of the lid edge opposite to the hinge}
- U B65D 5/6664
- • • • • • • {combined with flaps or tabs provided at the side edges of the lid}
- B65D 5/6667
- • • • • • • • {and connected to one another in order to form an uninterrupted telescoping flange (-[B65D 5/667](#) takes precedence-)}
- B65D 5/6673
- • • • • • {the lid being held in closed position by application of separate elements, e.g. clips, hooks, cords (-[B65D 5/6647](#) takes precedence-)}
- U B65D 5/6685
- • • • • {formed by extensions hinged to the upper edge of a container body formed by erecting a blank to U-shape}
- B65D 5/6688
- • • • • • {the container body sliding in an outer sleeve (-[B65D 85/1054](#) takes precedence-)}

- B65D 5/70
 - • Break-in flaps, or members adapted to be torn-off, to provide pouring openings (~~B65D 5/74~~ takes precedence-)
- U B65D 5/72
 - • Contents-dispensing means
- U B65D 5/74
 - • • Spouts
- B65D 5/741
 - • • • {for containers having a tubular body (~~B65D 5/746~~ takes precedence-)}
- B65D 5/742
 - • • • • {Spouts formed by deforming or tearing the closure flaps or severed or incised parts of the closure flaps (~~B65D 5/06~~ takes precedence-)}
- B65D 7/00**

Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of metal (~~specially constructed to be opened by cutting, piercing, or tearing of wall portions B65D 17/00 ; pallets B65D 19/00 ; tanks for domestic water storage heaters F24H 1/181-~~)
- U B65D 7/02
 - characterised by shape
- B65D 7/04
 - • of curved cross-section, e.g. cans of circular or elliptical cross-section(~~thermally insulated B65D 81/3813 , B65D 81/3837-~~)
- B65D 7/045
 - • • {Casks, barrels, or drums in their entirety, e.g. beer barrels, i.e. presenting most of the following features like rolling beads, double walls, reinforcing and supporting beads for end walls (~~thermally insulated barrels, B65D 81/3802-~~)}
- U B65D 7/12
 - characterised by wall construction or by connections between walls
- B65D 7/22
 - • with double walls, e.g. double end walls(~~for thermal insulating purposes B65D 81/3806 , B65D 81/3818 , B65D 81/383-~~)
- B65D 7/34
 - • with permanent connections between walls (~~permanent connections between walls for closing containers after filling B65D 17/06-~~)
- B65D 7/42
 - Details of metal walls ({ casks, barrels or drums in their entirety B65D 7/045 } ; other container details B65D 23/00 , B65D 25/00-)
- U B65D 9/00**

Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of wood or substitutes therefor
- B65D 9/02
 - Containers of curved cross-section, e.g. cylindrical boxes(~~thermally insulated B65D 81/3813 , B65D 81/3837-~~)
- B65D 9/04
 - • made up of staves, e.g. barrels for liquids(~~thermally insulated barrels, B65D 81/3802-~~)
- B65D 9/26
 - with double end walls, e.g. double bottoms(~~for thermal insulating purposes B65D 81/3806 , B65D 81/3818 , B65D 81/383-~~)
- B65D 9/32
 - Details of wooden walls; Connections between walls (~~other container details B65D 23/00 , B65D 25/00 ; connections between walls and non-removable lids or covers B65D 43/14-~~)
- B65D 11/00**

Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of plastics material (~~specially constructed to be opened by cutting, piercing, or tearing of wall portions B65D 17/00 ; pallets B65D 19/00-~~)
- B65D 11/02
 - of curved cross-section(~~thermally insulated B65D 81/3813-~~)
- B65D 11/04
 - • Bottles or similar containers with necks or like restricted apertures designed for pouring contents(~~thermally insulated B65D 81/3837-~~)
- B65D 11/06
 - • Drums or barrels(~~thermally insulated B65D 81/3802-~~)
- B65D 11/10
 - of polygonal cross-section {and all parts being permanently connected to each other(~~B65D 11/18~~ takes precedence-)}
- U B65D 11/18
 - collapsible, i.e. with walls hinged together or detachably connected

- B65D 11/1833
- {whereby all side walls are hingedly connected to the base panel (~~B65D 11/186~~ takes precedence-)}
- B65D 11/1846
- {whereby all side walls are hingedly connected to each other (~~B65D 11/186~~ takes precedence-)}
- B65D 11/1866
- {with detachable components (~~B65D 11/1893~~ takes precedence-)}
- B65D 13/00**
- Containers having bodies formed by interconnecting two or more rigid, or substantially rigid, components made wholly or mainly of the same material, other than metal, plastics, wood, or substitutes therefor (~~pallets B65D 19/00-~~)**
- B65D 13/04
- of paper (~~by winding, bending, or folding paper B65D 3/00 , B65D 5/00-~~)
- B65D 15/00**
- Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, sections made of different materials (~~specially constructed to be opened by cutting, piercing, or tearing, of wall portions B65D 17/00 ; pallets B65D 19/00-~~)**
- B65D 17/00**
- Containers specially constructed to be opened by cutting or piercing, or by tearing of frangible member or portion (~~opening devices for containers made by winding, bending, or folding paper B65D 3/00 , B65D 5/00 ; frangible inner closure members associated with caps, lids, or covers B65D 51/20 ; opening devices added or incorporated during filling or closing of containers B65D 77/30 ; separate devices for opening closed containers B67B 7/00-~~)**
- B65D 17/16
- Opening arrangements or devices incorporated in or attached to, containers (~~B65D 17/50~~ takes precedence-)}
- B65D 17/168
- {for tearing along a line or from a point of weakness provided in the side wall (~~B65D 17/20~~ takes precedence-)}
- U B65D 17/50
- Non-integral frangible members applied to, or inserted in, a preformed opening, e.g. tearable strips, plastic plugs
- U B65D 17/501
- {Flexible tape or foil-like material}
- B65D 17/502
- • {applied to the external part of the container wall only (~~B65D 17/505~~ takes precedence-)}
- B65D 17/503
- • {applied to the internal part of the container wall only (~~B65D 17/505~~ takes precedence-)}
- B65D 19/00**
- Pallets or like platforms, with or without side walls, for supporting loads to be lifted or lowered (~~in devices for lifting or lowering bulky or heavy goods for loading or unloading purposes B66F 9/12-~~)**
- B65D 21/00**
- Nestable, stackable, or joinable containers; Containers of variable capacity (~~large containers B65D 88/00 ; { containers for display purposes A47B 87/0276 }~~)**
- B65D 21/02
- Containers specially shaped, or provided with fittings or attachments, to facilitate nesting, stacking, or joining together (~~stackable containers of polygonal cross-section formed by folding or erecting blanks made of paper B65D 5/001-~~)
- U B65D 21/0201
- {stackable or joined together side-by-side}
- B65D 21/0205
- • {joined together by bonding, adhesive or the like (~~B65D 21/0208~~ takes precedence-)}
- B65D 21/0206
- • {Separate rigid or semi-rigid trays or cups joined together, e.g. separate trays connected by single foil closure or crimped together (~~plurality of trays formed in one piece B65D 1/30-~~)}
- B65D 21/0209
- {stackable or joined together one-upon-the-other in the upright or upside-down position (~~B65D 21/0234 , B65D 21/0235~~ take precedence-)}

- B65D 21/0212 . . . {Containers presenting local stacking elements protruding from the upper or lower edge of a side wall, e.g. handles, lugs, ribs, grooves (~~B65D 21/0211~~ , ~~B65D 21/0215~~ , ~~B65D 21/023~~ take precedence-)}
- B65D 21/0215 . . . {Containers with stacking feet or corner elements (~~B65D 21/0211~~ , ~~B65D 21/023~~ take precedence-)}
- B65D 21/0217 . . . {Containers with a closure presenting stacking elements (~~B65D 21/064~~ takes precedence-)}
- B65D 21/0219 {the closure presenting projecting peripheral elements receiving or surrounding the bottom or peripheral elements projecting from the bottom of a superimposed container (~~B65D 21/0222~~ and ~~B65D 21/0223~~ take precedence-)}
- B65D 21/022 {the bottom presenting projecting peripheral elements receiving or surrounding the closure or peripheral elements projecting therefrom (~~B65D 21/0222~~ and ~~B65D 21/0223~~ take precedence-)}
- B65D 21/0223 {the closure and the bottom presenting local co-operating elements, e.g. projections and recesses (~~B65D 21/0222~~ takes precedence-)}
- B65D 21/0226 . . . {Containers with movable parts adapted to be placed in alternative positions for stacking the containers at different levels, i.e. without nesting of the containers (~~with means for nesting B65D 21/06-~~)}
- B65D 21/0228 . . . {Containers joined together by screw-, bayonet-, snap-fit or the like, (~~B65D 21/0211~~ , ~~B65D 21/0231~~ take precedence-)}
- B65D 21/023 . . . {Closed containers provided with local cooperating elements in the top and bottom surfaces, e.g. projection and recess (~~B65D 21/0223~~ takes precedence-)}
- B65D 21/0231 {Bottles, canisters or jars whereby the neck or handle project into a cooperating cavity in the bottom (~~B65D 81/361~~ takes precedence-)}
- U B65D 21/04 . . . Open-ended containers shaped to be nested when empty and to be superposed when full
- B65D 21/043 . . . {Identical stackable containers specially adapted for nesting after rotation around a vertical axis (~~B65D 21/041~~ takes precedence-)}
- B65D 21/046 {about 90° (~~staggered configuration B65D 21/0235-~~)}
- B65D 21/048 . . . {Identical stackable containers specially adapted for retaining the same orientation when nested, e.g. the upper container being fixed or slightly rotatable during the nesting operation (~~B65D 21/041~~ takes precedence-)}
- B65D 21/06 . . . with movable parts adapted to be placed in alternative positions for nesting the containers when empty and for stacking them when full (~~without means for nesting B65D 21/0226-~~)}
- B65D 21/062 . . . {the movable parts being attached or integral and displaceable into a position overlying the top of the container, e.g. bails, corner plates (~~covers B65D 21/064-~~)}
- B65D 21/08 . . . Containers of variable capacity (~~containers of polygonal cross-section adapted to be of variable capacity formed by folding or erecting blanks made of paper { B65D 5/0005 }~~)
- B65D 21/086 . . . {Collapsible or telescopic containers (~~B65D 1/0292~~ and ~~B65D 21/068~~ take precedence)}
- B65D 23/00 -
B65D 25/00** **Details of rigid or semi-rigid containers not otherwise provided for (~~for pallets B65D 19/38 ; of large containers B65D 90/00-~~)**
- B65D 23/00** **Details of bottles or jars not otherwise provided for (~~closure-securing elements B65D 45/00-~~)**
- B65D 23/04 . . . Means for mixing or for promoting flow of contents (~~hydro-dynamic means for influencing the flow of liquids F15D-~~)

- B65D 23/08 · Coverings or external coatings (-wrappers [B65D 65/00-](#))
- U B65D 23/0807 · · {Coatings}
- U B65D 23/0814 · · · {characterised by the composition of the material}
- B65D 23/0821 · · · · {consisting mainly of polymeric materials (-[B65D 23/0828](#) takes precedence-)}
- U B65D 23/0842 · · {Sheets or tubes applied around the bottle with or without subsequent folding operations}
- B65D 23/085 · · · {and glued or otherwise sealed to the bottle (-[B65D 23/0857](#) , [B65D 23/0864](#) , [B65D 23/0871](#) take precedence-)}
- B65D 23/0857 · · · {and locked to the bottle by mechanical means, e.g. tabs snapping into recesses of the bottle (-[B65D 23/0871](#) , [B65D 23/0878](#) take precedence-)}
- B65D 23/0871 · · · {Stretched over the bottle (-[B65D 23/0892](#) takes precedence-)}
- B65D 23/0885 · · {Rigid shells for receiving the bottle or part of it (-[B65D 23/0842](#) , [B65D 81/3876](#) , [B65D 85/302](#) take precedence-)}
- U B65D 23/12 · Means for the attachment of smaller articles
- B65D 23/14 · · of tags, {labels, cards, coupons, decorations or the like (-[B65D 23/008](#) takes precedence-)}
- B65D 23/16 · · of thermometers (-feeding bottles with thermometers [A61J 9/02-](#))
- U B65D 25/00** **Details of other kinds or types of rigid or semi-rigid containers**
- B65D 25/005 · {Side walls formed with an aperture or a movable portion arranged to allow removal or insertion of contents (-[B65D 5/16](#) , [B65D 7/40](#) take precedence-)}
- B65D 25/02 · Internal fittings (-of containers made by folding or erecting blanks made of paper [B65D 5/44-](#))
- U B65D 25/04 · · Partitions
- U B65D 25/08 · · · with provisions for removing or destroying, e.g. to facilitate mixing of contents
- B65D 25/082 · · · · {the partition being in the form of a plug or the like which is removed by increasing or decreasing the pressure within the container (-[B65D 81/3211](#) takes precedence-)}
- B65D 25/085 · · · · {the partition being in the form of a plug or the like which is dislodged by means of a plunger rod or the like pushing the plug down (-[B65D 81/3211](#) takes precedence-)}
- B65D 25/087 · · · · {the partition being in the form of a plug or the like which can be raised off its seat by means of a pull cord or the like, e.g. the plug being connected to the cap (-[B65D 81/3211](#) takes precedence-)}
- B65D 25/10 · · Devices to locate articles in containers (-for protecting articles from mechanical damage [B65D 81/02-](#))
- B65D 25/101 · · · {Springs, elastic lips, or other resilient elements to locate the articles by pressure (-[B65D 25/102](#) , [B65D 25/103](#) take precedence-)}
- B65D 25/103 · · · {V-shaped elements, e.g. racks, protuberances projecting from a supporting surface, supporting the articles locally at its sides (-[B65D 25/107](#) takes precedence-)}
- B65D 25/14 · Linings or internal coatings (-of containers made by folding or erecting blanks made of paper [B65D 5/56](#) ; { linings for domestic water storage heaters [F24H 1/183](#) })
- B65D 25/20 · External fittings (-of containers made by folding or erecting blanks made of paper [B65D 5/44-](#))
- B65D 25/205 · · {Means for the attachment of labels, cards, coupons or the like; (-Cards or coupons for the other types of rigid or semi-rigid containers [B65D 25/36](#) takes precedence-)}

- B65D 25/24
 - for spacing bases of containers from supporting surfaces, e.g. legs (-for pallets [B65D 19/40](#)-)
- B65D 25/28
 - Handles (-of containers made by folding or erecting blanks made of paper [B65D 5/46](#) ; of bottles or jars [B65D 23/10](#) ; { holders for glasses, bottles, cartons, plastic bags, cans [A47G 23/02](#) })
- B65D 25/2802
 - {fixed, i.e. non-swingable, handles (-[B65D 25/2867](#) , [B65D 25/2882](#) take precedence-)}
- B65D 25/2835
 - {Swingable handles (-[B65D 25/2867](#) and [B65D 25/2882](#) take precedence; bails [B65D 25/32](#)-)}
- B65D 25/2867
 - {with respective ends fixed to local areas of two opposite sides or wall-part (-bails [B65D 25/32](#)-)}
- B65D 25/2882
 - {Integral handles (-[B65D 25/2867](#) takes precedence-)}
- B65D 25/32
 - Bail handles, i.e. pivoted {rigid}handles of generally semi-circular shape {with pivot points on two opposed sides or wall parts of the container}
- B65D 25/34
 - Coverings or external coatings (-of containers made by folding or erecting blanks made of paper [B65D 5/62](#) ; for bottles or jars [B65D 23/08](#) ; wrappers [B65D 65/00](#)-)
- B65D 25/38
 - Devices for discharging contents ({ containers formed by folding or erecting paper blanks [B65D 5/72](#) } ; incorporated in removable or non-permanently secured closure members [B65D 47/00](#) ; for discharging thin flat articles [B65D 83/08](#)-)
- B65D 25/40
 - Nozzles or spouts (-in general [B05B](#)-)
- U B65D 25/54
 - Inspection openings or windows
- B65D 25/56
 - with means for indicating level of contents
- B65D 27/00 -
B65D 37/00
B65D 27/00**
 - General kinds of flexible containers (-large containers [B65D 88/00](#)-)**
 - Envelopes or like essentially-rectangular containers for postal or other purposes having no structural provision for thickness of contents (-with shock-absorbing properties [B65D 81/03](#) ; letter-cards [B42D 15/00](#)-)**
 - B65D 27/12
 - Closures (-separate fasteners [B42F 1/00](#)-)
 - B65D 27/32
 - Opening devices incorporated during envelope manufacture (-incorporated during closing of envelope [B43M 5/00](#) ; separate devices for opening envelopes [B43M 7/00](#)-)
 - B65D 31/00**
 - Bags or like containers made of paper and having structural provision for thickness of contents{(-with shock-absorbing properties [B65D 81/03](#)-)}**
 - B65D 31/005
 - {by folding a single blank to U-shape to form the base of the bag and opposite sides of the body-portion, the remaining sides being formed by extensions of one or more of these opposite sides (-cartons [B65D 5/18](#)-)}
 - B65D 31/04
 - with multiple walls{(-[B65D 81/3881](#) takes precedence; for shock absorbing purposes [B65D 81/03](#)-)}
 - U **B65D 33/00**
 - Details of, or accessories for, sacks or bags**
 - B65D 33/008
 - {Individual filled bags or pouches connected together (-[B65D 33/001](#) , [B65D 33/002](#) take precedence-)}
 - B65D 33/01
 - Ventilation or drainage of bags,{e.g. disaligned apertures, labyrinth welds(-pressure-relief valves comprising at least one elastic element [B65D 77/225](#); connection of valves to inflatable elastic bodies [B60C 29/00](#)-)}
 - B65D 33/02
 - Local reinforcements or stiffening inserts, e.g. wires, strings, strips, frames{(-[B65D 33/007](#) takes precedence-)}
 - B65D 33/04
 - Windows or other apertures, e.g. for viewing contents{(-ventilation apertures [B65D 33/01](#) ; windows for level indication [B65D 33/004](#)-)}

- B65D 33/06
 - B65D 33/065
 - B65D 33/14
 - B65D 33/16
 - B65D 33/1616
 - B65D 33/165
 - B65D 33/1658
 - B65D 33/18
 - B65D 33/24
 - B65D 33/25
 - U B65D 33/2508
 - U B65D 33/2541
 - B65D 33/255
 - B65D 33/26
 - B65D 33/30
 - B65D 33/34
 - B65D 35/00**
 - B65D 35/24
 - B65D 35/245
 - B65D 35/36
 - B65D 35/44
 - B65D 35/46
 - B65D 35/56
 - B65D 35/565
 - B65D 37/00**
- Handles~~{(-forming part of the closing arrangement [B65D 33/16-](#))}~~
 - • {Integral handles ~~(-[B65D 33/08](#) takes precedence-)}~~
 - Suspension means ~~(-handles [B65D 33/06-](#))~~
 - End- or aperture-closing arrangements or devices (valves of valve bags{ [B65D 31/14](#) } ; removable stoppers or caps [B65D 39/00](#) , [B65D 41/00](#) ; closures of filled bags [B65D 77/10](#) ; closing filled bags in association with packaging [B65B 7/00](#) , [B65B 51/00-](#))
 - • {Elements constricting the neck of the bag ~~(-hinged clips [B65D 33/1675-](#))}~~
 - • • {Flexible elongated elements integral with or attached to bags or sacks ~~(-draw closures [B65D 33/28-](#)); Fastening thereof to the bag before closing}~~
 - • {Elements for flattening or folding the mouth portion ~~(-[B65D 33/30](#) takes precedence-)}~~
 - • using adhesive applied to integral parts, e.g. to flaps ~~(-of envelopes [B65D 27/14-](#))~~
 - • using self-locking integral or attached closure elements, e.g. flaps ~~(-[B65D 33/25](#) takes precedence-)~~
 - • Riveting; Dovetailing; Screwing; using press buttons or slide fasteners~~{(-slide fasteners per se [A44B 19/00-](#))}~~
 - • • {using slide fasteners with interlocking members having a substantially uniform section throughout the length of the fastener and operated without a slider}
 - • • • {characterised by the slide fastener, e.g. adapted to interlock with a sheet between the interlocking members having sections of particular shape}
 - • • • • {being provided with special visual, audible or tactile indicating means, e.g. indicating proper engagement ~~(-[B65D 33/2516](#) takes precedence-)}~~
 - • using staples or stitches~~{(-[B65D 33/1641](#) takes precedence-)}~~
 - • Deformable or resilient metal or like strips or bands~~{(-[B65D 33/1616](#) takes precedence-)}~~
 - • with special means for indicating unauthorised opening~~{(-[B65D 33/2516](#) takes precedence-)}~~
- Pliable tubular containers adapted to be permanently {or temporarily}deformed to expel contents, e.g. collapsible tubes for toothpaste or other plastic or semi-liquid material; Holders therefor{(-packages for tubes [B65D 85/14-](#))}**
- with auxiliary devices ~~(-linings or inserts [B65D 35/14-](#))~~
 - • {Suspension means integral with, or attached to the container ~~(-[B65D 51/242](#) takes precedence-)}~~
 - • for applying contents to surfaces ~~(-brushes combined or associated with tubular containers [A46B 11/00-](#))~~
 - Closures ~~(-closure members of interest apart from this application [B65D 39/00](#) to [B65D 55/00](#) ; forming bottom closures after filling [B65B 7/14-](#))~~
 - • with valves ~~(-bureau accessories for applying liquids, e.g. adhesive, [B43M 11/00-](#))~~
 - Holders for collapsible tubes~~{(-[B65D 51/249](#) takes precedence-)}~~
 - • {the holder being attached to a wall or suspended from a panel ~~(-[B65D 35/285](#) takes precedence-)}~~
- Portable flexible containers not otherwise provided for**

B65D 39/00 - B65D 55/00	Closure members for rigid or semi-rigid containers or for flexible containers presenting similar closing problems (-closure flaps or lids attached to, or incorporated in, containers, or foldable or erectable container blanks, made of paper B65D 3/00 , B65D 5/00 ; closure walls of containers specially constructed to be opened by cutting, piercing, or tearing of wall portions B65D 17/00 ; applying closure members to bottles, jars, or similar containers B67B ; covers or similar closure members, for pressure vessels in general F16J 13/00 -); Parts of containers co-operating with closure members or characterised by the form of closure member (-for large containers B65D 90/00 -)
B65D 39/00	Closures arranged within necks or pouring openings or in discharge apertures, e.g. stoppers (-lids or covers B65D 43/00 ; with additional securing elements B65D 45/00 -)
	NOTE
	In this group, the indexing codes of L65D339 are used
B65D 39/0005	• {made in one piece (- B65D 39/02 , B65D 39/04 , B65D 39/06 , B65D 39/08 take precedence-)}
B65D 39/0029	• • {-Plastic closures other than those covered by groups B65D 39/0011 to B65D 39/0023 -}
B65D 39/0035	• • {Swing or hinged stoppers, e.g. for "Grolsch"-type bottles (-toggle mechanisms B65D 45/06 or B65D 45/16 -)}
B65D 39/0041	• • {Bungs, e.g. wooden or rubber, for barrels or the like (- B65D 39/08 takes precedence-)}
B65D 39/0047	• • {Glass, ceramic or metal stoppers for perfume bottles or the like (- B65D 39/0035 takes precedence-)}
B65D 39/0052	• {made in more than one piece (- B65D 39/02 , B65D 39/04 , B65D 39/06 , B65D 39/08 take precedence-)}
B65D 39/0076	• • {-Plastic closures other than those covered by groups B65D 39/0058 to B65D 39/007 -}
B65D 39/0082	• • {Swing or hinged stoppers, e.g. for "Grolsch"-type bottles (-toggle mechanisms B65D 45/06 or B65D 45/16 -)}
B65D 39/0088	• • {Bungs, e.g. wooden or rubber, for barrels or the like (- B65D 39/08 takes precedence-)}
B65D 39/0094	• • {Glass, ceramic or metal stoppers for perfume bottles or the like (- B65D 39/0082 takes precedence-)}
B65D 39/02	• Disc closures (-discs with flanges B65D 39/04 -)
B65D 41/00	Caps, e.g. crown caps, crown seals, i.e. members having parts arranged for engagement with the external periphery of a neck or wall defining a pouring opening or discharge aperture; Protective cap-like covers for closure members, e.g. decorative covers of metal foil or paper (- B65D 45/00 takes precedence; combinations of caps and protective cap-like covers B65D 51/18 ; making closures by working metal sheet B21D 51/44 ; affixing labels B65C 3/06 -)
B65D 41/005	• {with integral sealing means (- B65D 41/02 takes precedence-)}
U B65D 41/02	• Caps or cap-like covers without lines of weakness, tearing strips, tags, or like opening or removal devices
U B65D 41/04	• • Threaded or like caps or cap-like covers secured by rotation
B65D 41/0407	• • • {with integral sealing means (- B65D 41/065 takes precedence-)}
B65D 41/0428	• • • {formed by a collar, flange, rib or the like contacting the top rim or the top edges or the external surface of a container neck (- B65D 41/0421 takes precedence-)}

- U B65D 41/0435 . . . {with separate sealing elements}
- B65D 41/0442 {Collars or rings ([B65D 41/0457](#) takes precedence-)}
- B65D 41/045 {Discs ([B65D 41/0457](#) takes precedence-)}
- B65D 41/0492 . . . {formed by several elements connected together ([B65D 41/0478](#) takes precedence-)}

- U B65D 41/16 . . . Snap-on caps or cap-like covers
- B65D 41/165 {with integral internal sealing means ([B65D 41/17](#) takes precedence-)}
- B65D 41/18 non-metallic, e.g. made of paper or plastics ([B65D 41/17](#) takes precedence-)}

- U B65D 41/32 . . . Caps or cap-like covers with lines of weakness, tearing-strips, tags, or like opening or removal devices, e.g. to facilitate formation of pouring openings
- B65D 41/34 . . . Threaded or like caps or cap-like covers {provided with tamper elements formed in, or attached to, the closure skirt}
- B65D 41/3423 {with flexible tabs, or elements rotated from a non-engaging to an engaging position, formed on the tamper element or in the closure skirt ([B65D 41/3404](#) takes precedence-)}
- B65D 41/3442 {with rigid bead or projections formed on the tamper element and coating with bead or projections on the container ([B65D 41/3404](#) takes precedence-)}
- B65D 41/348 {the tamper element being rolled or pressed to conform to the shape of the container, e.g. metallic closures ([B65D 41/3404](#), [B65D 41/3423](#) take precedence-)}
- B65D 41/3495 {the tamper element being bonded or adhered to the container wall ([B65D 41/3461](#) takes precedence-)}

- U B65D 41/46 . . . Snap-on caps or cap-like covers
- B65D 41/465 {with integral internal sealing means ([B65D 41/47](#) takes precedence-)}
- B65D 41/48 non-metallic, e.g. made of paper, plastics ([B65D 41/47](#) takes precedence-)}
- B65D 41/62 . . . Secondary protective cap-like outer covers for closure members (-arrangements of closures with protective outer cap-like covers or of two or more co-operating closures [B65D 51/18](#)-)

- B65D 43/00** **Lids or covers for rigid or semi-rigid containers (-for cooking vessels [A47J 36/06](#) ; covers for pressure vessels in general [F16J 13/00](#)-)**
- B65D 43/02 . . . Removable lids or covers (-with means for piercing, cutting, or tearing a frangible inner closure [B65D 51/22](#)-)

- U B65D 43/0202 . . . {without integral tamper element}
- U B65D 43/0204 {secured by snapping over beads or projections}
- B65D 43/0208 {on both the inside and the outside of the mouth of the container ([B65D 43/0206](#) takes precedence-)}
- B65D 43/021 {only on the inside, or a part turned to the inside, of the mouth ([B65D 43/0206](#) takes precedence-)}
- B65D 43/0212 {only on the outside, or a part turned to the outside, of the mouth ([B65D 43/0206](#) takes precedence-)}
- B65D 43/0214 {secured only by friction or gravity ([B65D 43/0204](#) takes precedence-)}
- B65D 43/0218 {on both the inside and the outside of the mouth of the container ([B65D 43/0216](#) takes precedence-)}
- B65D 43/022 {only on the inside, or a part turned to the inside, of the mouth of the container ([B65D 43/0216](#) takes precedence-)}
- B65D 43/0222 {only on the outside, or a part turned to the outside, of the mouth of the container ([B65D 43/0216](#) takes precedence-)}

- U B65D 43/0225 . . . {secured by rotation}
- B65D 43/0229 {only on the inside, or a part turned to the inside, of the mouth of the container (-B65D 43/0227 takes precedence-)}
- B65D 43/0231 {only on the outside, or a part turned to the outside, of the mouth of the container (-B65D 43/0227 takes precedence-)}
- U B65D 43/0235 . . {with integral tamper element}
- U B65D 43/0237 . . . {secured by snapping over beads or projections before removal of the tamper element}
- B65D 43/0249 {on both the inside and the outside of the mouth of the container (-B65D 43/0239 takes precedence-)}
- B65D 43/0254 {only on the inside, or a part turned to the inside, of the mouth of the container (-B65D 43/0239 takes precedence-)}
- B65D 43/0256 {only on the outside, or a part turned to the outside, of the mouth of the container (-B65D 43/0239 takes precedence-)}
- B65D 43/0264 . . . {secured only by friction or gravity before removal of the tamper element (-B65D 43/0237 takes precedence-)}
- B65D 43/0268 {on both the inside and the outside of the mouth of the container (-B65D 43/0266 takes precedence-)}
- B65D 43/0272 {only on the inside, or a part turned to the inside, of the mouth of the container (-B65D 43/0266 takes precedence-)}
- B65D 43/0274 {only on the outside, or a part turned to the outside, of the mouth of the container (-B65D 43/0266 takes precedence-)}
- U B65D 43/0277 . . . {secured by rotation before removal of the tamper element}
- B65D 43/0281 {only on the inside, or a part turned to the inside, of the mouth of the container (-B65D 43/0279 takes precedence-)}
- B65D 43/0283 {only on the outside, or a part turned to the outside, of the mouth of the container (-B65D 43/0279 takes precedence-)}
- B65D 43/08 . . having a peripheral flange fitting over the rim of the container{ not in use, covered by B65D 43/0222 and B65D 43/0274 + L65D43 codes-}
- U B65D 43/14 . Non-removable lids or covers
- B65D 43/16 . . hinged for upward or downward movement ({ cigar or cigarette receptacles A24F 15/00 ; suitcases, étuis A45C ; casings for cosmetic substances with hinged covers A45D 40/22 ; toolboxes B25H 3/02 } ; hinges of door or similar type E05D ; { boxes for switchboards with hinged covers H02B 1/066 })
- B65D 43/162 . . . {the container, the lid and the hinge being made of one piece (-B65D 43/161 takes precedence-)}
- B65D 43/163 . . . {the container and the lid being made separately (-B65D 43/161 takes precedence-)}
- B65D 43/24 . . Devices for retaining in open position{(-holding lids in open position in general E05C 17/00 ; hinges with means for holding open E05D 11/10-)}
- B65D 43/26 . Mechanisms for opening or closing, e.g. pedal-operated{(-for refuse receptacles B65F 1/1623-)}
- B65D 45/00 Clamping or other pressure-applying devices for securing or retaining closure members (-screw-threaded or bayonet connections between stoppers or caps and containers B65D 39/08 , B65D 41/04 , B65D 41/34 ; expansible stoppers B65D 39/12 ; for pressure vessels in general F16J 13/00-)**
- U B65D 45/02 . for applying axial pressure to engage closure with sealing surface
- B65D 45/025 . . {Closure members opened by lever action and maintained closed by spring action (-B65D 45/04 takes precedence-)}

- B65D 45/04
- comprising U-shaped or bifurcated members coating with containers {these members remaining connected with the closure and with the container when the container is open}, e.g. pivoted bails
- B65D 45/06
- • associated with toggle levers, e.g. swing stopper arrangements {forming levers or links by working wire [B21F 45/04](#)}
- B65D 45/16
- Clips, hooks, or clamps {which are removable, or which remain connected either with the closure or with the container when the container is open}, e.g. C-shaped {U-shaped or bifurcated members [B65D 45/04](#)}
- B65D 45/30
- • Annular members, e.g. with snap-over action, screw-threaded {[B65D 45/32](#) takes precedence}
- B65D 45/305
- • {Screw-threaded or bayonet-type annular members cooperating with an intermediate ring {[B65D 41/08](#) , [B65D 51/14](#) takes precedence}}
- B65D 45/32
- for applying radial {or radial and axial} pressure, e.g. contractible bands encircling closure member
- B65D 45/322
- {the clamping device being an annular member moved axially to clamp the closure by using radial pressure {[B65D 55/0863](#) , [B65D 55/0872](#) take precedence}}
- B65D 45/325
- • {the annular member being screw-threaded or bayonet-type {[B65D 51/14](#) takes precedence}}
- B65D 45/327
- • {the annular member applying radial pressure against the inner surface of the container wall {[B65D 55/0863](#) , [B65D 55/0872](#) take precedence}}
- B65D 47/00**
- Closures with filling and discharging, or with discharging, devices {dispensers for liquid soap [A47K 5/12](#) ; desk equipment for applying liquid by contact with surfaces [B43M 11/00](#) ; fluid delivery valves in general [F16K 21/00](#)}**
- U B65D 47/04
- Closures with discharging devices other than pumps
- B65D 47/046
- • {Closures with swivelling dispensing devices {containers with swivelling devices comprising a bottom wall and two side walls [B65D 25/525](#)}
- B65D 47/06
- • with pouring spouts or tubes; with discharge nozzles or passages {with slidable spouts [B65D 47/26](#)}
- U B65D 47/065
- • {with hinged, foldable or pivotable spouts}
- B65D 47/066
- • • {the spout being either flexible or having a flexible wall portion, whereby the spout is foldable between a dispensing and a non-dispensing position {[B65D 47/2043](#) takes precedence}}
- B65D 47/08
- • • having articulated or hinged closures {[B65D 55/16](#) takes precedence}
- B65D 47/18
- • • for discharging drops; Droppers {droppers in general [B01L 3/00](#) ; { pipettes connected to container closures [B01L 3/0282](#) }
- B65D 47/20
- • comprising hand-operated members for controlling discharge {closures with liquid-dispensing taps or cocks [B67D 3/04](#)}
- U B65D 47/2018
- • • {comprising a valve or like element which is opened or closed by deformation of the container or closure}
- B65D 47/2031
- • • {the element being formed by a slit, narrow opening or constrictable spout, the size of the outlet passage being able to be varied by increasing or decreasing the pressure {[B65D 47/2025](#) takes precedence}}
- B65D 47/2056
- • • {lift valve type {lift valves not opened by deformation [B65D 47/24](#)}
- B65D 47/2093
- • • {slide valve type {slide valves not opened by deformation [B65D 47/26](#)}
- B65D 47/24
- • • with poppet valves {or lift valves, i.e. valves opening or closing a passageway by a relative motion substantially perpendicular to the plane of the seat}
- B65D 47/248
- • • {the valve being opened or closed by imparting a motion to the valve stem {[B65D 47/244](#) , [B65D 47/245](#) take precedence}}

- U B65D 47/26
- • • with slide valves, {i.e. valves that open and close a passageway by sliding over a port}, e.g. formed with slidable spouts
- B65D 47/261
- • • • {having a rotational or helicoidal movement (~~B65D 47/30~~ takes precedence-)}
- B65D 47/265
- • • • • {between planar parts (~~B65D 47/24~~ takes precedence-)}
- B65D 47/266
- • • • • {the rotational movement being transmitted by displacement of an additional external element, e.g. overcap (~~B65D 47/265~~ takes precedence-)}
- B65D 47/268
- • • • • {the valve member pivoting about an axis perpendicular to the container mouth axis (~~B65D 47/266~~ takes precedence-)}
- B65D 47/36
- Closures with frangible parts adapted to be pierced, torn, or removed, to provide discharge openings (~~B65D 51/18~~ takes precedence; caps with piercable membranes [B65D 41/20](#) , [B65D 41/50](#)-)
- B65D 47/42
- with pads or like contents-applying means ({ contents-applying means associated to aerosol container nozzles [B65D 83/285](#) ; } brushes combined or associated with containers [A46B 11/00](#) ; swabs for applying media to the human body from an integral supply ~~A61F13/40~~-)
- B65D 47/44
- • combined with slits opening when container is deformed or when pad is pressed against surface to which contents are to be applied (pliable tubular containers with valves opening when closure is pressed against surfaces(~~B65D35/54~~ not used- [B65D 47/248](#)))
- B65D 49/00**
- Arrangements or devices for preventing refilling of containers (-integral, or permanently secured, closures for containers specially adapted to be opened by cutting, piercing, or tearing of wall portions [B65D 17/00](#) ; for initial filling and for preventing subsequent refilling [B65D 47/02](#) -)**
- B65D 50/00**
- Closures with means for discouraging unauthorised opening or removal thereof, with or without indicating means, e.g. child-proof closures (-tamper-indicating closures without means for discouraging, see the relevant groups, e.g. [B65D 41/32](#) , [B65D 51/20](#)-)**
- U B65D 50/02
- openable or removable by the combination of plural actions
- B65D 50/04
- • requiring the combination of simultaneous actions, e.g. depress and turn, lift and turn, maintain a part and turn another one (~~caps or covers secured by rotation with bayonet cams [B65D 41/06](#) , [B65D 41/36](#)~~-)
- B65D 50/045
- • • {where one action elastically deforms or deflects at least part of the closure, the container or an intermediate element, e.g. a ring (~~B65D 50/041~~ , [B65D 50/043](#) take precedence-)}
- U B65D 50/06
- • requiring the combination of different actions in succession
- B65D 50/061
- • • {being disengageable from container only after rotational alignment of closure, or other means inhibiting removal of closure, with container, e.g. tortuous path type (~~B65D 55/145~~ takes precedence-)}
- B65D 50/065
- • • {with separate ring having to be axially displaced to permit user to access closure (~~B65D 50/062~~ , [B65D 50/064](#) take precedence; radial pressure applying means [B65D 45/32](#)-)}
- B65D 50/066
- • • {whereby parts of the container or closure having to be deformed, i.e. bi-stable movement (~~B65D 50/045~~ takes precedence-)}
- B65D 50/067
- • • {using integral or non-integral accessories, e.g. tool, key (~~B65D 50/062~~ , [B65D 50/064](#) , [B65D 50/065](#) take precedence-)}
- B65D 51/00**
- Closures not otherwise provided for (-covers or similar closures as engineering elements for pressure vessels in general [F16J 13/00](#)-)**

- B65D 51/02
 - Loosely-engaging lids or covers for jars, cans, or like containers for liquids without means for effecting sealing of container ~~(-for cooking-vessels [A47J 36/06-](#))~~
- B65D 51/04
 - • hinged ~~(-[B65D 51/10](#) takes precedence-)~~
- U B65D 51/16
 - with means for venting air or gas
- U B65D 51/1605
 - • {whereby the interior of the container is maintained in permanent gaseous communication with the exterior}
- B65D 51/1611
 - • • {by means of an orifice, capillary or labyrinth passage ~~(-[B65D 51/1616](#) , [B65D 51/1622](#) take precedence-)}~~
- U B65D 51/1633
 - • {whereby venting occurs by automatic opening of the closure, container or other element}
- B65D 51/1644
 - • • {the element being a valve ~~(-[B65D 51/1661](#) takes precedence-)}~~
- B65D 51/18
 - Arrangements of closures with protective outer cap-like covers or of two or more co-operating closures ~~(-secondary protective cap-like outer covers for caps [B65D 41/62](#) ; { [B65D 51/247](#) takes precedence })~~
- B65D 51/20
 - • Caps, lids, or covers co-operating with an inner closure arranged to be opened by piercing, cutting, or tearing ~~{(-[B65D 51/185](#) takes precedence; co-operating with an auxiliary container for additional articles or materials [B65D 51/28-](#))}~~
- U B65D 51/22
 - • • having means for piercing, cutting, or tearing the inner closure
- U B65D 51/221
 - • • • {a major part of the inner closure being left inside the container after the opening}
- U B65D 51/222
 - • • • • {the piercing or cutting means being integral with, or fixedly attached to, the outer closure}
- B65D 51/224
 - • • • • • {the outer closure comprising flexible parts ~~(-[B65D 51/223](#) takes precedence-)}~~
- B65D 51/225
 - • • • • • {and further comprising a device first inhibiting displacement of the outer closure ~~(-[B65D 51/223](#) takes precedence-)}~~
- B65D 51/24
 - combined {or co-operating}with auxiliary devices for non-closing purposes
- B65D 51/243
 - • {combined with an opening device ~~(-[B65D 51/22](#) takes precedence-)}~~
- B65D 51/245
 - • {provided with decoration, information or contents indicating devices, labels ~~(-[B65D 81/366](#) takes precedence-)}~~
- B65D 51/246
 - • {provided with eating utensils or spatulas ~~(-applicator rods or brushes [B65D 51/32-](#))}~~
- B65D 51/248
 - • {the closure being provided with transient audible or visual signaling means, e.g. for indicating dispensing, or other illuminating or acoustic devices, e.g. whistles ~~(-[B65D 55/026](#) , [B65D 55/028](#) take precedence; for indicating incorrect storage [B65D 79/02-](#))}~~
- B65D 51/28
 - • with auxiliary containers for additional articles or materials ~~{(-[B65D 51/247](#) takes precedence-)}~~
- U B65D 51/2807
 - • • {the closure presenting means for placing the additional articles or materials in contact with the main contents by acting on a part of the closure without removing the closure, e.g. by pushing down, pulling up, rotating or turning a part of the closure, or upon initial opening of the container}
- U B65D 51/2814
 - • • • {the additional article or materials being released by piercing, cutting or tearing an element enclosing it}
- B65D 51/2828
 - • • • • {said element being a film or a foil ~~(-[B65D 51/2821](#) , [B65D 51/2842](#) take precedence-)}~~
- B65D 51/2842
 - • • • • {said element being provided with a preformed weakened line ~~(-[B65D 51/2821](#) takes precedence-)}~~

- B65D 51/2857 {the additional article or materials being released by displacing or removing an element enclosing it (-B65D 51/2814 takes precedence-)}
- B65D 51/2892 {the element, e.g. a valve, opening an aperture of the auxiliary container (-B65D 51/2864 , B65D 51/2878 take precedence-)}
- B65D 51/32 . . with brushes or rods for applying or stirring contents (-droppers B65D 47/18 ; { eating utensils or spatulas B65D 51/246 })
- B65D 53/00 Sealing or packing elements (-sealings in general F16J 15/00-); Sealings formed by liquid or plastics material**
- NOTE
Sealings or packing means combined with particular closures are classified with the closures, e.g. in subgroups of B65D 39/00 together with indexing codes out of B65D339/00, or in the groups B65D 41/005 , B65D 41/0435
- U B65D 55/00 Accessories for container closures not otherwise provided for**
- B65D 55/02 . Locking devices; Means for discouraging or indicating unauthorised opening or removal of closure (-protective covers for bottles B65D 23/08 ; { B65D 41/32 takes precedence } ; protective cap-like outer covers for bottle or jar closures B65D 41/28 ; pressure-applying means B65D 45/00]-)
- B65D 55/022 . . {with ratchet effect between relatively rotating parts (-B65D 41/3404 , B65D 50/04 take precedence-)}
- B65D 55/024 . . {Closures in which a part has to be ruptured to gain access to the contents (-B65D 41/32 , B65D 43/0235 , B65D 55/022 , B65D 55/06 take precedence-)}
- B65D 55/026 . . {initial opening or unauthorised access being indicated by a visual change using indicators other than tearable means, e.g. change of colour, pattern or opacity (-B65D 55/066 takes precedence-)}
- B65D 55/06 . . Deformable or tearable wires, strings, or strips (-containers specially constructed to be opened by tear-strips, strings or the like B65D 17/00 ; caps or cap-like closures with tear-strips B65D 41/32-); Use of seals, e.g. destructible locking pins ({ B65D 55/022 takes precedence } ; applying labels to bottles B65C 3/06 , B65C 9/00 ; seals per se G09F 3/00-)
- U B65D 55/08 Annular elements encircling container necks**
- B65D 55/0809 {Destructible filamentary elements (-non-destructible elements B65D 45/322-)}
- U B65D 55/0818 [Destructible or permanently removable bands, e.g. adhesive]**
- B65D 55/0827 {Separate tamper bands inserted between container and closure (-B65D 41/32 takes precedence-)}
- B65D 55/0836 {Metallic strips, e.g. soldered on container and lid (-containers with integral tearing strips with tongues or tags for engagement by slotted keys B65D 17/22-)}
- B65D 55/0854 {Shrink-film bands (-B65D 41/54 , B65D 41/62 take precedence-)}
- B65D 55/0863 {Plastic snap-on cap-like collars having frangible parts (-collar for maintaining rigid discs in sealing engagement with mouth of containers B65D 51/145-)}
- B65D 55/0872 {Destructible rigid elements snapping into annular grooves in closure for maintaining closure on container (-non-destructible elements B65D 45/322-)}
- B65D 55/0881 {Closure not directly connected to container, but connected by means of a destructible intermediate ring (-B65D 55/0863 takes precedence-)}

- B65D 55/089 . . . {Annular tamper band connected to the closure, but not coacting with the container for preventing initial downward motion, e.g. on two-parts child-proof closures (~~B65D 41/32~~ takes precedence)}
- B65D 55/10 . Locking pins (~~destructible locking pins B65D 55/06~~)
- B65D 55/12 . Devices or means with relatively-moving parts co-operating with abutments on bottle or jar (~~B65D 55/022~~ takes precedence); applications of locks ~~B65D 55/14~~)
- B65D 57/00** **Internal frames or supports for flexible articles, e.g. stiffeners; Separators for articles packaged in stacks or groups, e.g. for preventing adhesion of sticky articles** (~~B65D 71/70~~ takes precedence)}
- B65D 59/00** **Plugs, sleeves, caps, or like rigid or semi-rigid elements for protecting parts of articles or for bundling articles, e.g. protectors for screw-threads, end caps for tubes or for bundling rod-shaped articles** (~~stopping flow from or in pipes or hoses by means of plugs F16L 55/11, by means of caps F16L 55/115; protection of pipes or objects of similar shape against external or internal damage or wear F16L 57/00~~)
- B65D 61/00** **External frames or supports adapted to be assembled around, or applied to, articles** (~~collapsible containers B65D 5/00, B65D 7/24, B65D 9/12, B65D 11/18~~)
- B65D 63/00** **Flexible elongated elements, e.g. straps, for bundling or supporting articles** (~~attached to or integral with bags or sacks B65D 33/165; for securing load B60P 7/0823; for supporting pipes, cables or protective tubing F16L 3/137; { for bundling pipes F16L 3/233 }~~)
- U B65D 63/10 . Non-metallic straps, tapes, or bands; Filamentary elements, e.g. strings, threads, wires; Joints between ends thereof
- B65D 63/1009 . {Adhesive tapes (~~composition of the tapes C09J 7/00~~)}
- B65D 65/00** **Wrappers or flexible covers; Packaging materials of special type or form** (~~wrappers or envelopes with shock-absorbing properties B65D 81/03; layered products per se B32B; materials per se, see the relevant classes~~)
- NOTE
Attention is drawn to the definition of "packaging element" in Note (5) following the title of this subclass
- U B65D 65/38 . Packaging materials of special type or form
- B65D 65/40 . Applications of laminates for particular packaging purposes (~~B65D 1/0215, B65D 1/28, B65D 3/22, B65D 5/0281, B65D 5/563, B65D 9/30, B65D 29/02, B65D 31/02, B65D 75/26, B65D 77/2024, B65D 81/1275, B65D 81/3811, B65D 81/3823, B65D 81/3834, B65D 81/3846, B65D 81/3858, B65D 81/3874, B65D 81/3886, B65D 81/3897~~ take precedence; laminates per se or laminated packages characterised by the composition or-)
- NOTE
A packaging purpose covered by another group of ~~B65D~~ should be classified in that group of ~~B65D~~ and in ~~B32B~~]
- B65D 67/00** **Kinds or types of packaging elements not otherwise provided for** (~~B65D 5/425~~ takes precedence)}
- B65D 67/02 . Clips or clamps for holding articles together for convenience of storage or transport

- B65D 69/00** Articles joined together for convenience of storage or transport without the use of packaging elements ({ packages joined together [B65D 5/427](#) , [B65D 21/02](#) } ; joining articles for convenience of packaging [B65B 17/02](#)-)
- B65D 71/00** Bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carrier for plural receptacles such as beer cans, pop bottles; Bales of material (-binding of hay or straw [A01D](#) , [A01F 1/00](#) ; bundling or baling [B65B](#) , e.g. [B65D 13/00](#) , [B65D 27/00](#)-)
- B65D 71/0085 • {Packaging elements adhered to the articles, e.g. a carton sheet (-adhesive tapes [B65D 63/1009](#)-)}
- U B65D 71/06 • Packaging elements holding or encircling completely or almost completely the bundle of articles, e.g. wrappers
- B65D 71/063 • • {Wrappers formed by one or more films or the like, e.g. nets (-[B65D 71/08](#) takes precedence; wrappers formed by folding a single blank [B65D 71/12](#) ; wrappers formed by folding two or more blanks [B65D 71/38](#)-)}
- B65D 71/066 • • • {and provided with inserts (-[B65D 7/10](#) takes precedence)-}
- B65D 71/08 • • Wrappers shrunk by heat {or under tension, e.g. stretch films, films tensioned by compressed articles(-wrappers formed by folding a single blank [B65D 71/12](#) ; wrappers formed by folding two or more blanks [B65D 71/38](#)-)}
- B65D 71/12 • • the packaging elements {e.g. wrappers}being formed by folding a single blank
- B65D 71/14 • • • having a tubular shape {e.g. tubular wrappers}without end walls (-sleeves [B65D 59/04](#)-)
- U B65D 71/28 • • • • characterised by the handles
- B65D 71/30 • • • • • unitary {i.e. integral}with the tubular packaging elements
- B65D 71/34 • • • • characterised by {weakened lines or other opening devices}
- B65D 71/38 • • the packaging elements {e.g. wrappers}being formed by folding and interconnecting two or more blanks
- B65D 71/40 • comprising a plurality of articles held together only partially by packaging elements formed by folding a blank {or several blanks}
- U B65D 71/70 • Trays provided with projections or recesses in order to assemble multiple articles, e.g. intermediate elements for stacking
- B65D 71/72 • • formed by folding one or more blanks, the articles being inserted in openings in a wall{-trays with apertures located within an external paper container [B65D 5/5038](#)-)}
- B65D 73/00** Packages comprising articles attached to cards, sheets, or webs ({ [B65D 85/18](#) takes precedence } ; cards for buttons, collar-studs, or sleeve-links [A44B 7/00](#) ; attaching articles to cards, sheets, or webs [B65B 15/00](#)-)
- B65D 73/0007 • {the articles being attached to the plane surface of a single card (-[B65D 75/30](#) takes precedence-)}
- B65D 73/0035 • {the articles being retained within a recess or a series of recesses provided in a single card (-[B65D 75/32](#) takes precedence-)}
- B65D 73/0064 • {the articles being supported by or suspended from a tag-like element (-hangers for wearing apparel [A47G 25/00](#)-)}
- B65D 73/0078 • {the articles being retained or enclosed in a folded-over or doubled card (-[B65D 75/20](#) takes precedence-)}
- B65D 75/00** Packages comprising articles or materials partially or wholly enclosed in strips, sheets, blanks, tubes, or webs of flexible sheet material, e.g. in folded wrappers (-[B65D 71/00](#) takes precedence; wrapping [B65B 11/00](#)-)
- B65D 75/002 • {in shrink films (-[B65D 71/08](#) takes precedence-)}
- U B65D 75/04 • Articles or materials wholly enclosed in single sheets or wrapper blanks

- U B65D 75/20
 - • in sheets or blanks doubled around contents and having their opposed free margins united, e.g. by pressure-sensitive adhesive, crimping, heat-sealing, or welding
- B65D 75/22
 - • • the sheet or blank being recessed to accommodate contents{(containers simulating a book [B65D 77/006](#))}
- B65D 75/225
 - • • {the sheet or blank comprising more than one fold line ([B65D 75/245](#) takes precedence)}
- U B65D 75/28
 - Articles or materials wholly enclosed in composite wrappers, i.e. wrappers formed by associating or interconnecting two or more sheets or blanks
- U B65D 75/30
 - • Articles or materials enclosed between two opposed sheets or blanks having their margins united, e.g. by pressure-sensitive adhesive, crimping, heat-sealing, or welding
- U B65D 75/32
 - • • one or both sheets or blanks being recessed to accommodate contents
- B65D 75/36
 - • • • one sheet or blank being recessed and the other formed of relatively stiff flat sheet material, e.g. blister packages,{the recess or recesses being preformed([B65D 73/0057](#) , [B65D 73/0092](#) take precedence)}
- B65D 75/38
 - Articles or materials enclosed in two or more wrappers disposed one inside the other{(for shock absorbing purposes [B65D 81/03](#) ; for thermal insulating purposes [B65D 81/3893](#))}
- U B65D 75/52
 - Details
- B65D 75/527
 - • {Tear-lines for separating a package into individual packages ([B65D 1/30](#) , [B65D 21/0206](#) , [B65D 75/34](#) take precedence)}
- B65D 75/54
 - • Cards, coupons, or other inserts or accessories {(opening devices [B65D 75/70](#))}
- B65D 75/545
 - • • {the inserts or accessories being located within a pouch or envelope attached to the exterior of the packages, e.g. shipping mailers {(envelope construction [B65D 27/00](#))}
- U B65D 75/56
 - • • Handles or other suspension means
- B65D 75/563
 - • • • {Integral handles or suspension means {([B65D 75/566](#) takes precedence)}
- B65D 75/58
 - • Opening or contents-removing devices added or incorporated during package manufacture{([B65D 75/36](#) , [B65D 85/1027](#) take precedence)}
- B65D 75/5827
 - • • {Tear-lines provided in a wall portion {([B65D 75/5805](#), [B65D 75/5816](#) take precedence)}
- U B65D 75/5833
 - • • • {for tearing out a portion of the wall}
- B65D 75/5844
 - • • • • {the portion of the wall being a narrow strip, e.g. between lines of weakness ([B65D 75/5838](#) takes precedence)}
- B65D 75/5861
 - • • {Spouts {([B65D 75/5811](#) , [B65D 75/5822](#) take precedence)}
- B65D 75/5888
 - • • {Tear-lines for removing successive sections of a package {(for separating package into individual packages [B65D 75/527](#))}
- U **B65D 77/00**
 - Packages formed by enclosing articles or materials in preformed containers, e.g. boxes, cartons, sacks, bags**
- B65D 77/006
 - {Containers simulating a book {(pencil cases [A45C 11/34](#) ; books, book covers [B42D](#) ; albums, filing appliances, e.g. boxes, [B42F](#) ; for videos [G11B](#))}
- U B65D 77/04
 - Articles or materials enclosed in two or more containers disposed one within another
- U B65D 77/0413
 - • {the inner and outer containers being rigid or semi-rigid and the outer container being of polygonal cross-section formed by folding or erecting one or more blanks, e.g. carton}

- B65D 77/0433
 - • • {the inner container being a tray or like shallow container, not formed by folding or erecting one or more blanks (-[B65D 81/3862](#) takes precedence-)}
- B65D 77/0446
 - • {the inner and outer containers being rigid or semi-rigid and the outer container being of polygonal cross-section not formed by folding or erecting one or more blanks (-[B65D 81/3825](#) takes precedence-)}
- B65D 77/048
 - • {the inner and outer containers being rigid and the outer container being of curved cross-section, e.g. cylindrical (-[B65D 81/3825](#) takes precedence-)}
- B65D 77/0486
 - • • {the inner container being coaxially disposed within the outer container (-[B65D 81/3876](#) takes precedence-)}
- B65D 77/06
 - • Liquids or semi-liquids {or other materials or articles} enclosed in flexible containers disposed within rigid containers
- B65D 77/10
 - Container closures formed after filling ({ for sacks or bags [B65D 33/16](#) } ; closing filled containers in association with packaging [B65B 7/00](#) , [B65B 51/00](#)-)
- U B65D 77/20
 - • by applying separate lids or covers, {i.e. flexible membrane or foil-like covers}
- B65D 77/2004
 - • • {the cover being maintained on the container by mechanical means, e.g. crimping, clamping, riveting (-[B65D 77/2024](#) takes precedence-)}
- U B65D 77/2024
 - • • {the cover being welded or adhered to the container}
- U B65D 77/2028
 - • • • {Means for opening the cover other than, or in addition to, a pull tab}
- U B65D 77/2032
 - • • • • {by peeling or tearing the cover from the container}
- B65D 77/204
 - • • • • {the cover having an unsealed portion for initiating removal (-[B65D 77/2036](#) takes precedence-)}
- B65D 77/2044
 - • • • • • {whereby a layer of the container or cover fails, e.g. cohesive failure (-[B65D 77/2036](#) takes precedence-)}
- B65D 77/2048
 - • • • • • • {whereby part of the container or cover has been weakened, e.g. perforated or precut (-[B65D 77/2036](#) takes precedence-)}
- U B65D 77/22
 - Details
- B65D 77/24
 - • Inserts or accessories added or incorporated during filling of containers (-opening devices [B65D 77/30](#)-)
- B65D 77/245
 - • • {Utensils for removing the contents from the package, e.g. spoons, forks, spatulas (-[B65D 77/28](#) takes precedence-)}
- B65D 77/28
 - • • Cards, coupons, or drinking straws ({-[B65D 5/4212](#) , [B65D 23/14](#) , [B65D 25/205](#) , [B65D 33/004](#) , [B65D 51/245](#) , [B65D 75/54](#) take precedence-})
- B65D 77/286
 - • • • {formed integrally with the container (-containers having integrally formed tubes with contents expelled by deforming the container [B65D 1/326](#)-)}
- B65D 77/30
 - • Opening or contents-removing devices added or incorporated during filling or closing of containers ({-[B65D 77/20](#) takes precedence-})
- U **B65D 79/00**
 - **Kinds or details of packages, not otherwise provided for**
- B65D 79/02
 - Arrangements or devices for indicating incorrect storage or transport ({ [B65D 79/005](#) takes precedence } ; measuring devices [G01](#)-)
- U **B65D 81/00**
 - **Containers, packaging elements, or packages, for contents presenting particular transport or storage problems, or adapted to be used for non-packaging purposes after removal of contents**
- U B65D 2081/001
 - {for packaging articles or materials intended to be mixed or infused with a liquid without having previously been removed from the package}
- U B65D 2081/002
 - • {Packages adapted to be totally immersed in the liquid to release part or all of their contents, e.g. tea bags}
- B65D 2081/004
 - • • {with special features facilitating their manipulation or suspension (-[B65D 2081/005](#) takes precedence-)}

- B65D 2081/007
 - • {Packages adapted to allow liquid to pass through the contents (~~B65D 2081/002~~ takes precedence)}
- B65D 81/02
 - specially adapted to protect contents from mechanical damage ({~~containers of polygonal cross-section provided with internal protecting elements for contents B65D 5/50~~ ; devices to locate articles in containers B65D 25/10})
- B65D 81/022
 - • {Containers made of shock-absorbing material (~~B65D 81/03~~ takes precedence; for thermal insulating purposes B65D 81/3813)}
- U B65D 81/025
 - • {Containers made of sheet-like material and having a shape to accommodate contents}
- B65D 81/027
 - • • {double-walled (~~for thermal insulating purposes B65D 81/3818~~ , ~~B65D 81/383~~)}
- B65D 81/03
 - • Wrappers or envelopes with shock-absorbing properties, e.g. bubble films ({~~for thermal insulating purposes B65D 81/3888~~)}
- B65D 81/05
 - • maintaining contents at spaced relation from package walls, or from other contents ({ B65D 81/022 , B65D 81/025 , } B65D 81/03 take precedence-)
- U B65D 81/053
 - • • {Corner, edge or end protectors}
- B65D 81/054
 - • • • {Protectors contacting two generally perpendicular surfaces of the packaged article, e.g. edge protectors (~~B65D 81/055~~ takes precedence)}
- B65D 81/055
 - • • • {Protectors contacting three surfaces of the packaged article, e.g. three-sided edge protectors (~~B65D 81/058~~ takes precedence)}
- B65D 81/07
 - • • using resilient suspension means ({~~B65D 81/051~~ takes precedence)}
- B65D 81/09
 - • • using flowable discrete elements of shock-absorbing material, e.g. pellets, popcorn ({~~B65D 81/051~~ takes precedence)}
- U B65D 81/107
 - • • using blocks of shock-absorbing material
- B65D 81/113
 - • • • of a shape specially adapted to accommodate contents ({~~B65D 81/053~~ takes precedence)}
- B65D 81/127
 - • • using rigid or semi-rigid sheets of shock-absorbing material ({~~B65D 81/025~~ takes precedence)}
- B65D 81/1275
 - • • • {laminated or bonded to the inner wall of a container (~~for thermal insulating purposes B65D 81/3858~~)}
- B65D 81/133
 - • • • of a shape specially adapted to accommodate contents, e.g. trays ({~~B65D 81/053~~ takes precedence; thermally insulated trays B65D 81/3816 , B65D 81/3827})
- B65D 81/18
 - providing specific environment for contents, e.g. temperature above or below ambient (~~with thermal insulation B65D 81/38~~ ; ice-boxes with cooling means F25D-)
- B65D 81/20
 - • under vacuum or superatmospheric pressure, or in a special atmosphere, e.g. of inert gas ({~~B65D 81/28~~ takes precedence; containers with pressurising means for maintaining ball pressure A63B 39/025})
- U B65D 81/2007
 - • • {under vacuum}
- B65D 81/2015
 - • • • {in an at least partially rigid container (~~B65D 81/2038~~ takes precedence)}
- B65D 81/2023
 - • • • {in a flexible container (~~B65D 81/2038~~ takes precedence)}
- B65D 81/2046
 - • • {under superatmospheric pressure (~~B65D 81/2069~~ takes precedence)}
- B65D 81/24
 - Adaptations for preventing deterioration or decay of contents; Applications to the container or packaging material of food preservatives, fungicides, pesticides or animal repellants (~~with thermal insulation B65D 81/38~~)
- B65D 81/245
 - • {Internal membrane, floating cover or the like isolating the contents from the ambient atmosphere (~~loosely-attached linings B65D 25/16~~ ; dispensing pistons B65D 83/0005 ; flexible bags for expelling the contents B65D 83/0055)}

- B65D 81/26
 - with provision for draining away, or absorbing, {or removing by ventilation,} fluids, e.g. exuded by contents; {(B65D 33/01 takes precedence-)}; Applications of corrosion inhibitors or desiccators
- B65D 81/263
 - • {for ventilating the contents (B65D 5/4295 , B65D 51/1605 take precedence-)}
- B65D 81/266
 - • {for absorbing gases, e.g. oxygen absorbers or desiccants (B65D 51/244 , B65D 51/30 take precedence-)}
- B65D 81/30
 - • by excluding light or other outside radiation (-wrappers B65D 65/16-)
- B65D 81/32
 - for packaging two or more different materials which must be maintained separate prior to use in admixture (-containers with removable or destructible partitions B65D 25/08 ; { closures combined with auxiliary containers B65D 51/28 ; in aerosol containers B65D 83/682 ; amalgam capsules A61C 5/066 ; containers for pharmaceutical purposes A61J 1/20 , A61M 5/19 ; medical syringes A61M 3/005 , resin cartridges for grouting anchoring-bolts in mines E21D 20/026 })
- B65D 81/3205
 - {Separate rigid or semi-rigid containers joined to each other at their external surfaces (B65D 81/3288 takes precedence-)}
- U B65D 81/3216
 - {Rigid containers disposed one within the other}
- B65D 81/3227
 - • {arranged parallel or concentrically and permitting simultaneous dispensing of the two materials without prior mixing (B65D 81/325 takes precedence-)}
- U B65D 81/3233
 - {Flexible containers disposed within rigid containers}
- B65D 81/3244
 - • {arranged parallel or concentrically and permitting simultaneous dispensing of the two materials without prior mixing (B65D 35/22 , B65D 81/325 take precedence-)}
- B65D 81/3283
 - {Cylindrical or polygonal containers, e.g. bottles, with two or more substantially axially offset, side-by-side compartments for simultaneous dispensing (B65D 35/22 , B65D 35/242 , B65D 81/3227 , B65D 81/325 take precedence-)}
- B65D 81/34
 - for packaging foodstuffs {or other articles} intended to be cooked or heated within the package
- B65D 81/3415
 - {specially adapted to be heated in hot water, e.g. boil pouches (-dissolvable packages B65D 65/46 ; packaging articles or materials intended to be mixed or infused with a liquid B65D 85/808-)}
- B65D 81/3476
 - {Packages provided with an electrical circuit, e.g. resistances, for heating the contents (microwave susceptors B65D 2581/3463-)}
- B65D 81/3484
 - {Packages having self-contained heating means, e.g. heating generated by the reaction of two chemicals (-warming devices A47J 36/24-)}
- U B65D 81/36
 - adapted to be used for non-packaging purposes after removal of contents
- B65D 81/361
 - {Modular elements with complementary shapes, interengageable parts or the like (-toy building blocks A63H 33/04 ; building elements for walls E04B 2/02-)}
- B65D 81/365
 - {Containers, or parts thereof, simulating or being incorporated into other items, e.g. puppet, animal, vehicle, building, dumb bells (B65D 81/363 , B65D 81/368 take precedence-)}
- B65D 81/368
 - {Foldable carton-boxes simulating, or transformable into, a special configuration, e.g. a car, a house, an animal (-cartons with spaced apart images to give a 3-D effect B65D 5/4258 ; toy models made by folding paper A63H 33/16-)}
- B65D 81/38
 - with thermal insulation (-vacuum bottles or the like A47J 41/00 ; { thermal insulation of domestic water storage heaters F24H 1/182 })
- U B65D 81/3848
 - {semi-rigid container folded up from one or more blanks}

- B65D 81/3858 . . . {formed of different materials, e.g. laminated or foam filling between walls; for shock absorbing purposes [B65D 81/1275](#)-}
- B65D 81/3888 . . . {wrappers or flexible containers, e.g. pouches, bags (-for shock absorbing purposes [B65D 81/03](#)-)}

B65D 83/00

Containers or packages with special means for dispensing contents (-dispensing means incorporated in removable or non-permanently secured container closures [B65D 47/00](#) ; for shops, stores, offices, bars, or the like [A47F 1/04](#) ; showcases or cabinets with dispensing arrangements [A47F 3/02](#) ; { for surgical articles [A61B 19/026](#) } ; magazines for screws or nuts in combination with spanners, wrenches or screw-drivers [B25B 23/06](#) ; nail dispensers [B25C 3/00](#) ; for use in connection with the handling of sheets, webs, or filamentary material [B65H](#); coin deliverers [G07D 1/00](#) ; { coin-free apparatus for dispensing discrete articles [G07F 11/00](#) })

WARNING

Groups [B65D 83/75](#) to [B65D 83/759](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [B65D 83/75](#) to [B65D 83/759](#) : [B65D 83/14](#)

- B65D 83/0005 . . . {Containers or packages provided with a piston or with a movable bottom or partition having approximately the same section as the container (-[B65D 83/0072](#) takes precedence-)}
- B65D 83/0038 . . . {moved by a spring-like mechanism (-[B65D 83/005](#) , [B65D 83/0817](#) , [B65D 83/0858](#) take precedence-)}
- B65D 83/0044 . . . {the piston having a dispensing opening formed in the piston (-[B65D 83/0016](#) takes precedence-)}
- B65D 83/0094 . . . {Containers having an external wall formed as, or with, a diaphragm or the like which is deformed to expel the contents (-[B65D 1/32](#) takes precedence-)}
- B65D 83/02 . . . for dispensing rod-shaped articles, e.g. needles ({ packages for cigarettes provided with dispensing means [B65D 85/1009](#) } ; cigar or cigarette receptacles or boxes [A24F 15/00](#) ; { dispensers for drinking straws [A47G 21/184](#) })
- U B65D 83/04 . . . for dispensing annular, disc-shaped, spherical, or like small articles, e.g. tablets, pills
- B65D 83/0409 . . . {the dispensing means being adapted for delivering one article, or a single dose, upon each actuation (-[B65D 83/0445](#) takes precedence-)}
- U B65D 83/0445 . . . {all the articles being stored in individual compartments}
- B65D 83/0454 {the whole forming a circular container with rotating parts (-[B65D 83/0463](#) takes precedence-)}
- B65D 83/06 . . . for dispensing powdered or granular material ({ [B65D 83/04](#) takes precedence } ; spraying or atomising apparatus in general [B05B](#)-)
- B65D 83/08 . . . for dispensing thin flat articles in succession{(-towel dispensers intended for re-use [A47K 10/24](#)-)}

NOTE

[B65D 83/10](#) and [B65D 83/12](#) take precedence over [B65D 83/0805](#) to [B65D 83/0894](#)

- U B65D 83/0805 . . . {through an aperture in a wall}
- U B65D 83/0811 {with means for assisting dispensing}
- B65D 83/0817 {the articles being automatically urged towards the dispensing aperture, e.g. spring-loaded (-[B65D 83/0823](#) takes precedence-)}
- B65D 83/0841 {and for cutting interconnected articles (-cutting devices for dispensers intended for re-use [B65H 35/008](#)-)}

- U B65D 83/0847 . . {through an aperture at the junction of two walls}
- U B65D 83/0852 . . . {with means for assisting dispensing}
- B65D 83/0858 {the articles being automatically urged towards the dispensing aperture, e.g. spring-loaded (~~B65D 83/0864~~ takes precedence)}
- B65D 83/0882 {and for cutting interconnected articles (~~cutting devices for dispensers intended for re-use B65H 35/008~~)}
- B65D 83/14 . . for delivery of liquid or semi-liquid contents by internal gaseous pressure, i.e. aerosol containers {for a product delivered by a propellant (~~spraying devices for the destruction of noxious animals or plants A01M 7/00~~, for therapeutic purposes A61M 11/00; spraying or atomizing apparatus in general B05B; aerosol compositions, e.g. propellants C09K 3/30; pumping of fluid by direct contact of another fluid, e.g. siphons F04F; fluid-delivery valves in general F16K 21/00; discharge nozzles in general F16K 31/58; vessels for containing or storing compressed, liquefied, or solidified gases F17C)}
- B65D 83/16 . . characterised by the actuating means (~~actuation occurring by moving the aerosol container relative to an outer shell B65D 83/386; involved in metering valve assemblies B65D 83/546~~)}
- B65D 83/20 . . . {operated by manual action, e.g. button-type actuator or} actuator cap (~~actuators formed as a rigid elongate spout B65D 83/306~~)}
- B65D 83/201 {Lever-operated actuators (~~B65D 83/206~~ takes precedence)}
- B65D 83/202 {combined with a hand grip (~~Hand-held or body-worn self-defense devices using aerosol containers F41H 9/10~~ *Hand-held or body-worn self-defense devices using aerosol containers F41H 9/10*)}
- B65D 83/203 {comprising an extension rod located between the aerosol container and the hand grip (~~setting-out line markings on playing courts A63C 19/065; marking-out on finished paving by spraying from aerosol containers E01C 23/227~~)}
- B65D 83/207 {Actuators comprising a manually operated valve and being attachable to the aerosol container, e.g. downstream a valve fitted to the container; Actuators associated to container valves with valve seats located outside the aerosol container (~~portable spraying apparatus comprising pressurised supply containers B05B 7/2402, B05B 9/0805; manually actuated controlling means for spraying apparatus B05B 12/002; actuators connected to the aerosol container by a flexible tube B65D 83/756~~)}
- B65D 83/22 . . . with means to disable actuation, {e.g. with actuator locking means that can be manually put in place again after use to prevent, e.g. unintended, actuation until next use} (~~B65D 50/00~~ takes precedence; { preventing delivery when the container is incorrectly oriented B65D 83/65 })
- B65D 83/224 {Tamper indicating means obstructing initial actuation, e.g. removable (~~container closure having to be perforated B65D 83/382; tamper indicating means located in front of outlets B65D 83/7538~~)}
- U B65D 83/28 . . Nozzles, nozzle fittings or accessories specially adapted therefor
- B65D 83/285 . . . {for applying the contents, e.g. brushes, rollers, pads, spoons, razors, scrapers (~~closures with pads or like contents-applying means B65D 47/42; brushes with integral pre-pressurised reservoirs A46B 11/0017; domestic cleaning implements with liquid-feeding devices A47L 13/00~~)}
- B65D 83/38 . . Details of container body (~~pressure relief devices B65D 83/70~~)
- B65D 83/40 . . Closure caps {actuator caps { B65D 83/205 }}
- B65D 83/42 . . Filling or charging means (~~Filling liquids into containers B65B 3/12; Filling liquids into containers B65B 3/12~~; Adding propellants to aerosol containers B65B 31/003)}

- B65D 83/44
 - • Valves specially adapted therefor; Regulating devices (-filling or charging means [B65D 83/42](#) ; { pressure regulators releasing propellant inside the container [B65D 83/663](#) } ; pressure relief devices [B65D 83/70-](#))
- B65D 83/46
 - • • Tilt valves (-[B65D 83/50](#) takes precedence-)
- B65D 83/48
 - • • Lift valves, e.g. operated by push action (-[B65D 83/50](#) takes precedence; { adapted for metering and for continuous delivery [B65D 83/543](#) })
- B65D 83/56
 - • {with means for preventing delivery when the container is incorrectly oriented, e.g.}shut-off when inverted{(-for disabling actuation [B65D 83/22-](#))}
- B65D 83/60
 - • Product and propellant separated{(-portable fire extinguishers wherein extinguishing material and pressure gas are stored in separate containers [A62C 13/66-](#))}
- B65D 83/62
 - • • by membrane, bag, or the like{(-containers in which the content is delivered by the contracting forces inherent in the bag [B65D 83/0061-](#))}
- B65D 83/625
 - • • • {the propellant being generated by a chemical or electrochemical reaction (-for pressure gas in portable fire extinguishers [A62C 13/02-](#))}
- U B65D 83/64
 - • • by piston
- B65D 83/643
 - • • • {the propellant being generated by a chemical or electrochemical reaction (-for pressure gas in portable fire extinguishers [A62C 13/02-](#))}
- B65D 83/646
 - • • • {the piston being provided with a dispensing opening through which the contents are dispensed (-containers with such a dispensing piston, adapted for hand-held, manually operated spray apparatus [B05B 11/0051](#) , in general [B65D 83/0044-](#))}
- U B65D 83/66
 - • • first separated, but finally mixed,{e.g. in a dispensing head(mixing in general [B01F](#))}
- B65D 83/666
 - • • • {product and propellant being totally mixed on, or prior to, first use, e.g. by braking an ampoule containing one of those components (-[B65D 83/687](#) takes precedence; portable spraying apparatus comprising a container pressurized by a gas cartridge [B05B 9/0833-](#))}
- U B65D 83/68
 - • Dispensing two or more products,{e.g. sequential dispensing or simultaneous dispensing of two or more products without mixing them}
- B65D 83/682
 - • • {the products being first separated, but finally mixed, e.g. in a dispensing head (mixing in general [B01F](#))}
- B65D 83/75
 - • {-Aerosol containers not provided for in groups [B65D 83/16](#) to [B65D 83/74-](#)}
- U B65D 83/753
 - • • {characterised by details or accessories associated with outlets}
- B65D 83/7535
 - • • • {Outlet valves opened by the product to be delivered (-adapted for hand-held, manually operated spray apparatus [B05B 11/0062-](#))}
- B65D 83/7538
 - • • • {Tamper indicating means located in front of outlets (-tamper indicating means obstructing initial actuation [B65D 83/224-](#))}
- B65D 83/754
 - • • {comprising filters in the fluid flow path (-filters specially adapted for spraying plants or apparatus [B05B 15/008-](#))}
- B65D 83/756
 - • • {comprising connectors, e.g. for tyre valves, or actuators connected to the aerosol container by a flexible tube (-auto-repairing or self-sealing arrangement for repairing plastic articles [B29C 73/16-](#))}
- B65D 83/757
 - • • {Tamper-indicating means (-actuators with tamper-indicating means [B65D 83/224](#) ; tamper indicating means located in front of outlets [B65D 83/7538-](#))}

- B65D 85/00** Containers, packaging elements or packages specially adapted for particular articles or materials (~~B65D 71/00~~, ~~B65D 83/00~~ take precedence; hand implements, travelling equipment [A45C](#); cosmetic or toilet equipment [A45D](#); { for surgical instruments or appliances [A61B 19/026](#) }; containers specially adapted for medical or pharmaceutical purposes [A61J 1/00](#); paint cans [B44D 3/12](#); oil cans [F16N 3/04](#); containers for carrying smallarms [F41C 33/06](#); packaging of ammunition or explosive charges [F42B 39/00](#); containers for record carriers, specially adapted for co-operation with the recording or reproducing apparatus [G11B 23/00](#))
- NOTE
Attention is drawn to Note (4) following the title of this subclass
- B65D 85/02 • for annular articles (for web or tape-like material wound in flat spiral form [B65D 85/671](#))
- B65D 85/08 • for compressible or flexible rod-shaped or tubular articles (collapsible tubes per se [B65D 35/00](#))
- U B65D 85/10 • • for cigarettes
- B65D 85/1009 • • • {provided with proffering means (~~B65D 85/1054~~ takes precedence)}
- B65D 85/1081 • • • {Inserts or accessories added or joined to the container, e.g. coins, pens, cards, spacers (~~B65D 85/1009~~ takes precedence)}
- B65D 85/14 • • for collapsible {empty}tubes, {i.e. pliable tubular containers adapted to be permanently or temporarily deformed to expel contents}
- B65D 85/16 • for compressible or flexible articles of other shapes (for wearing apparel [B65D 85/18](#))
- U B65D 85/18 • for wearing apparel, i.e. clothes, headgear, shoes
- B65D 85/185 • • {Containers for shipping garments on hangers (travelling or trunk wardrobes [A47B 61/06](#))}
- U B65D 85/20 • for incompressible or rigid rod-shaped or tubular articles
- B65D 85/28 • • for pencils or pens (pencil boxes [A45C 11/34](#))
- U B65D 85/30 • for articles particularly sensitive to damage by shock or pressure
- B65D 85/305 • • {Bottle-crates (formed in one piece [B65D 1/243](#))}
- B65D 85/50 • for living organisms, articles, or materials sensitive to changes of environment or atmospheric conditions, e.g. land animals, birds, fish, water plants, non-aquatic plants, flower bulbs, cut flowers, foliage (devices for transporting live fish [A01K 63/02](#))
- B65D 85/58 • for ball bearings, washers, buttons, or like spherical or disc-shaped articles (cards for buttons, collar-studs, sleeve-links [A44B 7/00](#))
- B65D 85/67 • for other web or tape-like material (with means for dispensing [B65D 83/08](#))
- U B65D 85/70 • for materials not otherwise provided for
- B65D 85/804 • • Disposable containers or packages with contents which are {mixed,}infused or dissolved in situ {i.e. without having been previously removed from the package (~~B65D 65/46~~ takes precedence; tea infusers [A47G 19/16](#); spoons or stirrers comprising beverage additives [A47G 21/04](#))}
- B65D 85/8043 • • • {Packages adapted to allow liquid to pass through the contents (~~B65D 85/808~~ takes precedence; coffee filters not used as packages [A47J 31/00](#))}
- B65D 85/808 • • • for immersion in the liquid {to release part or all of their contents}, e.g. tea bags
- B65D 85/812 • • • with features facilitating their {manipulation or}suspension (~~B65D 85/8085~~ takes precedence)}

- B65D 85/816
- • • into which liquid is added {and the resulting preparation is retained}, e.g. cups preloaded with powder or dehydrated food
- B65D 88/00**
- Large containers** (-component parts, details or accessories [B65D 90/00](#) ; construction or assembling of bulk storage containers employing civil engineering techniques in situ or off the site [E04H 7/00](#) ; gas holders of variable capacity [F17B](#) ; vessels for containing or storing compressed, liquefied or solidified gases [F17C](#)-)
- B65D 88/02
- rigid (-[B65D 88/34](#) to [B65D 88/78](#) take precedence; hoppers [B65D 88/26](#) ; { special vessels for collecting or storing rain-water for use in the household [E03B 3/03](#) ; cesspools [E03F 11/00](#) })
- U B65D 88/022
- • {in multiple arrangement, e.g. stackable, nestable, connected or joined together side-by-side}
- B65D 88/027
- • • {single containers connected to each other by additional means so as to form a cluster of containers, e.g. a battery of containers} (-[B65D 88/005](#) takes precedence-)
- B65D 88/04
- • spherical (-[B65D 88/12](#) takes precedence-)
- B65D 88/06
- • cylindrical (-[B65D 88/12](#) takes precedence-)
- B65D 88/10
- • parallelepipedic (-[B65D 88/12](#) takes precedence-)
- B65D 88/12
- • specially adapted for transport (-associated with vehicles, see the relevant subclasses of [B60](#) to [B64](#)-)
- B65D 88/127
- • • {open-sided container, i.e. having substantially the whole side free to provide access, with or without closures (-[B65D 88/129](#) , [B65D 90/008](#) take precedence-)}
- B65D 88/16
- flexible (-[B65D 88/34](#) to [B65D 88/78](#) take precedence; hoppers [B65D 88/26](#)-)
- B65D 88/1606
- • {double-walled or with linings (-[B65D 88/1612](#) takes precedence; linings for container walls in general [B65D 90/04](#)-)}
- U B65D 88/1612
- • {Flexible intermediate bulk containers (FIBC)}
- U B65D 88/1675
- • • {Lifting fittings}
- B65D 88/1693
- • • • {Rigid (-[B65D 90/205](#) takes precedence-)}
- B65D 88/18
- • bellows-shaped (-[B65D 88/22](#) takes precedence; connection of valves to inflatable elastic bodies [B60C 29/00](#)-)
- B65D 88/20
- • with rigid end-walls (-[B65D 88/18](#) , [B65D 88/22](#) take precedence-)
- B65D 88/22
- • specially adapted for transport (-associated with vehicles, see the relevant subclasses of [B60](#) to [B64](#)-)
- B65D 88/26
- Hoppers, i.e. containers having funnel-shaped discharge sections (-[B65D 88/34](#) to [B65D 88/78](#) take precedence-)
- B65D 88/30
- • specially adapted to facilitate transportation from one utilisation site to another (-collapsible hoppers [B65D 88/52](#)-)
- B65D 88/34
- having floating covers, e.g. floating roofs or blankets (-venting means [B65D 90/34](#)-)
- B65D 88/54
- characterised by means facilitating filling or emptying ({ filling or emptying features for flexible large containers [B65B 69/0075](#) ; } construction or shape of discharge section of hoppers [B65D 88/28](#) ; gates or closures [B65D 90/54](#) ; filling or emptying bunkers, hoppers, or like containers [B65G 65/30](#)-)
- B65D 88/542
- • {Ramps forming part of the container (-ramps per se [B65G 69/28](#) ; for ambulances [A61G 3/061](#) ; for vehicles in general [B60P 1/43](#)-)}
- B65D 88/546
- • {Devices for loading or unloading and forming part of the container, e.g. rollers, conveyors (-loading or unloading vehicles [B65G 67/20](#)-)}
- B65D 88/548
- • {by pneumatic means (-[B65D 88/72](#) takes precedence-)}
- U B65D 88/64
- • preventing bridge formation

- B65D 88/70
 - • • using fluid jets (~~B65D 88/72~~ takes precedence-)
- B65D 88/76
 - for use underground (~~manholes, inspection openings, covers therefor~~ [B65D 90/105](#) ; { special vessels for collecting or storing rain-water for use in the household [E03B 3/03](#) ; cesspools [E03F 11/00](#) })
- B65D 88/78
 - for use in or under water (~~manholes, inspection openings, covers therefor~~ [B65D 90/10](#)-)
- B65D 90/00**
 - Component parts, details or accessories for large containers (~~B65D 88/34~~ to ~~B65D 88/78~~ take precedence-)**
- B65D 90/0006
 - {Coupling devices between containers, e.g. ISO-containers (~~coupling devices between containers and vehicles~~ [B60P 7/13](#)-)}
- B65D 90/0033
 - {Lifting means forming part of the container (~~B65D 90/0006~~ , ~~B65D 90/0026~~ take precedence; Loading or unloading container on or from a truck [B60P 1/6418](#) ; lifting the container using a crane [B66C 1/663](#)-)}
- U B65D 90/004
 - {Contents retaining means}
- B65D 90/0046
 - • {fixed on the top of the container (~~B65D 90/0066~~ , ~~B65D 90/0073~~ take precedence-)}
- B65D 90/0053
 - • {fixed on the side wall of the container (~~B65D 90/0066~~ , ~~B65D 90/0073~~ take precedence-)}
- B65D 90/006
 - • {fixed on the floor of the container (~~B65D 90/0066~~ , ~~B65D 90/0073~~ take precedence-)}
- B65D 90/008
 - {Doors for containers, e.g. ISO-containers (~~locking~~ [E05B65/16](#)-)}
- B65D 90/0093
 - {Devices for cleaning the internal surfaces of the container and forming part of the container (~~cleaning of containers in general~~ [B08B 9/08](#)-)}
- U B65D 90/02
 - Wall construction
- B65D 90/021
 - • {Flexible side walls or doors (~~B65D 88/125~~ takes precedence-)}
- B65D 90/022
 - • {Laminated structures (~~B65D 90/029~~ , ~~B65D 90/505~~ , ~~B65D 90/508~~ take precedence-)}
- B65D 90/028
 - • {hollow-walled, e.g. double-walled with spacers (~~B65D 90/501~~ takes precedence; linings [B65D 90/04](#)-)}
- B65D 90/04
 - • Linings ({~~for flexible containers~~ [B65D 88/1606](#)-)}
- B65D 90/10
 - Manholes; Inspection openings; Covers therefor (~~safety features~~ [B65D 90/22](#) ; covers or similar closure members, for pressure vessels in general [F16J 13/00](#)-)
- U B65D 90/12
 - Supports
- B65D 90/18
 - • Castors, rolls, or the like; e.g. detachable (~~castors in general~~ [B60B](#)-)
- U B65D 90/20
 - • Frames or nets, e.g. for flexible containers
- B65D 90/205
 - • • {for flexible containers, i.e. the flexible container being permanently connected to the frame (~~B65D 77/061~~ , ~~B65D 88/1612~~ , ~~B65D 90/046~~ take precedence; unpacking of Flexible Intermediate Bulk Container (FIBC) [B65B 69/0075](#) ; crane hooks for frames for FIBC [B66C 1/226](#)-)}
- B65D 90/22
 - Safety features (~~floating covers~~ [B65D 88/34](#) ; arrangements of indicating or measuring devices [B65D 90/48](#) ; fire-fighting [A62C](#)-)
- B65D 90/26
 - • Overfill prevention (~~spillage retaining means~~ [B65D 90/24](#) ; arrangements of indicating or measuring devices [B65D 90/48](#)-)
- B65D 90/32
 - • Arrangements for preventing, or minimising the effect of, excessive or insufficient pressure (~~valves per se~~ [F16K](#)-)
- B65D 90/325
 - • • {due to explosion, e.g. inside the container (~~safely destroying explosive ammunition or similar~~ [F42B 39/14](#) ; in buildings [E04B 1/98](#)-)}
- B65D 90/34
 - • • Venting means (~~vehicle fuel tanks characterised by venting means~~ [B60K 15/035](#)-)

- B65D 90/46
- Arrangements for carrying off, or preventing the formation of electrostatic charges (-carrying-off, or preventing the formation of electrostatic charges in general [H05F](#)-)
- U B65D 90/48
- Arrangements of indicating or measuring devices
- B65D 90/50
- of leakage-indicating devices (-investigating fluid-tightness of structures [G01M 3/00](#)-)
- B65D 90/52
- Anti-slosh devices (-vehicle fuel tanks with means modifying or controlling distribution or motion of fuel, e.g. to prevent noise, surge, splash or fuel starvation [B60K 15/077](#)-)
- B65D 90/54
- Gates or closures (-for manholes [B65D 90/10](#) ; covers or similar closure members, for pressure vessels in general [F16J 13/00](#) ; valves per se [F16K](#) ; { doors for containers [B65D 90/008](#) })
- B65D 90/56
- operating by deformation of flexible walls{ [B65D 90/58](#) takes precedence-}
- B65D 2101/00**
- Tamper-indicating means (-relating to aerosol containers [B65D 83/224](#)-)**
- B65D 2101/0015
- Tearable part of the container (-[B65D 2101/0092](#) takes precedence-)
- B65D 2101/0023
- Tearable part of the closure (-[B65D 2101/0092](#) takes precedence-)
- B65D 2101/003
- Frangible elements completely enclosed in closure skirt (-tear-off strips [B65D 2101/0038](#)-)
- B65D 2203/00**
- Decoration means, markings, information elements, contents indicators (-see also [B65D 5/4212](#) , [B65D 33/004](#)-)**
- B65D 2203/04
- Level indicators (-see also [B65D 25/56](#) , [B65D 33/004](#)-)
- B65D 2203/12
- Audible, olfactory or visual signalling means (-[B65D 51/248](#) , [B65D 55/028](#) , [B65D 79/02](#) and [B65D 81/24](#) take precedence-)
- B65D 2251/00**
- Details relating to container closures (-lids or covers for box-like containers [B65D 43/00](#)-)(-see also [B65D 43/00](#)-)**
- B65D 2251/06
- Special configurations; Closures simulating or provided with another item, e.g. puppet, animal, vehicle, building (-[B65D 81/366](#) takes precedence-)
- B65D 2255/00**
- Locking devices (-for actuation of aerosol containers [B65D 83/226](#) ; for lids [B65D 2251/1008](#) , [B65D 2251/1016](#)-)**
- B65D 2301/00**
- Details of blanks (not used)**
- U **B65D 2313/00**
- Connecting or fastening means**
- B65D 2313/08
- Double sided adhesive tape, e.g. for suspension of the container (-[B65D 2313/10](#) takes precedence-)
- U **B65D 2501/00**
- Containers having bodies formed in one piece**
- U B65D 2501/0009
- Bottles or similar containers with necks or like restricted apertures designed for pouring contents
- B65D 2501/0063
- Additional discharging means (-[B65D 1/06](#) takes precedence-)
- U B65D 2501/24
- Boxes or like containers with moulded compartments or partitions
- U B65D 2501/24006
- Details relating to bottle crates
- U B65D 2501/2405
- Construction
- U B65D 2501/24146
- Connection between walls or of walls with bottom
- B65D 2501/24152
- Integral (-[B65D 2501/24184](#) takes precedence-)
- U B65D 2501/24159
- Non-integral
- B65D 2501/24171
- Interlocked (-[B65D 2501/24184](#) takes precedence-)
- B65D 2501/24178
- Nailed, screwed, riveted (-[B65D 2501/24184](#) takes precedence-)
- U B65D 2501/24197
- Arrangements for locating the bottles

B65D 2501/24312	• • • Means for preventing bottle breakage (-B65D 2501/24292 takes precedence-)
B65D 2501/24554	• • • Stacking means (-B65D 2501/24694 takes precedence-)
B65D 2501/2456	• • • for stacking or joining side-by-side (e.g. also containers stacked by being laid on one side)(e.g. also containers stacked by being laid on one side)
B65D 2501/24687	• • • Nesting means (-B65D 2501/24694 takes precedence-)
U B65D 2501/24866	• • • Other details
B65D 2501/24929	• • • Drainage means (-B65D 2501/24127 and B65D 2501/24133 take precedence-)
B65D 2501/24936	• • • Means for handling (-handles B65D 2501/24363-)
B65D 2501/24942	• • • • Means for suspending or lifting (-B65D 2501/24949 takes precedence-)
B65D 2517/00	Containers specially constructed to be opened by cutting, piercing or tearing of wall portions, e.g. preserving cans or tins (not used)
B65D 2517/0001	• Details (not used)
B65D 2517/001	• • Action for opening container (not used)
B65D 2517/0031	• • Reclosable openings (not used)
B65D 2517/0047	• • Provided with additional elements other than for closing the opening (not used)
B65D 2517/0058	• • Other details of container end panel (not used)
B65D 2517/0059	• • • General cross-sectional shape of container end panel (not used)
B65D 2517/0068	• • • Ribs or projections in container end panel (not used)
B65D 2517/008	• • • Materials of container end panel (not used)
B65D 2517/0091	• • Means for venting upon initial opening (not used)
B65D 2517/50	• Non-integral frangible members applied to, or inserted in, a preformed opening (not used)
B65D 2517/5002	• • Details of flexible tape or foil-like material (not used)
B65D 2517/5024	• • • Material (not used)
B65D 2517/504	• • Details of preformed openings (not used)
B65D 2517/5043	• • • provided with a flange (not used)
B65D 2517/5072	• • Details of hand grip, tear- or lift-tab (not used)
B65D 2519/00	Pallets or like platforms, with or without side walls, for supporting loads to be lifted or lowered (not used)
B65D 2519/00004	• Details relating to pallets (not used)
U B65D 2519/00009	• • Materials
B65D 2519/00119	• • • for the construction of the reinforcements (not used for the integral reinforcements)
B65D 2519/00258	• • Overall construction (not used)
B65D 2519/00263	• • • of the pallet (not used)
B65D 2519/00283	• • • of the load supporting surface (not used)
B65D 2519/00313	• • • of the base surface (not used)
B65D 2519/00328	• • • • shape of the contact surface of the base (not used)
U B65D 2519/00398	• • • reinforcements
B65D 2519/00432	• • • • Non-integral, e.g. inserts (-B65D 2519/00462 takes precedence-)
B65D 2519/00537	• • • of the lid or cover (not used)
B65D 2519/00542	• • • of the corner posts (not used)
B65D 2519/00736	• • Details (not used)

- B65D 2519/00741 . . . Dimensional aspects of the pallet (not used)
- B65D 2519/00761 the surface being variable, e.g. extendable pallets (-[B65D 2519/00746](#) takes precedence-)
- U B65D 2519/00776 . . . Accessories for manipulating the pallet
- B65D 2519/00781 for moving on a surface, e.g. wheels, pads (-[B65D 2519/00825](#) takes precedence-)
- U B65D 2519/00825 . . . Finishing of the external surfaces
- B65D 2519/0083 Anti-slip means (not used)
- B65D 2519/00845 Slip means (not used)
- B65D 2543/00 Lids or covers essentially for box-like containers (for container closures in general [B65D 2251/00](#)-)**
- U B65D 2543/00009 . Details of lids or covers for rigid or semi-rigid containers
- U B65D 2543/00018 . . Overall construction of the lid
- U B65D 2543/00064 . . . Shape of the outer periphery
- B65D 2543/00074 curved (-combined with straight sides [B65D 2543/0012](#)-)
- U B65D 2543/0012 having straight sides, e.g. with curved corners
- U B65D 2543/00175 four straight sides, e.g. trapezium or diamond
- B65D 2543/00194 square or rectangular (-with curved sides [B65D 2543/00101](#)-)
- U B65D 2565/00 Wrappers or flexible covers; Packaging materials of special type or form**
- U B65D 2565/38 . Packaging materials of special type or form
- U B65D 2565/381 . . Details of packaging materials of special type or form
- B65D 2565/384 . . . made of recycled material (-[B65D 2565/383](#) takes precedence-)
- U B65D 2571/00 Bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carrier for plural receptacles such as beer cans, pop bottles; Bales of material**
- U B65D 2571/00006 . Palletisable loads, i.e. loads intended to be transported by means of a fork-lift truck
- B65D 2571/0008 . . Load supporting elements (Not used)
- U B65D 2571/00123 . Bundling wrappers or trays
- B65D 2571/00129 . . Wrapper locking means (-end walls locking means [B65D 2571/00722](#)-)
- U B65D 2571/00555 . . Wrapper opening devices
- B65D 2571/00561 . . . Lines of weakness (-[B65D 2571/00864](#) takes precedence-)
- U B65D 2571/00833 . . Other details of wrappers
- U B65D 2571/00932 . . . Flattenable or foldable packages
- B65D 2571/00938 Means for maintaining collapsible packages in erected state (~~[B65D 2571/00129](#) takes precedence~~ [B65D 2571/00129](#) takes precedence)
- B65D 2575/00 Packages comprising articles or materials partially or wholly enclosed in strips, sheets, blanks, tubes or webs of flexible sheet material, e.g. in folded wrappers (Not used)**
- B65D 2575/28 . Articles or materials wholly enclosed in composite wrappers, i.e. wrappers formed by associating or interconnecting two or more sheets or blanks (Not used)
- B65D 2575/30 . . Articles or materials enclosed between two opposed sheets or blanks having their margins united, e.g. by pressure-sensitive adhesive, crimping, heat-sealing, or welding (Not used)

- B65D 2575/32 . . . one or both sheets or blanks being recessed to accommodate contents (Not used)
- B65D 2575/3209 Details (Not used)
- B65D 2575/52 . Details (Not used)
- B65D 2575/54 . . Cards, coupons, or other inserts or accessories (Not used)
- B65D 2575/56 . . . Handles or other suspension means (Not used)
- B65D 2575/58 . . Opening or contents-removing devices added or incorporated during package manufacture (Not used)
- B65D 2577/00 Packages formed by enclosing articles or materials in preformed containers, e.g. boxes, cartons, sacks, bags (not used)**
- B65D 2577/04 . Articles or materials enclosed in two or more containers disposed one within another (not used)
- B65D 2577/10 . Container closures formed after filling (not used)
- B65D 2577/20 . . by applying separate lids or covers (not used)
- U B65D 2581/00 Containers, packaging elements, or packages, for contents presenting particular transport or storage problems, or adapted to be used for non-packaging purposes after removal of contents**
- U B65D 2581/34 . for packaging foodstuffs or other articles intended to be cooked or heated within
- B65D 2581/3401 . . Cooking or heating method specially adapted to the contents of the package (not used)
- U B65D 2581/3402 . . . characterised by the type of product to be heated or cooked
- B65D 2581/3412 Cooking fried food (-[B65D 2581/3416](#) and [B65D 2581/3417](#) take precedence-)
- B65D 2581/3424 Cooking fish or shellfish (-[B65D 2581/3413](#) takes precedence-)
- B65D 2581/3425 Cooking a complete meal, e.g. TV-dinners (-trays with moulded compartments [B65D 1/36](#)-)
- U B65D 2581/3429 . . . Packages containing a secondary product to be cooked and discharged over the primary product
- B65D 2581/3433 to add moisture to the product, e.g. steaming (-[B65D 81/3438](#) takes precedence-)
- U B65D 2581/3437 . . specially adapted to be heated by microwaves
- U B65D 2581/3439 . . . Means for affecting the heating or cooking properties
- U B65D 2581/3455 Packages having means for improving the internal circulation of air
- B65D 2581/3456 Means for holding the contents at a distance from the base of the package, e.g. raised islands or protrusions (-[B65D 2581/3459](#) takes precedence-)
- U B65D 2581/3486 . . . Dielectric characteristics of microwave reactive packaging
- B65D 2581/3489 Microwave reflector, i.e. microwave shield (-[B65D 2581/3487](#) takes precedence-)
- B65D 2581/3494 Microwave susceptor (-[B65D 2581/3487](#) takes precedence-)
- U B65D 2585/00 Containers, packaging elements or packages specially adapted for particular articles or materials**
- B65D 2585/08 . for compressible or flexible rod-shaped or tubular article (not used)
- B65D 2585/30 . for articles particularly sensitive to damage by shock or pressure (not used)
- B65D 2585/36 . . for biscuits or other bakery products (not used)
- B65D 2585/54 . for articles of special shape not otherwise provided for (not used)
- U B65D 2585/64 . for bulky articles

- B65D 2585/641
- • specific articles (not used)
- U B65D 2585/68
- for machines, engines, or vehicles in assembled or dismantled form
- B65D 2585/6802
- • specific machines, engines or vehicles (not used)
- B65D 2585/6845
- • • other household devices; [B65D 2585/6815](#) and [B65D 2585/6835](#) take precedence
- B65D 2585/86
- • for electrical components (-small electrical components attached to cards, sheets or webs [B65D 73/02](#) ; for articles particularly sensitive to damage by shock or pressure [B65D 2585/30](#) ; for ampoules, lamp bulbs, electronic valves or tubes [B65D 85/42](#)-)
- B65D 2588/00**
- Large container (not used)**
- B65D 2588/02
- rigid (not used)
- B65D 2588/12
- • specially adapted for transport (not used)
- B65D 2588/16
- flexible (not used)
- B65D 2588/54
- characterised by means facilitating filling or emptying (not used)
- B65D 2588/64
- • preventing bridge formation (not used)
- B65D 2588/74
- having means for heating, cooling, aerating or other conditioning of contents (not used)
- B65D 2588/743
- • blowing or injecting heating, cooling or other conditioning fluid inside the container (not used)
- B65D 2590/00**
- Component parts, details or accessories for large containers (not used)**
- B65D 2590/0008
- Coupling device between containers (not used)
- B65D 2590/0025
- • Twist lock (not used)
- B65D 2590/02
- Wall construction (not used)
- B65D 2590/04
- • Linings (not used)
- B65D 2590/043
- • • Flexible liners (not used)
- B65D 2590/22
- Safety features (not used)
- B65D 2590/24
- • Spillage-retaining means (not used)
- B65D 2590/54
- Gates or closures (not used)
- B65D 2590/66
- • Operating devices therefor (not used)

Project: N/A (B65F)

- U B65F 1/00
- Refuse receptacles; {Accessories therefor}(containers not specially adapted for refuse, features of refuse receptacles of general interest [B65D](#))**
- U B65F 1/0006
- {Flexible refuse receptables, e.g. bags, sacks}
- B65F 1/0013
- • {-with means for fixing and mounting of the receptacle to walls, doors}
- B65F 1/002
- • {-with means for opening or closing of the receptacle}
- B65F 1/0026
- • {-with odor controlling substances}
- U B65F 1/04
- with removable inserts
- U B65F 1/06
- • with flexible inserts, e.g. bags or sacks {([B65F 1/0073](#) takes precedence)}
- B65F 1/065
- • • {-with means aiding the insertion of the flexible insert}
- B65F 1/068
- • • {-with means aiding the removal of the flexible insert}
- U B65F 1/14
- Other constructional features; {Accessories}(holders or carriers for hand articles [A45F 5/00](#); fastening devices [E05C](#))
- U B65F 1/1468
- • {Means for facilitating the transport of the receptacle, e.g. wheels, rolls (hand-operated refuse vehicles [B65F 3/005](#))}
- B65F 1/1473
- • • {-Receptacles having wheels}

Project: N/A (B65G)

B65G

TRANSPORT OR STORAGE DEVICES, e.g. CONVEYERS FOR LOADING OR TIPPING; SHOP CONVEYER SYSTEMS; PNEUMATIC TUBE CONVEYERS ({ preventing fire in special objects or places [A62C 3/00](#) } ; transport or storage devices used in a particular handling or treatment of articles or materials, see the relevant subclass, e.g. in metal-working [B21D 43/00](#) , [B23Q 7/00](#) , [B23Q 41/02](#) ; vehicle, railway, sea or aircraft aspects [B60](#) to [B64](#); in packaging [B65B](#); handling thin or filamentary materials [B65H](#); hoisting, lifting, hauling, e.g. truck loaders [B66](#); handling liquids [B67](#); { transport or storage containers for preparing or distributing road building materials [E01C](#); construction or assembling of bulk storage containers employing civil engineering techniques in site or off the site [E04H 7/00](#) } ; specially adapted to underground conditions in mines [E21F 13/00](#) ; storing or distributing gases or liquids [F17](#); in handling radioactive materials [G21C 19/00](#)-)

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

B65G 33/28	covered by	
B65G 33/265		
B65G 47/10	covered by	
B65G 1/1373		
B65G 47/86	covered by	B65G 47/842
,		
		B65G 47/847
B65G 49/07	covered by	
H01L 21/677		
B65G 69/32	covered by	
B65G 69/28		
B65G 69/34	covered by	B65G 69/28

B65G 1/00

Storing articles, individually or in orderly arrangement, in warehouses or magazines (-conveyer combinations in warehouses, magazines, or workshops [B65G 37/00](#) ; stacking of articles [B65G 57/00](#) ; removing articles from stacks [B65G 59/00](#) ; loading machines [B65G 65/02](#) ; arrangements of articles for drying or baking in kilns or ovens [F26](#) ; [F27](#)-)

NOTE

group [B65G 1/0442](#) takes precedence over the other groups, except over [B65G 1/08](#)

B65G 1/02

- Storage devices (-furniture, shop fittings, table equipment [A47B](#) , [A47F](#) , [A47G](#) ; mechanical garages [E04H](#) ; for data record cards in association with machines for making or sensing data [G06K](#) ; coin changers or sorters [G07D](#) ; coin-freed apparatus [G07F](#)-){ pallets [B65D 19/00](#)-}

U B65G 1/04

- • mechanical

B65G 1/0407

- • • {using stacker cranes (-constructional features of stacker cranes [B66F 9/06](#)-)}

B65G 1/0442

- • • {for elongated articles (-drill pipe racking [E21B 19/14](#)-)}

B65G 1/06

- • • with means for presenting articles for removal at predetermined position or level (-[B65G 1/12](#) takes precedence-)

B65G 1/08

- • • • the articles being fed by gravity{ braking arrangements for roller-ways [B65G 13/075](#) ; separating or stopping elements [B65G 47/88](#)-}

- B65G 1/10
- • • with relatively movable racks to facilitate insertion or removal of articles { cabinets with means for moving compartments up and down [A47B 51/00](#) ; cabinet system, e.g. consisting of cabinets arranged in a row with means to open or close passages between adjacent cabinets [A47B 53/02](#) }
- B65G 1/12
- • • with {separate} article supports or holders movable in a closed circuit to facilitate insertion or removal of articles {the articles being books, documents, forms or the like}
- B65G 1/137
- • • with arrangements or automatic control means for selecting which articles are to be removed (-devices for feeding articles to conveyers from several groups of articles [B65G 47/10](#)-)
- B65G 3/00** **Storing bulk material or loose, i.e. disorderly, articles (-filling or emptying storage spaces or containers, spreading out or piling up bulk material or loose articles [B65G 65/28](#) , [B65G 65/30](#) , [B65G 69/04](#) { [B65G 63/00](#) ; storing agricultural or horticultural produce [A01F 25/00](#) })**
- B65G 3/02
- in the open air (-[B65G 3/04](#) takes precedence-)
- B65G 5/00** **Storing fluids in natural or artificial cavities or chambers in the earth (-modification of mine passages or chambers for storage purposes, especially for fluids [E21F 17/16](#)-)**
- NOTE
- When the cavity or chamber is lined documents are classified in [F17C 3/005](#)
- B65G 7/00 -
B65G 9/00** **Devices assisting manual conveyance of articles over short distances, e.g. in storage depots, warehouses or factories (-chutes [B65G 11/00](#) ; rollerways [B65G 13/00](#) ; luggage carriers [A45C 13/38](#) ; holders or carriers for hand articles or for use while travelling or camping [A45F 5/00](#) ; vehicles in general, axles, wheels [B60](#) ; air-cushion vehicles [B60V](#) ; handcarts, sledges, features of hand-propelled wheeled devices or pedestrian-controlled, power-driven vehicles equally applicable to handcarts [B62B](#) ; ship-moving devices [B63C](#) , [E02C](#) ; containers, pallets [B65D](#) ; air-cushions as bearing elements [F16C 29/00](#)-)**
- B65G 7/00** **Devices for moving or tilting heavy loads (-for tilting and emptying barrels or casks [B65G 65/24](#)-)**
- B65G 7/02
- Devices adapted to be interposed between loads and the ground or floor, e.g. crowbars with means for assisting conveyance of loads (-crowbars per se [B66F 15/00](#)-)
- B65G 7/06
- • using fluid at high pressure supplied from an independent source to provide a cushion between load and ground { conveying articles over a flat surface by jets located in the surface [B65G 51/00](#) }
- B65G 9/00** **Apparatus having suspended load carriers movable by hand or gravity (-manually-operated endless-rope or chain conveyers [B65G 17/00](#) ; railway systems [B61B](#)-)**
- B65G 11/00 -
B65G 37/00** **Chutes; Kinds or types of conveyers; Constructional features, details, or auxiliary devices peculiar to conveyers of particular types (-feeding or discharging conveyers by devices incorporated in or operatively associated with conveyers [B65G 47/00](#) ; loading or unloading [B65G 65/00](#) ; escalators or moving walkways [B66B 21/00](#) ; drag-line scraper conveyers [E02F 3/46](#)-)**
- B65G 11/00** **Chutes (-used as storage devices [B65G 1/02](#) , [B65D 88/26](#) ; for sports, games, or amusements [A63G 21/00](#) ; for refuse disposal in buildings [E04F 17/12](#)-)**
- U B65G 11/08
- with discontinuous guiding surfaces, e.g. arranged in zigzag or cascade formation

- B65G 11/081 · · {for articles (~~B65G 11/085~~ takes precedence)}
- B65G 11/083 · · {for bulk (~~B65G 11/085~~ takes precedence)}
- B65G 13/00** **Roller-ways (storage devices comprising roller-ways [B65G 1/02](#) ; endless-chain conveyers comprising load-supporting rollers [B65G 17/00](#) ; rollers, or arrangements thereof [B65G 39/00](#) ; feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers [B65G 47/00](#) , { e.g. by roller-ways as accumulating devices [B65G 47/261](#) ; } in metal-rolling equipment [B21B 39/00](#) , [B21B 41/00](#)-)**
- B65G 15/00** **Conveyers having endless load-conveying surfaces, i.e. belts and like continuous members, to which tractive effort is transmitted by means other than endless driving elements of similar configuration (~~having load-conveying surfaces formed by interconnected longitudinal links [B65G 17/06](#)~~-)**
- U B65G 15/10 · comprising two or more co-operating endless surfaces with parallel longitudinal axes, or a multiplicity of parallel elements, e.g. ropes defining an endless surface
- U B65G 15/12 · · with two or more endless belts
- B65G 15/14 · · · the load being conveyed between the belts{ [B65G 15/18](#) , [B65G 15/20](#) take precedence-}
- B65G 15/18 · · · the belts being sealed at their edges (~~endless-surface conveyers having a single belt with sealed edges [B65G 15/08](#)~~-)
- B65G 15/20 · · · arranged side-by-side, e.g. for conveyance of flat articles in vertical position (~~for conveying sheets or like thin flat articles [B65H](#)~~-)
- U B65G 15/22 · comprising a series of co-operating units
- B65G 15/26 · · extensible, e.g. telescopic{ adjustment of length or configuration of load-carrier [B65G 21/14](#)-}
- B65G 15/30 · Belts or like endless load-carriers (~~co-operating with rails or the like [B65G 21/22](#) ; with rollers [B65G 39/20](#) ; belts in general [F16G](#)-){ belt fastenings [F16G 3/00](#)-}~~
- B65G 15/60 · Arrangements for supporting or guiding belts, e.g. by fluid jets (~~constructions of rollers or supports therefor [B65G 39/00](#) { [F16C 13/00](#) }~~-)
- B65G 17/00** **Conveyers having an endless traction element, e.g. a chain, transmitting movement to a continuous or substantially continuous load-carrying surface or to a series of individual load-carriers; Endless-chain conveyers in which the chains form the load-carrying surface (~~railway systems, detachable load-carriers on rails [B61B](#); escalators or paternosters neither combined nor associated with loading or unloading apparatus [B66B 9/00](#)~~-)**
- B65G 17/005 · {comprising individual load carriers which are movably mounted (~~[B65G 17/16](#) takes precedence-~~)}
- U B65G 17/06 · having a load-carrying surface formed by a series of interconnected e.g. longitudinal, links, plates, or platforms
- B65G 17/061 · · {the load carrying surface being formed by profiles, rods, bars, rollers or the like attached to a single traction element (~~[B65G 17/24](#) takes precedence-~~)}
- B65G 17/063 · · {the load carrying surface being formed by profiles, rods, bars, rollers or the like attached to more than one traction element (~~[B65G 17/24](#) takes precedence-~~)}
- U B65G 17/065 · · {the load carrying surface being formed by plates or platforms attached to a single traction element}
- B65G 17/066 · · · {specially adapted to follow a curved path (~~for individual load carriers [B65G 17/22](#)~~-)}

- U B65G 17/067
 - {the load carrying surface being formed by plates or platforms attached to more than one traction element}
- B65G 17/068
 - • {specially adapted to follow a curved path (-for individual load carriers [B65G 17/22](#)-)}
- U B65G 17/08
 - • the surface being formed by the traction element
- B65G 17/086
 - • • {specially adapted to follow a curved path (-for individual load carriers [B65G 17/22](#)-)}
- B65G 17/16
 - comprising individual load-carriers which are pivotally mounted, e.g. for free-swinging movement (guides inverting or tilting load-carriers for emptying{ [B65G 47/38](#) ; [B65G 17/20](#) takes precedence })
- B65G 17/22
 - with oppositely-moving parts of the conveyer located in a common plane {and being formed by individual load carriers only}
- B65G 17/24
 - comprising a series of rollers which are moved {e.g. over a supporting surface, by the traction element to effect conveyance of loads or load-carriers}
- U B65G 17/26
 - comprising a series of co-operating units, e.g. inter-connected by pivots
- B65G 17/28
 - • extensible, e.g. telescopic{ adjustment of length or configuration of traction element [B65G 21/14](#)-}
- B65G 17/30
 - Details; Auxiliary devices (-belts [B65G 15/30](#) ; framework [B65G 21/00](#)-)
- B65G 17/32
 - • Individual load-carriers (-control [B65G 17/48](#)-)
- B65G 17/38
 - • Chains or like traction elements (-chains in general [F16G](#)-); Connections between traction elements and load carriers
- B65G 17/48
 - • Controlling attitudes of load-carriers during movement{ [B65G 17/18](#) takes precedence }; (-guides [B65G 21/20](#) ; inverting or tilting load carriers to discharge contents [B65G 47/38](#)-)
- U B65G 19/00**
 - Conveyers comprising an impeller or a series of impellers carried by an endless traction element and arranged to move articles or materials over a supporting surface or underlying material, e.g. endless scraper conveyers**
- U B65G 19/18
 - Details
- B65G 19/185
 - • {for article conveyers, e.g. for container conveyers (-~~[B65G 19/20](#)~~, ~~[B65G 19/22](#)~~; [B65G 19/20](#) , [B65G 19/22](#) ; [B65G 19/28](#) take precedence-)}
- U B65G 19/22
 - • Impellers, e.g. push-plates, scrapers; Guiding means therefor
- B65G 19/225
 - • • {for article conveyers, e.g. for container conveyers (-[B65G 19/24](#) takes precedence-)}
- U B65G 19/24
 - • • Attachment of impellers to traction element
- B65G 19/245
 - • • • {for article conveyers, e.g. for container conveyers (-[B65G 19/26](#) takes precedence-)}
- U B65G 19/28
 - • Troughs, channels, or conduits
- B65G 19/282
 - • • {for article conveyers, e.g. for container conveyers (-[B65G 19/30](#) takes precedence-)}
- B65G 19/285
 - • • {with detachable or replaceable parts, e.g. replaceable wear channels (-[B65G 19/282](#) takes precedence-)}
- B65G 19/287
 - • • {Coupling means for trough sections (-[B65G 19/282](#) takes precedence-)}
- B65G 21/00**
 - Supporting or protective framework or housings for endless load-carriers or traction elements of belt or chain conveyers ({ for load-carriers in jiggling conveyers [B65G 27/08](#) } ; supporting framework or bases for conveyers as a whole [B65G 41/00](#)-)**
- U B65G 21/10
 - movable, or having interchangeable or relatively movable parts; Devices for moving framework or parts thereof

- B65G 21/14
 - • to allow adjustment of length or configuration of load-carrier or traction element (-varying speed of conveyance by adjusting configuration of load-carrier [B65G 23/00](#) ; { tensioning arrangement for belt or chain [B65G 23/44](#) })
- B65G 21/20
 - Means incorporated in, or attached to, framework or housings for guiding {or retaining}load-carriers, traction elements or loads supported on moving surfaces (-arrangements for supporting belts [B65G 15/60](#) ; { details of chain conveyers [B65G 17/30](#) ; } rollers or roller arrangements [B65G 39/00](#) ; [F16G](#)-)
- U B65G 21/2009
 - • {Magnetic retaining means}
- B65G 21/2018
 - • • {for retaining the load on the load-carrying surface,(-retaining loads by magnetic load-carriers, e.g. belts [B65G 15/58](#) , chains [B65G 17/46](#) ; individual magnetic grippers [B65G 17/323](#)-)}
- U B65G 21/2027
 - • {Suction retaining means}
- B65G 21/2036
 - • • {for retaining the load on the load-carrying surface (-individual suction grippers [B65G 17/323](#)-)}
- B65G 23/00**

Driving gear for endless conveyers {control devices(-for conveyers in general [B65G 43/00](#))}; Belt or chain tensioning arrangements
- U B65G 23/02
 - Belt- or chain-engaging elements
- B65G 23/04
 - • Drums, rollers, or wheels {[B65G 23/18](#) takes precedence}
- B65G 23/14
 - • Endless driving elements extending parallel to belt or chain{ [B65G 23/18](#) takes precedence-}
- B65G 23/22
 - Arrangements or mountings of driving motors{(-[B65G 23/08](#) takes precedence-)}
- B65G 23/24
 - Gearing between driving motor and belt- or chain-engaging elements (-contained in drums, rollers or wheels [B65G 23/08](#)-)
- B65G 25/00**

Conveyers comprising a cyclically-moving, e.g. reciprocating, carrier or impeller which is disengaged from the load during the return part of its movement (-jigging [B65G 27/00](#)-)
- B65G 27/00**

Jigging conveyers (-jigs for wet separation [B03B](#); generating or transmitting mechanical vibrations [B06](#); jiggers for screening, sifting or sorting [B07B 1/28](#)-)
- B65G 27/02
 - comprising helical or spiral channels or conduits for elevation of materials (-helical or spiral chutes in general [B65G 11/06](#) ; { use of such conveyers for arranging or orientating articles during feeding [B65G 47/1421](#) })
- B65G 27/08
 - Supports or mountings for load-carriers, e.g. framework, bases, spring arrangements{(-spring arrangements as jigging movement transmitting units [B65G 27/10](#)-)}
- U B65G 27/10
 - Applications of devices for generating or transmitting jigging movements
- U B65G 27/16
 - • of vibrators, i.e. devices for producing movements of high frequency and small amplitude
- B65G 27/18
 - • • Mechanical devices{(-[B65G 27/26](#) takes precedence-)}
- B65G 29/00**

Rotary conveyers, e.g. rotating discs, arms, starwheels, cones (-mechanical projectors [B65G 31/00](#) ; screw or rotary spiral conveyers [B65G 33/00](#) ; { turntables as feeding, transfer or discharging devices [B65G 47/80](#) ; starwheels as feeding, transfer or discharging devices [B65G 47/84](#) })
- B65G 29/02
 - for inclined or vertical transit (-[B65G 15/00](#) , [B65G 17/00](#) take precedence-)
- B65G 31/00**

Mechanical projectors for articles or solid materials (-distributors for fertilisers [A01C](#); moulding machines [B22C](#); sandblasting devices [B24C](#); projectors for applying plaster to buildings [E04F 21/00](#))

- B65G 33/00** **Screw or rotary spiral conveyers (screws for extruding, compressing, kneading, mixing, pumping or other special operations, see the relevant classes)**
- U B65G 33/08 · for fluent solid materials
 - U B65G 33/14 · · comprising a screw or screws enclosed in a tubular housing
 - B65G 33/18 · · · with multiple screws in parallel arrangements {e.g. concentric}
 - U B65G 33/24 · Details
 - B65G 33/26 · · Screws (-as gearing elements [F16H 25/20](#)-)
 - B65G 33/265 · · · {with a continuous helical surface (-flexible screws [B65G 33/16](#)-)}
 - B65G 33/32 · · Adaptations of bearings or couplings for supporting and connecting screws (-[B65G 33/16](#) takes precedence-)
- B65G 35/00** **Kinds of mechanical conveyers not otherwise provided for (railway systems [B61B](#))**
- B65G 35/04 · comprising a flexible load carrier, e.g. a belt, which is wound up at one end and paid out at the other (-reciprocating belt conveyers [B65G 25/06](#)-)
- B65G 37/00** **Combinations of mechanical conveyers of the same kind, or of different kinds, of interest apart from their application in particular machines or use in particular manufacturing processes (-in "live" storage devices [B65G 1/04](#) ; { series of co-operating belt conveyer units [B65G 15/22](#) ; series of co-operating chain conveyer units [B65G 17/26](#) ; sequence control of combined conveyers [B65G 43/10](#) } ; specially adapted for handling radioactive materials [G21](#))**
- B65G 37/005 · {comprising two or more co-operating conveying elements with parallel longitudinal axes (-the conveying elements being endless surfaces [B65G 15/10](#)-)}
 - B65G 37/02 · Flow-sheets for conveyer combinations in warehouses, magazines or workshops
- B65G 39/00** **Rollers, e.g. drive rollers, or arrangements thereof incorporated in rollerways or other types of mechanical conveyers (-driving gear for rollers of rollerways [B65G 13/06](#) ; drive rollers of endless conveyers [B65G 23/04](#) ; arrangement of rollers in metal-rolling equipment [B21B 39/10](#) ; friction members [F16H 55/32](#)-)**
- U B65G 39/02 · Adaptations of individual rollers and supports therefor
 - B65G 39/08 · · the rollers being magnetic (-in magnetic belt separators [B03C 1/00](#)-)
 - B65G 39/10 · Arrangements of rollers (-on a single axle [B65G 39/04](#)-)
 - U B65G 39/12 · · mounted on framework
 - B65G 39/16 · · · for aligning belts or chains (-for aligning tapes or webs [B65H](#)-)
 - B65G 39/20 · · attached to moving belts or chains (-belts [B65G 15/30](#) ; chains [B65G 17/38](#)-)
- U B65G 41/00** **Supporting frames or bases for conveyers as a whole, e.g. transportable conveyer frames**
- B65G 41/007 · {Means for moving conveyer frames and control arrangements therefor (-[B65G 41/02](#) takes precedence-)}
 - B65G 41/008 · · {frames mounted on wheels or caterpillar (-for movement on rail tracks [B65G 41/02](#)-)}
- B65G 43/00** **Control, e.g. safety, warning, fault-correcting, devices (for elevators, escalators or moving walkways [B66B](#); in general [F16P](#), [G08B](#))**

NOTE

- in this group the following indexing codes are used:

[B65G 2811/0673](#)
[B65G 2812/02099](#) to [B65G 2812/02108](#)

- B65G 43/04
 - detecting slip between driving element and load-carrier, e.g. for interrupting the drive{(-[B65G 43/02](#) takes precedence-)}
- B65G 43/08
 - Control devices operated by article or material being fed, conveyed or discharged{(-and controlling the discharging devices [B65G 47/42](#)-)}
- U B65G 45/00 Lubricating, cleaning, or clearing devices**
- B65G 45/10
 - Cleaning devices{(-adaptations of roller sleeves for cleaning belts [B65G 39/073](#))}
- B65G 47/00 Article or material handling devices associated with conveyers; Methods employing such devices (for sorting, e.g. postal [B07C](#))**
- U B65G 47/02
 - Devices for feeding articles or materials to conveyers
- U B65G 47/04
 - · for feeding articles
- B65G 47/06
 - · · from a single group of articles arranged in orderly pattern, e.g. workpieces in magazines{(-de-stacking devices [B65G 59/00](#) ; picking-up flat workpieces [B65H](#)-)}
- B65G 47/08
 - · · · spacing or grouping the articles during feeding{(-during transit by conveyers [B65G 47/26](#)-)}
- U B65G 47/12
 - · · from disorderly-arranged article piles or from loose assemblages of articles
- B65G 47/14
 - · · · arranging or orientating the articles by mechanical or pneumatic means during feeding{(-during transit by conveyer [B65G 47/24](#) , [B65G 47/26](#)-)}
- U B65G 47/1407
 - · · · · {the articles being fed from a container, e.g. a bowl}
- B65G 47/1442
 - · · · · {by means of movement of the bottom or a part of the wall of the container{(-devices using suction or magnetic forces [B65G 47/1485](#)-)}
- U B65G 47/16
 - · for feeding materials in bulk
- U B65G 47/18
 - · · Arrangements or applications of hoppers or chutes
- B65G 47/19
 - · · · having means for controlling material flow, e.g. to prevent overloading{(-controlling feed or discharge by weighing a continuous stream of material [G01G 11/08](#)-)}
- B65G 47/22
 - Devices influencing the relative position or the attitude of articles during transit by conveyers{(-during feeding [B65G 47/14](#)-)}
- U B65G 47/24
 - · Orientating the articles
- B65G 47/248
 - · · by turning over or inverting them{(-[B65G 47/244](#) takes precedence-)}
- B65G 47/26
 - · Arranging the articles, e.g. varying spacing between individual articles{(-stacking or destacking{ during transit [B65G 57/32](#) , [B65G 59/12](#))}
- B65G 47/28
 - · · during transit by a single conveyer{(-[B65G 47/261](#) takes precedence-)}
- B65G 47/29
 - · · · by temporarily stopping movement{(-stopping elements [B65G 47/88](#)-)}
- B65G 47/30
 - · · during transit by a series of conveyers{(-[B65G 47/261](#) takes precedence-)}
- B65G 47/32
 - · · · Applications of transfer devices{(-such devices per se [B65G 47/74](#)-)}
- B65G 47/34
 - Devices for discharging articles or materials from conveyers {(-[B65G 47/256](#) takes precedence; sorting in general [B07](#)-)}
- B65G 47/38
 - · by dumping, tripping, or releasing load carriers{(-by flexing or tilting travelling structures [B65G 47/94](#)-)}
- B65G 47/42
 - · operated by article or material being conveyed and discharged{(-[B65G 47/46](#) takes precedence-)}
- B65G 47/46
 - · and distributing, e.g. automatically, to desired points ({ pivotable chutes [B65G 11/12](#) } ; in tube mail systems [B65G 51/36](#) ; postal or like sorting [B07C](#) ; in railway operations [B61L](#) ; handling sheets or thin flat articles [B65H](#)-)}

- B65G 47/48
 - • • according to bodily destination marks on either articles or load carrier ~~(-marking data records [G06K](#)-)~~
- B65G 47/49
 - • • • without bodily contact between article or load carrier and automatic control device {e.g. the destination marks being electrically or electronically detected}
- B65G 47/51
 - • • according to unprogrammed signals, e.g. influenced by supply situation at destination ~~(-volume, flow or liquid level meters [G01F](#) ; scales or weighing machines [G01G](#) ; remote controls [G05G](#)-)~~
- U B65G 47/5104
 - • • • {for articles}
- U B65G 47/5109
 - • • • • {first In - First Out systems: FIFO}
- B65G 47/5113
 - • • • • {using endless conveyors ~~(-[B65G 47/5145](#) takes precedence-)~~}
- U B65G 47/5118
 - • • • • • {with variable accumulation capacity}
- B65G 47/5122
 - • • • • • • {by displacement of the conveyor-guiding means, e.g. of the loose pulley-type ~~(-[B65G 47/5127](#) takes precedence-)~~}
- U B65G 47/515
 - • • • • {First In-Last Out systems (FILO); Last In-First Out systems (LIFO)}
- B65G 47/5154
 - • • • • • {using endless conveyors ~~(-[B65G 47/5186](#) takes precedence-)~~}
- U B65G 47/5159
 - • • • • • • {with variable accumulation capacity}
- B65G 47/5163
 - • • • • • • • {by displacement of conveyor-guiding means, e.g. of the loose pulley type ~~(-[B65G 47/5168](#) takes precedence-)~~}
- B65G 47/52
 - Devices for transferring articles or materials between conveyers {or sections of one conveyer}, i.e. discharging and feeding devices ~~(-loading or unloading by means not incorporated in, or not operatively associated with, conveyers [B65G 65/00](#) ; transfer of workpieces during metal rolling [B21B 41/00](#)-)~~
- B65G 47/68
 - • adapted to receive articles arriving in one layer from one conveyer {lane} and to transfer them in individual layers to more than one conveyer {lane or to one broader conveyer lane}, or vice-versa, e.g. combining the flows of articles conveyed by more than one conveyer
- B65G 47/69
 - • • the articles being accumulated temporarily~~(-accumulating articles during transit [B65G 47/261](#)-)~~}
- B65G 47/71
 - • • the articles being discharged {or distributed}to several {distinct separate}conveyers {or to a broader conveyer lane}
- U B65G 47/74
 - Feeding, transfer, or discharging devices of particular kinds or types
- B65G 47/78
 - • Troughs having discharge openings and closures~~(-in air-slides [B65G 53/20](#)-)~~}
- B65G 47/82
 - • Rotary or reciprocating members for direct action on articles or materials, e.g. pushers, rakes, shovels~~(-means for pushing glass articles onto a conveyor [C03B 9/453](#)-)~~}
- B65G 47/84
 - • Star-shaped wheels or devices having endless travelling belts or chains, the wheels or devices being equipped with article-engaging elements{ not used, see [B65G 47/841](#) , [B65G 47/846](#)-}
- B65G 47/88
 - • Separating or stopping elements, e.g. fingers ~~(-attached to star-shaped wheels [B65G 47/84](#)-)~~}
- U B65G 47/90
 - • Devices for picking-up and depositing articles or materials
- B65G 47/908
 - • • {with inflatable picking-up means ~~(-inflatable gripping members on load engaging elements for cranes [B66C 1/46](#)-)~~}
- U B65G 47/94
 - • Devices for flexing or tilting travelling structures; Throw-off carriages
- B65G 47/96
 - • • Devices for tilting links or platform~~(-releasing load-carriers [B65G 47/38](#)-)~~}
- B65G 49/00**
 - Conveying systems characterised by their application for specified purposes not otherwise provided for ~~(-for conveying sheet material [B65H](#)-)~~**
- U B65G 49/02
 - for conveying workpieces through baths of liquid

- U B65G 49/04 • • the workpieces being immersed and withdrawn by movement in a vertical direction
 - U B65G 49/0409 • • • {specially adapted for workpieces of definite length}
 - U B65G 49/0436 • • • • {arrangements for conveyance from bath to bath}
 - U B65G 49/044 • • • • • {along a continuous circuit}
 - U B65G 49/045 • • • • • • {the circuit being fixed}
 - B65G 49/0454 • • • • • • • {by means of containers -or workpieces- carriers (-containers or carriers as such see [C25D 17/00](#)-)}
 - U B65G 49/05 • for fragile or damageable materials or articles
 - B65G 49/06 • • for fragile sheets, e.g. glass (-transporting of glass products during their manufacture [C03B 35/00](#)-)
- NOTE**
- In group [B65G 49/06](#) and subgroups it is desirable to add indexing codes for specific aspects of conveying systems. The indexing codes are chosen from groups [B65G 2249/00](#) to [B65G 2249/045](#)
- B65G 49/061 • • • {Lifting, gripping, or carrying means, for one or more sheets forming independent means of transport, e.g. suction cups, transport frames (-suction means as load-engaging elements attached to the lifting or lowering gear of cranes [B66C 1/02](#) ; suction cups for attaching purposes [F16B 47/00](#) ; suction cups on gripping heads [B25J 15/0616](#) ; suction cups in general [B65G 47/91](#) ; suction cups combined with cutting means on vertical conveyers [C03B 33/00](#) - [C03B 33/10](#) ; devices for turning sheets [B65G 49/067](#) ; suspending devices [B65G 49/066](#)-)}
 - B65G 49/062 • • • {Easels, stands or shelves, e.g. castor-shelves, supporting means on vehicles; (-vehicles adapted to carry glass sheets [B60P 3/002](#) ; storing articles [B65G 1/00](#) or [A47B 53/02](#) ; packaging for glass sheets [B65D 85/48](#)-)}
 - U B65G 49/063 • • • {Transporting devices for sheet glass}
 - B65G 49/064 • • • • {in a horizontal position (-[B65G 49/066](#) takes precedence-)}
 - B65G 49/065 • • • • • {supported partially or completely on fluid cushions e.g. a gas cushion (-in general [B65G 51/00](#)-)}
 - B65G 49/067 • • • {Sheet handling, means, e.g. manipulators, devices for turning or tilting sheet glass (-suction cups [B65G 49/061](#); combined with vertical conveyers [C03B 33/00](#) - [C03B 33/10](#) ; stacking and destacking [B65G 49/068](#)-)}
 - B65G 49/068 • • • {Stacking or destacking devices; Means for preventing damage to stacked sheets; e.g. spaces (-stacking in general [B65G 57/00](#) ; destacking in general [B65G 59/00](#) ; spacer sheets in general [B65H](#)-)}
 - B65G 49/069 • • • • {Means for avoiding damage to stacked plate glass, e.g. by interposing paper or powder spacers in the stack (-maculation per se [B65H 39/00](#)-)}
 - B65G 49/07 • • for semiconductor wafers{ Not used, see [H01L 21/677](#) }(-specially adapted for conveying of semiconductor wafers during manufacture or treatment of semiconductor or electric solid state devices or components [H01L 21/677](#)-)}
 - B65G 49/08 • • for ceramic mouldings (-charging, discharging, manipulation with charge in kilns [F27D 3/00](#)-)
- B65G 51/00 -
B65G 54/00
B65G 51/00**
- Non-mechanical conveying through pipes or tubes (-pipe-line systems [F17D](#)-); Floating in troughs**
- Conveying articles through pipes or tubes by fluid flow or pressure (-pneumatic railways [B61B](#)-); Conveying articles over a flat surface, e.g. the base of a trough, by jets located in the surface (-pumps [F04](#) ; fluid dynamics [F15D](#) ; valves, taps, cocks [F16K](#) ; pipes, pipe joints, or associated devices [F16L](#)-)**

- B65G 51/01
 - Hydraulic transport of articles (–[B65G 51/04](#) takes precedence; water roundabouts [A63G 3/00](#)–)
- U B65G 51/04
 - Conveying the articles in carriers having a cross-section approximating that of the pipe or tube; Tube mail systems
- B65G 51/08
 - • Controlling or conditioning the operating medium (–in compressors **59**; air-conditioning, e.g. de-watering, in pneumatic systems [F16L 55/10](#)–)
- B65G 53/00**

Conveying materials in bulk through troughs, pipes, or tubes by floating the materials, or by flows of gas, liquid, or foam (–fluidising in connection with loading or unloading [B65G 69/06](#) ; loaders for hay or cereals [A01D 87/00](#) ; { discharging means for mixtures containing clay or cementitious material [B28C 7/16](#) ; } fluidising devices facilitating filling or emptying of large containers [B65D 88/72](#) ; {combined washing or cutting and conveyance of materials in sugar manufacture [A23N](#); **C13C;} dredging [E02F](#); winning materials out of alluvial deposits [E21C 45/00](#) ; hydraulic or pneumatic mine-filling-up machines [E21F 15/00](#) ; fluid dynamics [F15D](#)–){pumping fluid by direct action of another fluid [F04F](#)}**
- B65G 53/02
 - Floating material troughs (–air slides [B65G 53/04](#)–)
- U B65G 53/04
 - Conveying materials in bulk pneumatically through pipes or tubes; Air slides
- B65G 53/28
 - • Systems utilising a combination of gas pressure and suction (–inducing feed of the materials by suction in gas pressure systems [B65G 53/14](#)–)
- B65G 53/32
 - Conveying concrete, e.g. for distributing same at building sites (–mixing concrete on or by conveyers [B28C 5/34](#)–)
- U B65G 53/34
 - Details
- B65G 53/36
 - • Arrangements of containers (–hoppers [B65D 3/06](#) ; containers in general [B65D](#)–)
- B65G 53/38
 - • Modification of material containing walls to facilitate fluidisation (–hoppers with walls modified for fluidisation of contents [B65D3714](#)–)
- U B65G 53/40
 - • Feeding or discharging devices
- B65G 53/42
 - • • Nozzles (–in general [B05B](#)–)
- B65G 53/50
 - • • Pneumatic devices (–incorporated in nozzles [B65G 53/42](#)–)
- U B65G 53/52
 - • Adaptations of pipes or tubes
- B65G 53/521
 - • • {means for preventing the accumulation or for removal of deposits (–preventing accumulation in pipes in general [F16L 55/24](#) ; preventing fouling in general [B08B 17/00](#)–)}
- B65G 53/528
 - • • {Flux combining or dividing arrangements (–[B65G 53/56](#) takes precedence–)}
- B65G 53/58
 - • Devices for accelerating or decelerating flow of the materials; Use of pressure generators (–controlling pressure of propelling gas [B65G 53/66](#)–)
- B65G 53/66
 - • use of indicator or control devices, e.g. for controlling gas pressure, for controlling proportions of material and gas, for indicating or preventing jamming of material{(–controlling the flow of coal firing systems [C21B 5/003](#)–)}

**B65G 57/00 -
B65G 69/00** **Stacking or de-stacking; Loading or unloading (by means incorporated in, or operatively associated with, conveyers [B65G 47/00](#) ; lift trucks [B60P](#) ; [B66F](#) ; handling sheet material or flat articles made therefrom [B65H](#) ; cranes [B66C](#) ; loading or unloading by soil-shifting or like equipment [E02F](#) ; stacking or de-stacking data record cards in association with machines for marking or sensing data [G06K](#)-)**

NOTE

In groups [B65G 57/00](#) to [B65G 61/00](#) , the following term is used with the meaning indicated:- "stacking" means disposing articles individually or in layers one above each other

B65G 57/00 **Stacking of articles (-[B65G 60/00](#) takes precedence; stacking of jumbo rolls [B41F](#); stackable containers [B65D](#); feeding, piling, or stacking sheets [B65H](#); stacked delivery of machined products, see the relevant classes for the machines-)**

- U [B65G 57/02](#) • by adding to the top of the stack
- U [B65G 57/11](#) • • the articles being stacked by direct action of the feeding conveyer
- [B65G 57/14](#) • • • the articles being transferred from carriers moving in an endless path adjacent to the stacks (-conveyer constructions [B65G 15/00](#) to [B65G 35/00](#) ; combinations of conveyers [B65G 37/00](#)-)

B65G 59/00 **De-stacking of articles (-[B65G 60/00](#) takes precedence-)**

B65G 61/00 **Use of pick-up or transfer devices or of manipulators for stacking or de-stacking articles not otherwise provided for (-manipulators [B25J](#)-)**

B65G 63/00 **Transferring or trans-shipping at storage areas, railway yards, harbours, {or in opening mining cuts}; Marshalling yard installations (-transferring refuse between vehicles or containers [B65F 9/00](#) ; dredging, soil shifting [E02F](#) ; conveyers used in co-operation with coal or like winning apparatus [E21C 47/00](#)-)**

- [B65G 63/04](#) • with essentially horizontal transit by bridges equipped with conveyers{(-cranes [B66C](#)-)}
- [B65G 63/06](#) • with essentially vertical transit (-hoppers [B65D 88/26](#)-)

B65G 65/00 **Loading or unloading (-of vehicles [B65G 67/00](#)-)**

- U [B65G 65/02](#) • Loading or unloading machines comprising essentially a conveyer for moving the loads associated with a device for picking-up the loads
- [B65G 65/04](#) • • with pick-up shovels (-constructions of shovels [E02F](#)-)
- [B65G 65/28](#) • Piling or unpling loose materials in bulk, e.g. coal, manure, timber, not otherwise provided for (-by soil-shifting or like equipment [E02F](#)-)
- [B65G 65/30](#) • Methods or devices for filling or emptying bunkers, hoppers, tanks, or like containers, of interest apart from their use in particular chemical or physical processes or their application in particular machines, e.g. not covered by a single other subclass (-devices for tilting and emptying containers [B65G 65/23](#) ; such containers having means facilitating filling or emptying [B65D 88/54](#)-)

NOTE

Methods or devices for filling bunkers, hoppers, or containers are only classified in group [B65G 65/30](#) if they are of general application apart from their use in particular processes or their application in particular machines or if they are not covered by a single other subclass

- [B65G 65/32](#) • • Filling devices (-pneumatic conveyers [B65G 51/00](#) , [B65G 53/00](#)-)
- [B65G 65/34](#) • • Emptying devices (-conveyer constructions [B65G 15/00](#) to [B65G 35/00](#) ; devices similar to vehicle tipplers [B65G 67/48](#)-)

- U B65G 65/40 . . . Devices for emptying otherwise than from the top
- U B65G 65/46 using screw conveyers
- B65G 65/463 {arranged vertically or substantially vertically within the container (~~B65G 65/466~~ takes precedence)}
- B65G 65/48 using other rotating means, e.g. rotating pressure sluices in pneumatic systems (~~B65G 53/46~~ takes precedence)}

- B65G 67/00** **Loading or unloading vehicles (by means incorporated in the vehicles [B60](#) to [B64](#); ground or aircraft-carrier-deck installations [B64F](#); transferring refuse between vehicles or containers [B65F 9/00](#))**
- U B65G 67/02 . Loading or unloading land vehicles
- B65G 67/04 . . Loading land vehicles (~~loading or unloading boats to or from land vehicles [B60P 3/10](#)~~)
- B65G 67/16 . . . Loading coke-oven products (~~discharging coke-ovens [C10B 33/00](#)~~)
- B65G 67/18 . . . Refuelling locomotives with solid fuels (~~servicing locomotives [B61K 11/02](#)~~)
- U B65G 67/24 . . Unloading land vehicles
- U B65G 67/32 . . . using fixed tipping installations
- B65G 67/34 Apparatus for tipping wagons or mine cars (~~inverting wagons [B65G 67/48](#); platform-lifts with tiltable platforms [B66F 7/22](#)~~)
- B65G 67/48 Vehicle tipplers (~~devices for washing or cleaning railroad vehicles [B60S](#)~~)
- B65G 67/60 . Loading or unloading ships (~~B65G 67/02~~ takes precedence; arrangement of ship-based loading or unloading equipment for cargo or passengers [B63B 27/00](#))
- B65G 67/62 . . using devices influenced by the tide or by the movement of the ship, e.g. devices on pontoons (~~horizontal loading or unloading platforms [B65G 69/22](#); loading ramps [B65G 69/28](#)~~)

- B65G 69/00** **Auxiliary measures taken, or devices used, in connection with loading or unloading (in vehicles, see the relevant subclasses; preventing, minimising, or fighting fire [A62C](#))**
- U B65G 69/04 . Spreading out the materials conveyed over the whole surface to be loaded; Trimming heaps of loose materials
- B65G 69/0408 . . {by relatively moving an endless feeding means (~~B65G 69/0458~~ takes precedence)}
- B65G 69/0441 . . {with chutes, deflector means or channels (~~B65G 69/0458~~ takes precedence)}
- B65G 69/045 . . {with scraping devices (~~B65G 69/0416~~ takes precedence)}
- B65G 69/08 . Devices for emptying storage spaces as completely as possible (~~devices preventing the formation of bridges [B65D 88/64](#)~~)
- B65G 69/10 . Obtaining an average product from stored bulk material (~~for measuring or testing [G01](#)~~)
- B65G 69/22 . Horizontal loading or unloading platforms (~~pile tables [B65H](#); as road or railway equipment [E01F 1/00](#)~~)
- B65G 69/28 . Loading ramps (~~as road or railway equipment [E01F 1/00](#)~~)

Project: N/A (B65H)

**B65H 1/00 -
B65H 15/00**

Feeding articles to machines; Separating articles from piles; Pile supports (manipulators [B25J](#))

B65H 1/00

Supports or magazines for piles from which articles are to be separated (carriers used for associating, collating, or gathering articles [B65H 39/00](#))

- B65H 1/08
- with means for advancing the articles to present the articles to the separating device{(-[B65H 1/02](#) takes precedence-)}
- B65H 1/10
- • comprising weights{(-[B65H 1/022](#) takes precedence-)}
- B65H 1/12
- • comprising spring{(-[B65H 1/022](#) takes precedence-)}
- B65H 1/14
- • comprising positively-acting mechanical devices{(-[B65H 1/025](#) takes precedence-)}
- B65H 1/16
- • comprising pneumatic or hydraulic means{(-[B65H 1/18](#) , [B65H 1/20](#) take precedence-)}
- U B65H 1/26
- with auxiliary supports to facilitate introduction or renewal of the pile
- B65H 1/266
- • {Support fully or partially removable from the handling machine, e.g. cassette, drawer (-[B65H 1/027](#) takes precedence-)}
- B65H 1/30
- with means for replenishing the pile during continuous separation of articles therefrom{(-[B65H 1/22](#) takes precedence-)}
- B65H 3/00**
- Separating articles from piles (-associating, collating, or gathering articles [B65H 39/00](#) ; machines for separating superposed webs [B65H 41/00](#) ; unpiling thin material combined with folding [B65H 45/26](#) ; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling [B65H 83/00](#) , { [B07C 1/02](#) , [G07D 11/0084](#) })**
- U B65H 3/02
- using friction forces between articles and separator
- B65H 3/06
- • Rollers or like rotary separators{(-[B65H 3/42](#) takes precedence-)}
- B65H 3/063
- • • {separating from the bottom of pile (-[B65H 3/0615](#) , [B65H 3/0623](#) take precedence-)}
- B65H 3/0638
- • • {Construction of the rollers or like rotary separators (-[B65H 3/0615](#) takes precedence; construction of feed or guide rollers [B65H 27/00](#)-)}
- B65H 3/08
- using pneumatic force{(-[B65H 3/40](#) , [B65H 3/42](#) take precedence-)}
- U B65H 3/0808
- • {Suction grippers}
- U B65H 3/085
- • • {separating from the bottom of pile}
- B65H 3/0858
- • • • {this action resulting merely in a curvature of each article being separated (-in combination with the use of screw or like separators [B65H 3/28](#)-)}
- B65H 3/0891
- • • {Generating or controlling the depression (-[B65H 3/0883](#) , [B65H 3/14](#) take precedence; in response to abnormal circumstances [B65H 7/16](#)-)}
- B65H 3/30
- by escapement devices (-screw and like separators [B65H 3/28](#)-); from staggered piles; from piles of articles having staggered formations, e.g. cuts or perforations
- B65H 3/32
- by elements, e.g. fingers, plates, rollers, inserted or traversed between articles to be separated and remainder of the pile (-such elements acting only as supplementary devices to assist separation or prevent double feed [B65H 3/50](#)-)
- B65H 3/40
- by two or more separators acting alternately on the same pile (-rotary or oscillating bodies carrying two or more separators [B65H 3/42](#)-)
- B65H 3/46
- Supplementary devices or measures to assist separation or prevent double feed (-control means comprising detectors responsive to double feed [B65H 7/12](#)-)
- B65H 3/56
- • Elements, e.g. scrapers, fingers, needles, brushes, acting on separated article or on edge of the pile{(-[B65H 3/52](#) takes precedence-)}
- B65H 5/00**
- Feeding articles separated from piles; Feeding articles to machines (identical mechanisms or parts for delivering or advancing articles from machined ({ [B65H 9/00](#) takes precedence; } identical mechanisms or parts for delivering or advancing articles from machines [B65H 29/00](#) ; recirculating articles [B65H 85/00](#) , { [G03B 27/6257](#) })))**

- B65H 5/002 · {Adaptations of counting devices (-delivery of articles from machines [B65H 29/001-](#))}
- B65H 5/02 · by belts or chains,{e.g. between belts or chains(-by combinations of endless conveyers and grippers [B65H 5/085](#) ; by suction belts [B65H 5/224-](#))}
- B65H 5/04 · by movable tables or carriages {(-rotary tables [B65H 5/18](#) ; { suction gripper or gripper tables [B65H 5/10](#))}
- B65H 5/06 · by rollers {or balls e.g. between rollers(-transport by suction rollers [B65H 5/226-](#))}
- U B65H 5/08 · by grippers, e.g. suction grippers
- B65H 5/085 · · {by combinations of endless conveyers and grippers (-suction belts [B65H 5/224-](#))}
- B65H 5/10 · · Reciprocating or oscillating grippers {e.g. suction or gripper tables}
- B65H 5/22 · by air-blast or suction device (-suction grippers [B65H 5/08-](#))
- U B65H 5/222 · · {by suction devices}
- B65H 5/224 · · · {by suction belts (-[B65H 11/005](#) takes precedence-)}
- U B65H 5/30 · Opening devices for folded sheets or signatures
- B65H 5/303 · · {comprising movable endless means for opening the folded sheets (-[B65H 5/308](#) takes precedence-)}
- B65H 5/305 · · {comprising rotary means for opening the folded sheets (-[B65H 5/308](#) takes precedence-)}
- U B65H 7/00 Controlling article feeding, separating, pile-advancing, or associated apparatus, to take account of incorrect feeding, absence of articles, or presence of faulty articles**
- U B65H 7/02 · by feelers or detectors
- B65H 7/04 · · responsive to absence of articles, e.g. exhaustion of pile (-[B65H 7/14](#) takes precedence-)
- B65H 7/06 · · responsive to presence of faulty articles or incorrect separation or feed (-[B65H 7/14](#) takes precedence-)
- B65H 7/10 · · · responsive to incorrect side register (-controlling transverse register of webs [B65H 23/032-](#))
- U B65H 9/00 Registering, e.g. orientating, articles; Devices therefor**
- B65H 9/04 · Fixed or adjustable stops or gauges (-gauge pins [B65H 9/02-](#))
- U B65H 9/10 · Pusher and like movable registers; Pusher or gripper devices which move articles into registered position
- NOTE**
After the notation of the groups [B65H 9/10](#) to [B65H 9/108](#) and separated therefrom by a + sign, the notation L may be added to indicate that the device moves articles, already positioned in registered position according to a first direction, into registered position along a second direction perpendicular to the first one, e.g. for lateral registering
- U B65H 9/103 · · {acting by friction or suction on the article for pushing or pulling it into registered position, e.g. against a stop}
- B65H 9/106 · · · {using rotary driven elements as part acting on the article (-[B65H 9/105](#) takes precedence; registering laterally while article is forwarded in principal direction [B65H 9/16-](#))}
- U B65H 15/00 Overturning articles**
- B65H 15/02 · Overturning piles

- B65H 16/00 - B65H 27/00** **Feeding webs to or from machines; Winding or unwinding webs; Splicing webs** (~~web-delivering apparatus incorporating devices for performing auxiliary operations [B65H 35/00](#) , [B65H 37/00](#) ; associating two or more webs [B65H 39/16](#) ; winding or unwinding metal band or like flexible metallic material during manufacture [B21C](#) ; { cutting machines or devices in general [B26D](#) } ; inselective printers, e.g. typewriters, ink-ribbon mechanisms [B41J](#) ; in cinematographic or photographic apparatus [G03B](#) ; winding, unwinding, or feeding tape to, in, or from, information processing apparatus [G06](#) , [G11B](#)-)~~)
- B65H 16/00** **Unwinding, paying-out webs**{(~~reel-to-reel type web winding and unwinding mechanisms [B65H 18/103](#) , [B65H 18/145](#)-)}~~}
- U **B65H 16/02** · Supporting web roll
- B65H 16/028** · · {on its outer circumference (~~[B65H 16/08](#) takes precedence-~~)}
- U B65H 19/00** **Changing the web roll**
- U **B65H 19/10** · in unwinding mechanisms or in connection with unwinding operations
- B65H 19/18** · · Attaching, e.g. pasting, the replacement web to the expiring web{(~~adhesive arrangements on leading end of replacement web, tabs and adhesive tapes for splicing [B65H 19/102](#)-}~~)}
- WARNING**
 Groups [B65H 19/1805](#) to [B65H 19/1842](#) are not complete pending reclassification. See also this group
- U **B65H 19/22** · in winding mechanisms or in connection with winding operations
- B65H 19/2238** · · {The web roll being driven by a winding mechanism of the nip or tangential drive type (~~[B65H 19/2276](#) takes precedence-~~)}
- B65H 19/28** · · Attaching the leading end of the web to the replacement web-roll core or spindle (~~cores, formers, supports or holders, e.g. reels, with arrangements for securing ends of material [B65H 75/28](#)-}~~)
- B65H 19/29** · · Securing the trailing end of the wound web to the web roll (~~cores, formers, supports or holders, e.g. reels, with arrangements for securing ends of material [B65H 75/28](#)-}~~)
- U B65H 20/00** **Advancing webs**
- B65H 20/30** · Arrangements for accumulating surplus web (~~while changing the web roll [B65H 19/14](#) , [B65H 19/24](#)-}~~)
- B65H 21/00** **Apparatus for splicing webs** (~~during web-roll changing [B65H 19/00](#)-)~~)
- B65H 23/00** **Registering, tensioning, smoothing or guiding webs** (~~registering articles [B65H 9/00](#) ; in connection with splicing [B65H 21/00](#)-)~~)
- B65H 23/005** · {Sensing web roll diameter (~~warning or safety devices responsive to a predetermined diameter [B65H 26/08](#)-}~~)}
- B65H 23/02** · transversely (~~by tentering, gripper, or like apparatus operating on fabric webs [D06C](#)-}~~)
- B65H 23/0204** · · {Sensing transverse register of web (~~and controlling it [B65H 23/032](#)-}~~)}
- U **B65H 23/04** · longitudinally
- B65H 23/042** · · {Sensing the length of a web loop (sensing web tension [B65H 23/044](#))}
- B65H 23/044** · · {Sensing web tension (~~[B65H 23/06](#) , [B65H 23/18](#) take precedence-~~)}
- B65H 23/046** · · {Sensing longitudinal register of web (~~[B65H 23/18](#) takes precedence-~~)}
- U **B65H 23/06** · · by retarding devices, e.g. acting on web-roll spindle
- B65H 23/066** · · · {Electrical brake devices therefor (~~[B65H 23/063](#) takes precedence-~~)}
- B65H 23/10** · · · acting on running web (~~suction retarders [B65H 23/24](#)-}~~)

- U B65H 23/18
 - • by controlling or regulating the web-advancing mechanism, e.g. mechanism acting on the running web
- U B65H 23/195
 - • • in winding mechanisms or in connection with winding operations
- B65H 23/198
 - • • • motor-controlled({*Controlling electrical drive motors therefor*})({~~Controlling electrical drive motors therefor~~})
- B65H 23/28
 - • by longitudinally-extending strips, tubes, plates, or wires (-flexible tapes or bands [B65H 23/30](#)-)
- B65H 26/00**

Warning or safety devices, e.g. automatic fault detectors, stop-motions, for web-advancing mechanisms (-safety devices in general [F16P](#) ; investigating chemical or physical properties of materials in general [G01N](#) ; indicating devices in general [G08B](#)-)
- B65H 27/00**

Special constructions of feed or guide rollers and surfaces thereof ({ tentering rollers [B65H 23/02](#) } ; rollers in general [F16C 13/00](#))
- U B65H 29/00**

Delivering or advancing articles from machines; Advancing articles to or into piles
- B65H 29/001
 - {Adaptations of counting devices (-to feeding of articles to machines [B65H 5/002](#)-)}
- B65H 29/003
 - {by grippers (-[B65H 29/02](#) takes precedence-)}
- U B65H 29/02
 - by mechanical grippers engaging the leading edge only of the articles
- U B65H 29/04
 - • the grippers being carried by endless chains or bands
- B65H 29/041
 - • • {and introducing into a pile (-slowing-down from grippers [B65H 29/683](#)-)}
- B65H 29/12
 - by means of the nip between two, or between two sets of, moving tapes or bands {or rollers}
- B65H 29/16
 - by contact of one face only with moving tapes, bands, or chains({-with suction belts [B65H 29/242](#)-})
- B65H 29/20
 - by contact with rotating friction members, e.g. rollers, brushes, or cylinders({-with suction rollers [B65H 29/243](#)-})
- B65H 29/24
 - by air blast or suction apparatus ({ [B65H 5/22](#) takes precedence; } dropping articles from suction carriers [B65H 29/32](#) { ; pneumatic brakes [B65H 29/686](#) })
- U B65H 29/245
 - • {Air blast devices}
- B65H 29/248
 - • • {with coanda effect (-separating from a stack [B65H 3/14](#)-)}
- B65H 29/26
 - by dropping {the articles}
- B65H 29/28
 - • from mechanical grippers (-grippers engaging the leading edge only [B65H 29/02](#)-)
- U B65H 29/54
 - Article strippers, e.g. for stripping from advancing elements
- B65H 29/56
 - • for stripping from elements or machines{ for electrographic machines [G03G](#)-}
- U B65H 29/58
 - Article switches or diverters
- B65H 29/60
 - • diverting the stream into alternative paths (-[B65H 29/62](#) takes precedence-)
- B65H 29/62
 - • diverting faulty articles from the main streams (-control devices detecting faulty articles [B65H 43/04](#)-)
- U B65H 29/66
 - Advancing articles in overlapping streams
- B65H 29/6609
 - • {forming an overlapping stream (-by separation of articles from a pile [B65H 5/24](#)-)}
- B65H 29/6645
 - • {buffering an overlapping stream of articles (-winding articles into rolls [B65H 29/006](#)-)}
- U B65H 29/6654
 - • {changing the overlapping figure}
- B65H 29/6663
 - • • {reversing the overlapping figure (-round stack feeder [B65H 1/225](#)-)}

- B65H 29/6672
- {dividing an overlapping stream into two or more streams; (-articles switches or diverters [B65H 29/58-](#))}
- U B65H 29/68
- Reducing the speed of articles as they advance
- B65H 29/683
- {Slowing-down from chain delivery ([-B65H 29/686](#) takes precedence)}
- B65H 31/00** **Pile receivers (-carriers used for associating, collating or gathering articles [B65H 39/00-](#))**
- U B65H 31/04
- with movable end support arranged to recede as pile accumulates
- U B65H 31/12
- • Devices relieving the weight of the pile or permitting or effecting movement of the pile end support during piling
- B65H 31/14
- • • Springs ([-fluid springs \[B65H 31/16-\]\(#\)](#))
- B65H 31/28
- Bands, chains, or like moving receivers ([-for articles piled on edge \[B65H 31/06-\]\(#\)](#))
- B65H 31/30
- Arrangements for removing completed piles ([-bands, chains, or like moving receivers \[B65H 31/28-\]\(#\)](#))
- B65H 31/3027
- • {by the nip between moving belts or rollers ([-pile being formed between belts or rollers \[B65H 29/145-\]\(#\)](#))}
- U **B65H 33/00** **Forming counted batches in delivery pile or stream of articles**
- B65H 33/14
- by diverting batches to separate receivers([\(-\[B65H 33/16\]\(#\) takes precedence; article switches or diverters \[B65H 29/58-\]\(#\)\)](#))
- B65H 35/00** **Delivering articles from cutting or line-perforating machines; Article or web delivery apparatus incorporating cutting or line-perforating devices, e.g. of the kinds specified below ([-cutting or perforating machines or devices in general \[B26D\]\(#\) , \[B26F-\]\(#\)](#))**
- U B65H 35/0006
- {Article or web delivery apparatus incorporating cutting or line-perforating devices}
- B65H 35/0013
- • {and applying the article or the web by adhesive to a surface ([-\[B65H 35/002\]\(#\) takes precedence-](#))}
- B65H 35/002
- • {Hand-held or table apparatus ([-\[B65H 35/006\]\(#\) takes precedence-](#))}
- U B65H 35/0026
- • • {for delivering pressure-sensitive adhesive tape}
- B65H 35/0033
- • • • {and affixing it to a surface ([-\[B65H 35/004\]\(#\) takes precedence-](#))}
- U B65H 35/04
- from or with transverse cutters or perforators
- B65H 35/06
- • from or with blade, e.g. shear-blade, cutters or perforators ([-from or with revolving blade \[B65H 35/08-\]\(#\)](#))
- B65H 37/00** **Article or web delivery apparatus incorporating devices for performing specified auxiliary operations ([-incorporating cutting or line-perforating devices \[B65H 35/00-\]\(#\)](#))**
- B65H 37/02
- for applying adhesive ([-and securing together \[B65H 37/04-\]\(#\)](#))
- B65H 37/04
- for securing together articles or webs, e.g. by adhesive, stitching or stapling ([-adhering replacement to expiring web during change of web roll \[B65H 19/18-\]\(#\)](#))
- B65H 39/00** **Associating, collating or gathering articles or webs (-machines for both collating or gathering and permanently attaching together sheets or signatures [B42C 1/00-](#))**
- B65H 39/10
- Associating articles from a single source, to form e.g. a writing-pad([\(-laminating \[B32B 37/00\]\(#\) , \[B32B 38/00-\]\(#\)\)](#))
- U **B65H 43/00** **Use of control, checking, or safety devices, e.g. automatic devices comprising an element for sensing a variable**

- B65H 43/02 · detecting, or responding to, absence of articles (~~B65H 43/08 takes precedence~~)
- B65H 43/04 · detecting, or responding to, presence of faulty articles (~~B65H 43/08 takes precedence~~; diverting faulty articles from main streams [B65H 29/62](#))
- B65H 43/06 · detecting, or responding to, completion of pile (~~B65H 43/08 takes precedence~~)
- B65H 45/00** **Folding thin material (~~especially adapted for the manufacture or treatment of particular products, see appropriate subclasses, e.g. D06F 89/00~~)**
- B65H 45/02 · Folding limp material ({ Shaping of plastics or by bending or folding [B29C 53/00](#) ; Folding sheets, blanks or webs for box, carton, envelope or bag making [B31B 1/26](#) ; Shaping of paper or cardboard by bending or folding [B31F 1/0003](#) ; })without application of pressure to define or form crease lines (~~winding or unwinding fabrics for feeding to or from machines [B65H 16/00](#) to [B65H 27/00](#) ; folding garments for packaging purposes [B65B](#) ; folding fabrics in sewing machines [D05B](#)~~)
- B65H 45/06 · · Folding webs (~~B65H 20/28 takes precedence~~)
- B65H 45/12 · Folding articles or webs with application of pressure to define or form crease lines (~~B65H 20/28 takes precedence~~; pleating, kilting or goffering textile fabrics [D06J](#))
- B65H 45/18 · · Oscillating or reciprocating blade folders (~~carried on rotary members [B65H 45/16](#)~~)
- B65H 45/20 · · Zig-zag folders(~~B65H 45/228 takes precedence~~)
- B65H 45/26 · · Folding in combination with unpiling (~~unpiling [B65H 3/00](#)~~)
- B65H 45/28 · · Folding in combination with cutting (~~cutting machines [B26D](#)~~)
- B65H 45/30 · · Folding in combination with creasing, smoothing or application of adhesive (~~folding or adhesive application in article or web delivering [B65H 37/00](#)~~)
- B65H 47/00** **Unfolding thin limp material (~~B65H 20/28 takes precedence~~; opening devices for sheets or signatures [B65H 5/30](#))**
- B65H 49/00 - B65H 73/00** **Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material (~~devices specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material [B65H 75/34](#) ; working and processing wire [B21F](#), [G B21G](#); unwinding, paying-out, forwarding, or winding ropes or cables in load-moving apparatus [B61B](#); [B65G](#); [B66](#); creels, warping, beaming, or leasing machines or methods for textile manufacturing purposes [D02H](#))~~**
- B65H 49/00** **Unwinding or paying-out filamentary material; Supporting, storing or transporting packages from which filamentary material is to be withdrawn or paid-out (~~winding [B65H 54/00](#) ; bobbins, tubes or other cores for packages [B65H 75/00](#))~~**
- B65H 49/18 · Methods or apparatus in which packages rotate (~~flyers or other guides assisting paying-out [B65H 57/00](#) ; supports or holders, for storing and repeatedly paying-out and rewinding lengths of material provided for particular purposes [B65H 75/34](#)~~)
- U B65H 49/20 · · Package-supporting devices
- B65H 49/28 · · · Turntables {i.e. package resting on a table(~~having also means for clamping the package [B65H 49/30](#)~~)}
- B65H 49/36 · Securing packages to supporting devices (~~arrangements for applying packages to, or removing from, supports [B65H 65/00](#) , [B65H 67/00](#)~~)
- B65H 51/00** **Forwarding filamentary material (~~stretch-spinning methods [D01D 5/12](#) ; drawing or drafting rovings or the like [D01H 5/00](#)~~)**

- B65H 51/02
 - Rotary devices, e.g. with helical forwarding surfaces (-devices for temporarily storing filamentary material during forwarding [B65H 51/20](#) ; driven rotary devices for controlling tension [B65H 59/18](#)-)
- B65H 51/16
 - Devices for entraining material by flow of liquids or gases, e.g. air-blast devices (-blowing slag wool in molten state [C03B 37/06](#)-)
- U B65H 51/20
 - Devices for temporarily storing filamentary material during forwarding, e.g. for buffer storage
- B65H 51/22
 - • Reels or cages, e.g. cylindrical, with storing and forwarding surfaces provided by rollers or bars{-measuring and temporarily storing the weft in looms [D03D 47/36](#) ; thread feeding devices for weft knitting machines [D04B 15/48](#)-}
- B65H 51/30
 - Devices controlling the forwarding speed to synchronise with supply, treatment, or take-up apparatus (-[B65H 59/10](#) , [B65H 59/38](#) take precedence-)
- B65H 54/00**
 - Winding, coiling, or depositing filamentary material (-cores, formers, holders, cans or receptacles [B65H 75/02](#)-)**
- U B65H 54/02
 - Winding and traversing material on to reels, bobbins, tubes, or like package cores or formers
- U B65H 54/10
 - • for making packages of specified shapes or on specified types of bobbins, tubes, cores, or formers
- B65H 54/12
 - • • on flanged bobbins or spools (-[B65H 54/20](#) takes precedence-)
- B65H 54/28
 - • Traversing devices; Package-shaping arrangements (-arrangements for preventing ribbon winding [B65H 54/38](#) ; grooved, slotted, or split drums for driving of packages [B65H 54/46](#)-)
- U B65H 54/2806
 - • • {Traversing devices driven by cam}
- B65H 54/2809
 - • • • {rotating grooved cam (-driving split drums [B65H 54/50](#)-)}
- B65H 54/2821
 - • • {Traversing devices driven by belts or chains (-[B65H 54/2836](#) takes precedence-)}
- B65H 54/2848
 - • • {Arrangements for aligned winding (-reels with grooves or grooved elements for aligned winding [B65H 75/265](#)-)}
- B65H 54/2851
 - • • • {by pressing the material being wound against the drum, flange or already wound material, e.g. by fingers or rollers; guides moved by the already wound material (-[B65H 54/2869](#) takes precedence-)}
- B65H 54/2881
 - • • {Traversing devices with a plurality of guides for winding on a plurality of bobbins (-forming multiple packages [B65H 54/20](#)-)}
- B65H 54/2884
 - • • {-Microprocessor-controlled traversing devices in so far the control is not special to one of the traversing devices of groups [B65H 54/2803](#) - [B65H 54/325](#) or group [B65H 54/38](#)-}
- B65H 54/30
 - • • with thread guides reciprocating or oscillating with fixed stroke{-[B65H 54/2803](#) to [B65H 54/2896](#) take precedence-}
- U B65H 54/36
 - • • Yarn-guide advancing or raising mechanisms, e.g. cop-building arrangements
- B65H 54/365
 - • • • {for cops of pirn winding machine (-[B65H 54/14](#) takes precedence-)}
- U B65H 54/56
 - Winding of hanks or skeins
- B65H 54/58
 - • Swifts or reels adapted solely for the formation of hanks or skeins (-[B65H 49/30](#) takes precedence-)
- B65H 54/64
 - Winding of balls; ~~{(-Forming hollow objects by winding on to fusible or soluble cores, e.g. forming pressure vessels [B29C 53/56](#) -Forming hollow objects by winding on to fusible or soluble cores, e.g. forming pressure vessels [B29C 53/56](#)-)}~~
- U B65H 54/70
 - Other constructional features of yarn-winding machines

- B65H 54/702
- {Arrangements for confining or removing dust (-for spinning [D01H 11/00](#) ; cleaning in general [B08B](#)-)}
- B65H 54/74
- • Driving arrangements (-arrangements for preventing ribbon winding [B65H 54/38](#) ; arrangements for rotating packages [B65H 54/40](#)-)
- U B65H 57/00** **Guides for filamentary materials; Supports therefor**
- U B65H 57/18
- mounted to facilitate unwinding of material from packages
- B65H 57/20
- • Flyers (-for inserting twist [D01H](#)-)
- B65H 57/28
- Reciprocating or oscillating guides (-traversing devices for winding, coiling, or depositing filamentary material [B65H 54/28](#)-)
- U B65H 59/00** **Adjusting or controlling tension in filamentary material, e.g. for preventing snarling; Application of tension indicators**
- B65H 59/02
- by regulating delivery of material from supply package (-by contact of package with support [B65H 49/02](#) ; by controlling speed of driving mechanism of unwinding or paying-out devices [B65H 59/38](#)-)
- B65H 59/10
- by devices acting on running material and not associated with supply or take-up devices (-by controlling speed of driving mechanism of material-forwarding devices [B65H 59/38](#)-)
- B65H 59/18
- • Driven rotary elements (-material-forwarding devices [B65H 51/00](#)-)
- B65H 59/36
- • Floating elements compensating for irregularities in supply or take-up of material (-buffer storage devices [B65H 51/20](#)-)
- B65H 61/00** **Applications of devices for metering predetermined lengths of running material (-of general application [G01B](#)-)**
- B65H 63/00** **Warning or safety devices, e.g. automatic fault detectors, stop-motions (-safety devices in general [F16P](#) ; indicating devices in general [G08B](#)-){Quality control of the package}**
- U B65H 63/02
- responsive to reduction in material tension, failure of supply, or breakage, of material
- U B65H 63/024
- • responsive to breakage of materials
- U B65H 63/036
- • • characterised by the combination of the detecting or sensing elements with other devices, e.g. stopping devices for material advancing or winding mechanism
- B65H 63/0368
- • • • {by clutching or de-clutching the package from its driving means (*package secured to a rotary driven member*)}(*package-secured to a rotary driven member*)}
- B65H 63/06
- responsive to presence of irregularities in running material, e.g. for severing the material at irregularities {Control of the correct working of the yarn cleaner}
- U B65H 63/08
- responsive to delivery of a measured length of material, completion of winding of a package, or filling of a receptacle
- B65H 63/088
- • {Clamping device (-connected with slub-catcher [B65H 63/061](#)-)}
- B65H 65/00** **Securing material to cores or formers (-arrangements for securing ends of material to cores, formers, supports or holders, e.g. reels, [B65H 75/28](#)-)**
- U B65H 67/00** **Replacing or removing cores, receptacles, or completed packages at paying-out, winding, or depositing stations**
- B65H 67/02
- Arrangements for removing spent cores or receptacles and replacing by supply packages at paying-out stations ({ for cans [D01H 9/008](#) ; arrangement of the service carriage [B65H 54/26](#) ; } supports for packages [B65H 49/04](#) , [B65H 49/20](#)-)

- B65H 67/04
- Arrangements for removing completed take-up packages and {or}replacing by cores, formers, or empty receptacles at winding or depositing stations; Transferring material between adjacent full and empty take-up elements{(-arrangement of the service carriage [B65H 54/26-](#))}
- B65H 67/0405
- {Arrangements for removing completed take-up packages or for loading an empty core (~~-B65H 67/044 takes precedence-~~)}
- B65H 67/06
- Supplying cores, receptacles, or packages to, or transporting from, winding or depositing stations{(-between spinning and winding machines [D01H 9/18](#) , e.g. transporting cans [D01H 9/185-](#))}
- B65H 67/08
- Automatic end-finding and material-interconnecting arrangements (~~-knot-tying devices [B65H 69/00-](#)~~)
- U B65H 69/00** **Methods of, or devices for, interconnecting successive lengths of material; Knot-tying devices{;Control of the correct working of the interconnecting device}**
- B65H 69/06
- by splicing{ Grommets made by splicing [D07B 1/18](#) , auxiliary apparatus for splicing ropes or cables [D07B 7/16-](#)}
- B65H 71/00** **Moistening, sizing, oiling, waxing, colouring or drying filamentary material as additional measures during package formation (-applying liquids or other fluent materials to surfaces in general [B05](#))**
- B65H 71/002
- {Abrading, scraping (~~-in general [D02J 3/00-](#)~~)}
- B65H 73/00** **Stripping waste material from cores or formers, e.g. to permit their re-use**
- B65H 75/00 - B65H 99/00** **Methods, apparatus, or devices of general interest or not otherwise provided for in connection with the handling of webs, tapes, or filamentary materials (-unwinding, paying-out, forwarding or winding ropes or cables in load-moving apparatus [B61B](#) , [B65G](#) , [B66-](#)**
- B65H 75/00** **Storing webs, tapes, or filamentary material, e.g. on reels (-fishing reels [A01K 89/00](#) ; storing means for record carriers, specially adapted for cooperation with the recording or reproducing apparatus [G11B 23/02-](#))**
- B65H 75/005
- {Working on damaged packages, e.g. reshaping collapsed cores (~~-working on cores, reels or the like to permit their reuse [B65H 75/505-](#)~~)}
- B65H 75/02
- Cores, formers, supports, or holders for coiled, wound, or folded material, e.g. reels, spindles, bobbins, cop tubes, cans (~~-packaging aspects [B65D 85/67-](#)~~)
- B65H 75/04
- • Kinds or types (~~-[B65H 75/18](#) takes precedence-~~)
- B65H 75/08
- • • of circular or polygonal cross-section (~~-cans or receptacles [B65H 75/16-](#)~~)
- B65H 75/12
- • • • with a single end flange{(e.g. with a conical end flange)}(~~e.g. with a conical end flange~~); formed with one end of greater diameter than the barrel
- U B65H 75/18** • • Constructional details
- B65H 75/20
- • • Skeleton construction, e.g. formed of wire{(-perforated supports for textile materials to be treated [D06B 23/042-](#))}
- U B65H 75/24** • • • adjustable in configuration, e.g. expansible
- B65H 75/242
- • • • {Expansible spindles, mandrels or chucks, e.g. for securing or releasing cores, holders or packages (~~-expansible mandrels for machine tools [B23B 31/00-](#)~~)}

- B65H 75/34
- • specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material provided for particular purposes, e.g. anchored hoses, power cables (-retractors for storing flexible hoses as accessories of dental work stands [A61G 15/18](#) ; vehicle safety belt retractors [B60R 22/34](#) ; hose-storing devices in apparatus or devices for transferring liquids from bulk storage containers or reservoirs into vehicles or portable containers [B67D 7/40](#) ; clothes-line supports [D06F 53/00](#) ; spring drums for liftable blinds with horizontal lamellae [E06B 9/322](#) ; spring drums or tape drums for roll-type closures or roller blinds [E06B 9/56](#) ; hauling- or hoisting-chains with arrangements for holding electric cables, hoses or the like [F16G 13/16](#) ; devices for guiding pipes, cables or protective tubing, between relatively movable points, e.g. movable channels, [F16L 3/01](#) ; flexible rulers or tapes with scales [G01B 3/10](#) ; electrical features of stored material, see the relevant subclasses, e.g. [H02G-](#))
- U B65H 75/36
- • • without essentially involving the use of a core or former internal to a stored package of material, e.g. with stored material housed within casing or container, or intermittently engaging a plurality of supports as in sinuous or serpentine fashion
- B65H 75/362
- • • {with stored material housed within a casing or container (-[B65H 75/368](#) takes precedence-)}
- U B65H 75/38
- • • involving the use of a core or former internal to, and supporting, a stored package of material
- U B65H 75/40
- • • • mobile or transportable
- B65H 75/406
- • • • {hand-held during use (-[B65H 75/48](#) , [B65H 75/4473](#) take precedence-)}
- U B65H 75/44
- • • • Constructional details
- B65H 75/4402
- • • • {Guiding arrangements to control paying-out and re-storing of the material (-guides per se [B65H 57/00-](#))}
- B65H 75/4473
- • • • {without arrangements or adaptations for rotating the core or former (-cores or formers which are not specially adapted for repeatedly paying-out and re-storing lengths of material [B65H 75/02-](#))}
- B65H 75/4481
- • • • {Arrangements or adaptations for driving the reel or the material (-by a spring [B65H 75/48-](#))}
- B65H 75/48
- • • • • Automatic restoring devices{(-[B65H 75/4418](#) takes precedence-)}
- B65H 81/00**
- Methods, apparatus, or devices for covering or wrapping cores by winding webs, tapes, or filamentary material, not otherwise provided for (forming hollow objects by winding filamentary material on to fusible or soluble cores{ [B29C 53/56](#) } ; Wrapping for the purpose of packaging [B65B 11/00](#) ; making wound articles of paper [B31C-](#))**
- U B65H 2301/00**
- Handling processes for sheets or webs**
- U B65H 2301/40
- Type of handling process
- U B65H 2301/41
- • Winding, unwinding
- U B65H 2301/413
- • • Supporting web roll
- U B65H 2301/4132
- • • • Cantilever arrangement
- U B65H 2301/41324
- • • • • linear movement of roll support
- B65H 2301/413246
- • • • • perpendicular to roll axis (e.g. lowering)(e.g. lowering)
- U B65H 2301/4134
- • • • Both ends type arrangement
- B65H 2301/41342
- • • • • shaft transversing the roll (-see also [B65H 75/08-](#))
- B65H 2301/41344
- • • • • the roll being fixed to the shaft (e.g. by clamping)(e.g. by clamping)
- U B65H 2301/4135
- • • • Movable supporting means

- B65H 2301/41352 moving on linear path *(including linear slot arrangement)*~~(including linear slot arrangement)~~
- U B65H 2301/414 . . . Winding
- U B65H 2301/4143 Performing winding process
- U B65H 2301/41432 special features of winding process
- B65H 2301/414321 helical winding (~~B65H 2701/18444~~ takes precedence-)
- U B65H 2301/415 . . . Unwinding
- U B65H 2301/4155 after unwinding process
- U B65H 2301/41552 separating core from remaining layers of wound material from each other
- B65H 2301/415525 by cutting wound material, e.g. transversally *(core slabbing)*~~(core slabbing)~~
- U B65H 2301/42 . . Piling, depiling, handling piles
- U B65H 2301/422 . . . Handling piles, sets or stacks of articles
- U B65H 2301/4226 Delivering, advancing piles
- B65H 2301/42262 by acting on surface of outermost articles of the pile, e.g. in nip between pair of belts or rollers (~~Nota: gripping pile see B65H 2301/4224-~~)
- U B65H 2301/426 . . . Forming batches
- B65H 2301/4262 by inserting auxiliary support as defined in [B65H 31/32](#)
- U B65H 2301/44 . . Moving, forwarding, guiding material
- U B65H 2301/443 . . . by acting on surface of handled material
- U B65H 2301/4433 by means holding the material
- B65H 2301/44331 at particular portion of handled material (to be used in combination with at least one code **L65H713**)
- U B65H 2301/50 . Auxiliary process performed during handling process
- U B65H 2301/52 . . for starting
- U B65H 2301/522 . . . Threading web into machine
- B65H 2301/52202 around several subsequent rollers *(e.g. calendar)*~~(e.g. calendar)~~
- U B65H 2404/00** **Parts for transporting or guiding the handled material**
- U B65H 2404/10 . Rollers
- U B65H 2404/12 . . with at least an active member on periphery
- B65H 2404/122 . . . rotated around an axis parallel to the roller axis (~~B65H 2404/54~~ takes precedence-)
- U B65H 2404/15 . . Roller assembly, particular roller arrangement
- U B65H 2404/154 . . . Rollers conveyor
- B65H 2404/1541 Arrangement for curved path section, e.g. perpendicular to plane of handled material *(quadrant conveyor section)*~~(quadrant conveyor section)~~
- U B65H 2404/50 . Surface of the elements in contact with the forwarded or guided material
- B65H 2404/54 . . Surface including rotary elements, e.g. balls or rollers (~~not used for indexing wave generation rollers, e.g. combing wheels classified in [B65H 3/0646-](#)~~)
- U B65H 2405/00** **Parts for holding the handled material**
- U B65H 2405/40 . Holders, supports for rolls
- U B65H 2405/46 . . Grippers for bobbins, i.e. rolls
- B65H 2405/461 . . . center gripper *(inside the core)*~~(inside the core)~~
- B65H 2405/462 . . . outer gripper *(on circumference)*~~(on circumference)~~

U	B65H 2408/00	Specific machines
U	B65H 2408/20	· for handling web(s)
U	B65H 2408/23	· · Winding machines
U	B65H 2408/231	· · · Turret winders
U	B65H 2408/2312	· · · · with bedroll, i.e. very big roll used as winding roller
	B65H 2408/23121	· · · · · and transfer pad <i>(to attach leading edge to new core)</i> (to attach leading edge to new core)
U	B65H 2511/00	Dimension; Position; Number; Identification; Occurrence
U	B65H 2511/50	· Occurrence
	B65H 2511/515	· · Absence (-error, fault B65H 2511/52 -)
	B65H 2511/52	· · Error; Fault (-dimensional irregularities B65H 2511/16 ; irregularities in location B65H 2511/24 ; speed irregularities B65H 2513/106 -)
	B65H 2515/00	Physical entities not provided for in groups B65H 2511/00 or B65H 2513/00
U	B65H 2551/00	Means for control to be used by operator; User interfaces
U	B65H 2551/10	· Command input means
	B65H 2551/14	· · Switches; Selectors (-contact switches B65H 2553/25 -)
	B65H 2557/00	Means for control not provided for in groups B65H 2551/00 to B65H 2555/00
U	B65H 2557/10	· for signal transmission
	B65H 2557/11	· · wireless (-input by remote control devices B65H 2551/13 -)
U	B65H 2601/00	Problem to be solved or advantage achieved
U	B65H 2601/10	· Ensuring correct operation
U	B65H 2601/12	· · Compensating; Taking-up
	B65H 2601/125	· · · Vibration (- B65H 2601/524 takes precedence-)
U	B65H 2701/00	Handled material or storage means
U	B65H 2701/10	· Handled articles or webs
U	B65H 2701/12	· · Surface aspects
U	B65H 2701/124	· · · Patterns, marks, printed information
	B65H 2701/1244	· · · · RFID [<i>Radio Frequency Identification Data</i>] transponder (Radio-Frequency Identification Data)transponder
U	B65H 2701/17	· · Nature of material
	B65H 2701/174	· · · Textile, fibre (-for filamentary material B65H 2701/31 and subgroups-)
U	B65H 2701/19	· · Specific article or web
	B65H 2701/192	· · · Labels (-carrying webs or liners B65H 2701/194 -)

Project: N/A (B66B)**B66B**

ELEVATORS; ESCALATORS OR MOVING WALKWAYS ({ apparatus for raising or lowering persons on theatrical stages or the like [A63J 5/12](#) } ; funicular railbound systems with rigid ground-supported tracks and cable traction, e.g. cliff railways, [B61B 9/00](#) ; arrangements of ammunition handlers in vessels [B63G 3/00](#) ; hoists, lifts, or conveyers for loading or unloading in general [B65G](#); braking or detent devices controlling normal movements of winding drums or barrels [B66D](#); ship-lifting devices [E02C](#); garages for many vehicles with mechanical means for lifting vehicles [E04H 6/12](#) ; hoists for feeding ammunition or projectiles to launching apparatus or to loading mechanisms [F41A 9/00](#)-)

NOTE

In this subclass, the following term is used with the meaning indicated:

- "elevator" covers the term "lift", and the two terms are interchangeable

B66B 1/00

Control systems of elevators in general (-safety devices [B66B 5/00](#) ; controlling door or gate operation [B66B 13/00](#) ; systems of general application [G05](#)-)

- U B66B 1/02 . Control systems without regulation, i.e. without retroactive action
- U B66B 1/06 . . electric
- U B66B 1/14 . . . with devices, e.g. push-buttons, for indirect control of movements
- B66B 1/16 with means for storing pulses controlling the movements of a single car or cage{(-[B66B 1/2433](#) takes precedence-)}
- B66B 1/18 with means for storing pulses controlling the movements of several cars or cages{(-[B66B 1/2458](#) takes precedence-)}
- B66B 1/20 and for varying the manner of operation to suit particular traffic conditions, e.g. "one-way rush-hour traffic",{(-[B66B 1/2466](#) takes precedence-)}
- U B66B 1/24 . Control systems with regulation, i.e. with retroactive action, for influencing travelling speed, acceleration, or deceleration
- B66B 1/28 . . electrical (-detecting excessive speed [B66B 5/04](#)-); {(control of electrical motor [H02P](#))}
- B66B 1/32 . . . effective on braking devices,{e.g. acting on electrically controlled brakes (-brake control [H02P](#), lift brakes per se [B66B 5/02](#)-)}
- U B66B 1/34 . Details,{e.g. call counting devices, data transmission from car to control system, devices giving information to the control system}
- B66B 1/3476 . . {Load weighing or car passenger counting devices (-[B66B 5/14](#) takes precedence-)}
- B66B 1/3492 . . {Position or motion detectors or driving means for the detector (-[B66B 1/40](#) , [B66B 1/50](#) take precedence; length measuring [G01B](#) ; speed measuring [G01P](#)-)}
- B66B 1/46 . . Adaptations of switches or switchgear (-switches or switchgear in general, applications of switches or switchgear for floor-levelling purpose [H01H](#) ; panels for boards or switching arrangements [H02B 1/015](#)-)
- B66B 1/48 . . . Adaptations of mechanically-operated limit switches (-for cranes [B66C 13/50](#) ; for winding mechanisms [B66D 1/56](#)-)
- U **B66B 5/00** **Application of checking, fault-correcting, or safety devices in elevators**
- B66B 5/0006 . {Monitoring devices or performance analysers (-[B66B 5/02](#) takes precedence-)}

- B66B 5/0087
 - {Devices facilitating maintenance, repair or inspection tasks (-devices incorporated in the buffer [B66B 5/288](#) ; railings on top of the car [B66B 11/0226](#)-)}
- U B66B 5/02
 - responsive to abnormal operating conditions
- B66B 5/021
 - • {the abnormal operating conditions being independent of the system (alarm systems in general [G08B](#))}
- B66B 5/028
 - • {Safety devices separate from control system in case of power failure, for hydraulical lifts, e.g. braking the hydraulic jack (-[B66B 5/16](#) takes precedence-)}
- U B66B 5/16
 - • Braking or catch devices operating between cars, cages, or skips and fixed guide elements or surfaces in hoistway or well
- U B66B 5/18
 - • • and applying frictional retarding forces
- B66B 5/20
 - • • • by means of rotatable eccentrically-mounted members (-[B66B 5/24](#) takes precedence-)
- B66B 5/22
 - • • • by means of linearly-movable wedges (-[B66B 5/24](#) takes precedence-)
- U B66B 5/28
 - Buffer-stops for cars, cages, or skips
- B66B 5/288
 - • {with maintenance features (-if not incorporated in the buffer [B66B 5/0087](#)-)}
- U B66B 7/00**

Other common features of elevators

 - Guideways; Guides (-arrangements in mine shafts [E21D 7/02](#)-)
 - • {Riding means, e.g.}Shoes, Rollers,{between car and guiding means, e.g. rails, ropes (-rollers adapted to match the shape of a special guiding means [B66B 7/02](#) ; vibration attenuation systems acting between car and its supporting frame [B66B 11/026](#)-)}
- B66B 9/00**

Kinds or types of lifts in, or associated with, buildings or other structures (-characterised by control systems [B66B 1/00](#) ; apparatus for raising or lowering persons on stages of theatres [A63J 5/12](#)-)

 - actuated pneumatically or hydraulically (-platforms for lifting or lowering through short distances [B66F 7/00](#)-)
- U B66B 9/06
 - inclined, e.g. serving blast furnaces
- B66B 9/08
 - • associated with stairways, e.g. for transporting disabled persons((-facilitating access of invalids to vehicles [A61G 3/02](#)-)}
- B66B 9/0846
 - • • {Guide rail (-[B66B 9/0807](#) takes precedence-)}
- B66B 9/10
 - Paternoster type (-with devices for transferring goods into, or out of, the compartments [B65G 17/00](#)-)
- B66B 9/16
 - Mobile or transportable lifts specially adapted to be shifted from one part of a building or other structure to another part or to another building or structure (-devices for lifting or lowering bulky or heavy goods for loading or unloading purposes [B66F 9/00](#) , e.g. fork-lift trucks [B66B 9/06](#)-)
- B66B 9/187
 - • with a liftway specially adapted for temporary connection to a building or other structure (-[B66B 9/193](#) takes precedence-)
- U B66B 11/00**

Main component parts of lifts in, or associated with, buildings or other structures

 - {Applications of loading and unloading equipment for lifts associated with buildings (-of general application [B65G](#); for paternoster lifts [B65G 17/00](#) ; for mine lifts [B66B 17/14](#)-)}
 - {Roping (-Mining hoist [B66B 15/08](#)-)}
 - Cages,{i.e. cars} (-doors, gates or other apparatus controlling access to, or exit from, cages [B66B 13/00](#)-)

- U B66B 11/0226
 - • {Constructional features, e.g. walls assembly, decorative panels, comfort equipment, thermal or sound insulation}
- B66B 11/0246
 - • • {Maintenance features (-devices facilitating maintenance in general [B66B 5/0087-](#))}
- B66B 11/026
 - • {Attenuation system for shocks, vibrations, imbalance, e.g. passengers on the same side (-acting between car or supporting frame and guides [B66B 7/04](#) ; acting between car and ropes, cables [B66B 7/08](#) ; correcting levelling between car and floor [B66B 1/40-](#))}
- B66B 11/0266
 - • • {Passive systems (-aerodynamic structure [B66B 11/0226-](#))}
- B66B 11/0293
 - • • {Suspension locking or inhibiting means to avoid movement when car is stopped at a floor (-locking car to building while loading to avoid movement [B66B 17/34-](#))}
- B66B 11/04
 - Driving gear; {Details thereof, e.g. seals (-braking devices acting on the driving gear [B66B 5/02](#) ; of mining-hoist winding devices [B66B 15/08-](#))}
- B66B 11/0407
 - • {actuated by an electrical linear motor (-in the counterweight [B66B 17/12-](#))}
- B66B 11/043
 - • {actuated by rotating motor; Details, e.g. ventilation (-Roping on drum, sheave, winch or pulley [B66B 11/0065](#) ; Power supply or control [B66B 1/28](#) , [H02P](#) ; Motor construction [H02K-](#))}
- B66B 11/0484
 - • • {with a clutch or a coupling system between several motors, e.g. switching different speeds, progressive starting, torque limitation, flywheel (-control [B66B 1/28-](#))}
- B66B 11/06
 - • with hoisting rope or cable positively attached to a winding drum{ [B66B 11/0075](#) takes precedence-}
- B66B 11/08
 - • with hoisting rope or cable operated by frictional engagement with a winding drum or sheave{ [B66B 11/008](#) takes precedence-}
- B66B 13/00**

Doors, gates, or other apparatus controlling access to, or exit from, cages or lift well landings (-door fittings, locks [E05-](#))
- B66B 13/02
 - Door or gate operation (-of general application [E05F-](#))
- B66B 13/30
 - Constructional features of doors or gates (-of interest apart from this application [E06B](#))
- U B66B 17/00**

Hoistway equipment
- B66B 17/02
 - mounted in head-frames (-winding towers for mines [E04H 12/26-](#))
- B66B 17/14
 - Applications of loading and unloading equipment (-of general application [B65G-](#))
- B66B 17/28
 - • electrically controlled (-for elevators in general [B66B 1/06-](#))
- U B66B 19/00**

Mining-hoist operation
- B66B 19/002
 - {installing or exchanging guide rails (-details of rails [B66B 7/02-](#))}
- B66B 19/06
 - Applications of signalling devices (-depth indicators [B66B 3/02](#) ; order telegraphs [G08B](#))
- B66B 20/00**

Elevators not provided for in groups [B66B 1/00](#) to [B66B 19/00](#)
- U B66B 21/00**

Kinds or types of escalators or moving walkways
- U B66B 21/02
 - Escalators
- B66B 21/08
 - • Paternoster type, i.e. the escalator being used simultaneously for climbing and descending (-[B66B 21/06](#) takes precedence-)
- U B66B 23/00**

Component parts of escalators or moving walkways
- U B66B 23/22
 - Balustrades

- B66B 23/24
 - • Handrails (-driving gear therefor [B66B 23/02](#) ; tensioning means therefor [B66B 23/16](#) ; preventing jamming thereof by foreign objects [B66B 29/04](#) ; accessories therefor [B66B 31/02-](#))
- B66B 25/00** **Control of escalators or moving walkways** (-walkways of variable speed type [B66B 21/12](#) ; handrails of variable speed type [B66B 23/26](#) ; of general application [G05](#)-)
- B66B 25/006
 - {Monitoring for maintenance or repair (-for security reasons [B66B 29/005-](#))}
- B66B 27/00** **Indicating operating conditions of escalators or moving walkways** (-of general application [G08-](#))
- B66B 29/00** **Safety devices of escalators or moving walkways** (-walkways of variable speed type [B66B 21/12](#) ; handrails of variable speed type [B66B 23/26-](#))
- B66B 29/08
 - Means to facilitate passenger entry or exit (-moving handrails [B66B 23/24-](#))
- B66B 31/00** **Accessories for escalators, or moving walkways, e.g. for sterilising or cleaning** (-for safety [B66B 29/00-](#))
- B66B 31/006
 - {for conveying hand carts, e.g. shopping carts (-hand carts per se [B62B 1/00](#) , [B62B 3/00-](#))}

Project: N/A (B66C)

- U B66C 1/00** **Load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith for transmitting lifting forces to articles or groups of articles (fastening to cables or ropes [F16G 11/00](#))**
- U B66C 1/02
 - by suction means {(suction cups for attaching purposes [F16B 47/00](#))}
- B66C 1/0206
 - • {-for handling bulk or bags}
- B66C 1/0212
 - • {-Circular shape}
- B66C 1/0218
 - • {-Safety measures e.g. sensors, duplicate functions}
- B66C 1/0225
 - • {-Hand held}
- B66C 1/0231
 - • {-Special lip configurations}
- B66C 1/0237
 - • {-Multiple lifting units; More than one suction area}
- B66C 1/0243
 - • • {-Separate cups}
- B66C 1/025
 - • • {-Divided cups}
- B66C 1/0256
 - • {-Operating and control devices}
- B66C 1/0262
 - • • {-for rotation}
- B66C 1/0268
 - • • {-Venturi effect}
- B66C 1/0275
 - • • {-actuated by lifting action}
- B66C 1/0281
 - • {-Rectangular or square shape}
- B66C 1/0287
 - • {-Other shapes, e.g. triangular or oval}
- B66C 1/0293
 - • {-Single lifting units; Only one suction cup}
- U B66C 1/10
 - by mechanical means
- U B66C 1/101
 - • {for containers ([B66C 1/223](#) and [B66C 1/663](#) take precedence)}
- B66C 1/102
 - • • {-for two or more containers end to end}
- B66C 1/104
 - • • {-for two or more containers side by side}
- B66C 1/107
 - • {-for lifting engines}
- B66C 1/108
 - • {-for lifting parts of wind turbines}
- U B66C 5/00** **Base supporting structure with legs**
- B66C 5/02
 - Fixed or travelling bridges or gantries, i.e. elongated structures of inverted L or of inverted U shape {or tripods}

- U B66C 13/00 Other constructional features or details**
- B66C 13/005 · {-Cranes carrying advertisements or the like}
 - U B66C 13/04 · Auxiliary devices for controlling movements of suspended loads, or preventing cable slack
 - U B66C 13/06 · · for minimising or preventing longitudinal or transverse swinging of loads
 - B66C 13/066 · · · {-for minimising vibration of a boom}
- U B66C 19/00 Cranes comprising trolleys or crabs running on fixed or movable bridges or gantries (B66C 17/00 takes precedence; base supporting structures with legs B66C 5/00; jib cranes B66C 23/00)**
- B66C 19/005 · {-Straddle carriers (B66C 19/007 takes precedence)}
- U B66C 23/00 Cranes comprising essentially a beam, boom, or triangular structure acting as a cantilever and mounted for translatory of swinging movements in vertical or horizontal planes or a combination of such movements, e.g. jib-cranes, derricks, tower cranes (base supporting structures with legs B65C 5/00)**
- U B66C 23/02 · with non-adjustable and non-inclinable jibs mounted solely for slewing movements
 - B66C 23/022 · · {-Pivot axis common with column}
 - B66C 23/025 · · {-with particular mounting for base of column}
 - B66C 23/027 · · {-Pivot axis separated from column axis}
 - U B66C 23/16 · with jibs supported by columns, e.g. towers having their lower end mounted for slewing movements
 - B66C 23/163 · · {-where only part of the column rotates, i.e. at least the bottom part is fixed}
 - B66C 23/166 · · {-Simple cranes with jibs which may be fixed or can slew or luff}
 - U B66C 23/18 · specially adapted for use in particular purposes
 - B66C 23/185 · · {-for use erecting wind turbines (B66C 23/207 takes precedence)}
 - U B66C 23/20 · · with supporting couples provided by walls of buildings or like structures
 - B66C 23/201 · · · {-with supporting couples provided from above, e.g. by ceilings of buildings}
 - B66C 23/202 · · · {-with supporting couples provided from below, e.g. by floors of buildings}
 - B66C 23/203 · · · {-with supporting couples provided by posts, e.g. scaffolding, trees or masts}
 - B66C 23/205 · · · {-for use on top of roofs}
 - B66C 23/206 · · · {-with supporting couples provided by iso containers}
 - B66C 23/207 · · · {-with supporting couples provided by wind turbines}
 - B66C 23/208 · · · {-with supporting couples provided from the side, e.g. by walls of buildings}
 - U B66C 23/36 · · mounted on road or rail vehicles; Manually-movable jib-cranes for use in workshops; Floating cranes (with pneumatic or hydraulic motors B66C 23/54; vehicle or ship aspects B60 to B63)
 - B66C 23/365 · · · {-dismantable into smaller units for transport purposes}
 - U B66C 23/48 · · · Manually-movable jib cranes for use in workshops
 - B66C 23/485 · · · · {-for lifting and moving engines, e.g. car or aero engines or parts thereof}
 - B66C 23/54 · with pneumatic or hydraulic motors, e.g. for actuating jib-cranes on tractors
 - B66C 23/545 · · {-with arrangements for avoiding dead centre problems during cylinder motion}
 - B66C 23/56 · · of the reciprocating type
 - U B66C 23/62 · Constructional features or details (of dredgers E02F)

- U B66C 23/82
 - • Luffing gear
- B66C 23/821
 - • • {-Bracing equipment for booms (Abspannstütze)}
- B66C 23/823
 - • • • {-Bracing equipment acting in vertical direction}
- B66C 23/825
 - • • • {-Bracing equipment acting in horizontal direction}
- B66C 23/826
 - • • • {-Bracing equipment acting at an inclined angle to vertical and horizontal directions}
- B66C 23/828
 - • • • • {-where the angle is adjustable}

Project: N/A (B66D)

- U **B66D 1/00** **Rope, cable, or chain winding mechanisms; Capstans (portable or mobile lifting or hauling appliances [B66D 3/00](#))**
- U B66D 1/02
 - Driving gear
- U B66D 1/14
 - • Power transmissions between power sources and drums or barrels {including brakes, one-way brakes, one-way clutches, clutches activated alternately with brakes, fixed ratio gearing unless otherwise provided for in [B66D 1/16](#) to [B66D 1/24](#)}
- B66D 1/16
 - • • the drums or barrels being freely rotatable { e.g. having a clutch activated independently of a brake-([B66D 1/20](#), [B66D 1/22](#), [B66D 1/24](#) take precedence; clutches activated alternately with brakes [B66D 1/14](#), slip couplings [B66D 1/14](#))}
- B66D 1/24
 - • • for varying speed or reversing direction of rotation of drums or barrels {i.e. variable ratio or reversing gearing-([B66D 1/225](#) takes precedence)}
- U B66D 1/60
 - adapted for special purposes
- U B66D 1/74
 - • Capstans
- B66D 1/7421
 - • • {-having a vertical rotation axis}
- B66D 1/7426
 - • • • {-driven by motor only}
- B66D 1/7431
 - • • • {-driven manually only}
- B66D 1/7436
 - • • • {-drivable by both motor and manually}
- B66D 1/7442
 - • • {-having a horizontal rotation axis}
- B66D 1/7447
 - • • • {-driven by motor only}
- B66D 1/7452
 - • • • {-driven manually only}
- B66D 1/7457
 - • • • {-drivable by both motor and manually}
- B66D 1/7463
 - • • {-Accessories}
- B66D 1/7468
 - • • • {-Handles}
- B66D 1/7473
 - • • • • {-with locking means}
- B66D 1/7478
 - • • • • {-Powered handles}
- B66D 1/7484
 - • • {-Details concerning gearing arrangements, e.g. multi-speed}
- B66D 1/7489
 - • • {-having a particular use, e.g. rope ascenders}
- B66D 1/7494
 - • • {-Self-tailing capstans}

Project: N/A (B66F)

B66F **HOISTING, LIFTING, HAULING OR PUSHING, NOT OTHERWISE PROVIDED FOR, e.g. DEVICES WHICH APPLY A LIFTING OR PUSHING FORCE DIRECTLY TO THE SURFACE OF A LOAD** ({ invalid lifting devices [A61G 7/10](#) ; } mounting artificial islands on piles or like supports [E02B 17/00](#) ; scaffolding combined with lifting devices [E04G 1/22](#) ; lifting devices for sliding forms [E04G 11/24](#) ; lifting of buildings [E04G 23/06](#) ; shores or struts [E04G 25/00](#) ; lifts or other hoisting devices on ladders [E06C 7/12](#) ; props for mining [E21D 15/00](#))

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B66F 19/02](#) covered by [B66F 19/00](#)

- U B66F 1/00** **Devices, e.g. jacks, for lifting loads in predetermined steps**
- U B66F 1/02
- B66F 1/025
- with locking elements, e.g. washers, co-operating with posts
 - {the devices being operated by fluid pressure (-[B66F 1/08](#) takes precedence-)}
- B66F 3/00** **Devices, e.g. jacks, adapted for uninterrupted lifting of loads** (-mobile jacks of the garage type [B66F 5/00](#) -)
- B66F 3/08
- B66F 3/12
- B66F 3/22
- B66F 3/24
- B66F 3/245
- B66F 3/247
- U B66F 3/25
- B66F 3/35
- U B66F 3/36
- B66F 3/40
- screw operated (-[B66F 3/44](#) takes precedence; gearings [F16H](#) -)
 - comprising toggle levers (-lazy-tongs mechanisms [B66F 3/22](#) -)
 - Lazy-tongs mechanisms(-[B66F 11/042](#) takes precedence-)}
 - fluid-pressure operated (-water-pressure machines [F03B](#) ; hydraulic gearings [F16H](#) ; cylinders, pistons [F16J](#) ; fluid-pressure servomotors [F15B](#) -)
 - {comprising toggle levers (-lazy-tongs mechanisms [B66F 3/22](#) -)}
 - {pneumatically actuated (-[B66F 3/35](#) takes precedence-)}
 - • Constructional features
 - • • Inflatable flexible elements, e.g. bellows (-inflatable load-engaging elements [B66F 3/40](#) ; connection of valves to inflatable elastic bodies [B60C 29/00](#) -)
 - • • Load-engaging elements
 - • • • inflatable (-connection of valves to inflatable elastic bodies [B60C 29/00](#) -)
- B66F 7/00** **Lifting frames, e.g. for lifting vehicles; Platform lifts** ({ [B66F 11/04](#) takes precedence } ; for lift-truck platform [B66F 9/06](#))
- B66F 7/02
- B66F 7/22
- B66F 7/26
- with platforms suspended from ropes, cables, or chains {or screws and movable along pillars}
 - with tiltable platforms (-tilting vehicles for unloading [B65G 67/34](#) -)
 - for selective lifting of parts of vehicles (-mobile garage jacks [B66F 5/00](#) -)
- B66F 9/00** **Devices for lifting or lowering bulky or heavy goods for loading or unloading purposes** (-mobile or transportable lifts in, or associated with, buildings and specially adapted to be shifted from one part of a building or other structure to another part or to another building or structure [B66B 9/16](#) ; cranes [B66C](#))
- B66F 9/06
- movable, with their loads, on wheels or the like, e.g. fork-lift trucks (-vehicle aspects [B60](#) to [B62](#) ; vehicles predominantly for transporting loads and modified to facilitate loading or unloading [B60P 1/00](#) ; low-lift hand trucks for transporting goods [B62B 3/06](#) -)

- B66F 9/065
 - • non-masted (-mobile jacks of the garage type mounted on wheels or rollers [B66F 5/00-](#))
- U B66F 9/075
 - • Constructional features or details
- B66F 9/20
 - • • Means for actuating or controlling masts, platforms, or forks (-power take-off from vehicle transmissions, combined with vehicle propulsion systems [B60K-](#))
- B66F 9/205
 - • • • {Arrangements for transmitting pneumatic, hydraulic or electric power to movable parts or devices (-for cranes [B66C 13/12-](#))}
- B66F 11/00**

Lifting devices specially adapted for particular uses not otherwise provided for (-ground-engaging vehicle fittings for supporting, lifting or manoeuvring the vehicle [B60S 9/00-](#))
- B66F 11/04
 - for movable platforms or cabins, e.g. on vehicles, permitting workmen to place themselves in any desired position for carrying out required operations ({ Working platforms on fork-lift trucks [B66F 9/127](#) ; } vehicle aspects of service vehicles [B60P 3/14](#) ; platforms for cleaning windows [A47L 3/02](#) ; devices for rescuing persons from buildings [A62B 1/02](#) ; liftable or lowerable platforms for use on ladders [E06C 7/16](#) ; maintenance travellers for bridges [E01D 19/10](#) ; scaffolds on an extensible sub-structure [E04G 1/22-](#))

Project: N/A (B67B)

- U **B67B 3/00**

Closing bottles, jars or similar containers by applying caps (caps per se [B65D 41/00](#))
- B67B 3/003
 - {-Pretreatment of caps, e.g. cleaning, steaming, heating or sterilizing}
- U B67B 3/20
 - by applying and rotating preformed threaded caps (forming threads in situ by resilient deforming means [B67B 3/16](#), by rotary capping heads [B67B 3/18](#))
- B67B 3/2006
 - • {-using manually-controlled or manually operated devices}
- B67B 3/2013
 - • {-by carousel-type capping machines}
- B67B 3/202
 - • • {-using friction means for screwing the caps, e.g. belts or guides ([B67B 3/2026](#), [B67B 3/2033](#) take precedence)}
- B67B 3/2026
 - • • {-comprising stationary capping heads}
- B67B 3/2033
 - • • {-comprising carousel co-rotating capping heads}
- B67B 3/204
 - • {-Linear-type capping machines}
- B67B 3/2046
 - • • {-using friction means for screwing the caps, e.g. belts or wheels ([B67B 3/2053](#) takes precedence)}
- B67B 3/2053
 - • • {-comprising capping heads}
- B67B 3/206
 - • {-Means for preventing rotation of the container or cap}
- B67B 3/2066
 - • {-Details of capping heads ([B67B 3/2073](#) takes precedence)}
- B67B 3/2073
 - • {-comprising torque limiting means (torque limiters in wrenches or screwdrivers [B25B 23/14](#); couplings or clutches per se [F16D](#))}
- B67B 3/208
 - • • {-Electrical means responsive to the torque applied and acting on motor control means, e.g. strain gauges or power measurement means ([B67B 3/2093](#) takes precedence)}
- B67B 3/2086
 - • • {-Magnetic or electromagnetic clutches}
- B67B 3/2093
 - • • {-whereby the applied torque limit is varied}
- U **B67B 7/00**

Hand- or power-operated devices for opening closed containers (nail pullers or extractors [B25C 11/00](#); { for expelling solid content, e.g. pills, from blister packs [B65B 69/0058](#);} attached to, or incorporated in, containers or container closures [B65D](#); { dispensers for pills from blister packs [B65B 69/0058](#)})
- B67B 7/24
 - Hole-piercing devices

- B67B 7/26
 - B67B 7/28
 - B67B 7/30
 - B67B 7/32
 - B67B 7/34
 - B67B 7/36
 - B67B 7/38
- • combined with spouts
 - • • and associated with receptacle holders
 - Hand-operated cutting devices
 - • propelled by rotary gears or wheels around periphery of container
 - • with rotatable cutters
 - • adapted to be mounted on walls
 - Power-operated cutting devices (machines for domestic use with a plurality of interchangeable units [A47J 43/06](#), [A47J 44/00](#))

Project: N/A (B67C)**U B67C 3/00**

Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus; Filling casks or barrels with liquids or semiliquids (filling containers with liquids or semiliquids using apparatus other than bottling or like apparatus [B65B 3/00](#))

- U B67C 3/001
 - B67C 3/005
 - B67C 3/008
 - U B67C 3/02
 - B67C 3/023
 - B67C 3/026
 - U B67C 3/04
 - B67C 3/045
 - U B67C 3/22
 - B67C 3/225
 - U B67C 3/28
 - B67C 3/282
 - B67C 3/283
 - B67C 3/284
 - B67C 3/285
 - B67C 3/286
 - B67C 3/287
 - B67C 3/288
 - U B67C 11/00
 - U B67C 11/06
 - B67C 11/063
 - B67C 11/066
- {Cleaning of filling devices}
 - • {-Cleaning outside parts of filling devices}
 - {-Bottling or like apparatus specially adapted to be transported, e.g. positioned on a truck or in a container}
 - Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus
 - • {-Filling multiple liquids in a container ([B67C 3/208](#) takes precedence)}
 - • • {-Filling the liquids simultaneously}
 - • without applying pressure
 - • • {-Apparatus specially adapted for filling bottles with hot liquids}
 - • Details
 - • • {-Means for filling simultaneously, e.g. in a rotary filling apparatus or multiple rows of containers}
 - • • Flow-control devices, e.g. using valves ({[B67C 3/2617](#), [B67C 3/2625](#), [B67C 3/2637](#) take precedence}; valves in general [F16K](#))
 - • • • {-related to filling level control ([B67C 3/2617](#), [B67C 3/2625](#) take precedence)}
 - • • • • {-using pressure sensing means}
 - • • • • {-using non-liquid contact sensing means ([B67C 3/283](#) takes precedence)}
 - • • • • {-using liquid contact sensing means ([B67C 3/283](#) takes precedence)}
 - • • • {-related to flow rate control, i.e. controlling slow and fast filling phases}
 - • • • {-related to flow control using predetermined or real-time calculated parameters}
 - • • • • {-using master-slave controls}
 - **Funnels, e.g. for liquids (filter funnels [B01D 23/28](#); volume flow-meters [G01F](#))**
 - with automatic discharge valves
 - • {-for preventing spilling or dripping}
 - • {-for preventing overflow of the filled container}

Project: N/A (B67D)**U B67D 1/00**

Apparatus or devices for dispensing beverages on draught ([B67D 3/00](#) takes precedence; apparatus for making beverages [A47J 31/00](#))

- B67D 1/0001 · {by squeezing collapsible or flexible storage containers ([B67D 1/0462](#) takes precedence)}
- B67D 1/0015 · {the beverage being prepared by mixing at least two liquid components}
- B67D 1/004 · · {the diluent being supplied from water mains}
- U B67D 1/0042 · {Details of specific parts of the dispensers}
- B67D 1/0043 · · {Mixing devices for liquids}
- U B67D 1/0044 · · · {for mixing inside the dispensing nozzle}
- B67D 1/0045 · · · · {Venturi arrangements; Aspirators; Eductors}
- B67D 1/0046 · · · · {Mixing chambers}
- B67D 1/0047 · · · · · {with movable parts, e.g. for stirring}
- B67D 1/0048 · · · · · {with baffles}
- B67D 1/0049 · · · · · {with means for diverging streams}
- B67D 1/005 · · · · · {with means for converging streams}
- U B67D 1/0051 · · · {for mixing outside the nozzle}
- B67D 1/0052 · · · · {by means for directing respective streams together}
- B67D 1/0053 · · · · {by stirring in the cup}
- B67D 1/0054 · · · {Recirculation means}
- B67D 1/0055 · · · · {with fountain effect}
- B67D 1/0056 · · · · · {with illumination}
- U B67D 1/0057 · · {Carbonators}
- B67D 1/006 · · · {Conventional carbonators}
- B67D 1/0061 · · · {with cooling means}
- B67D 1/0062 · · · · {inside the carbonator}
- B67D 1/0063 · · · · · {Cooling coil}
- B67D 1/0064 · · · · · {Cold plate}
- B67D 1/0065 · · · · · {Ice bank}
- B67D 1/0066 · · · · {outside the carbonator}
- B67D 1/0067 · · · · · {Cooling coil}
- B67D 1/0068 · · · · · {Cooling bath}
- B67D 1/0069 · · · {Details}
- B67D 1/007 · · · · {Structure of the carbonating chamber}
- B67D 1/0071 · · · · {Carbonating by injecting CO₂ in the liquid}
- B67D 1/0072 · · · · · {through a diffuser, a bubbler}
- B67D 1/0073 · · · · {Carbonating by spraying the liquid}
- B67D 1/0074 · · · · {Automatic carbonation control}
- B67D 1/0075 · · · · · {by sensing gas pressure}
- B67D 1/0076 · · · · · {by sensing temperature}
- B67D 1/0077 · · · · {Carbonator being specially adapted for adding a second gas to the CO₂}
- U B67D 2001/0091 · {Component storage means }
- B67D 2001/0092 · · {Containers for gas, for e.g. CO₂, N₂}
- U B67D 1/04 · Apparatus utilising compressed air or other gas acting directly or indirectly on beverages in storage containers
- B67D 1/0412 · · {the whole dispensing unit being fixed to the container}
- B67D 1/0437 · · · {comprising a gas pressure space within the container for the liquid}

- B67D 1/0443
 - • • {comprising a gas generator (apparatus for generating gases in general [B01J 7/00](#))}
- B67D 1/045
 - • {using elastic bags and pistons actuated by air or other gas}
- B67D 2001/0475
 - • {Type of gas or gas mixture used, other than pure CO₂}
- B67D 2001/0481
 - • • {Single inert gas, e.g. N₂}
- B67D 2001/0487
 - • • {Mixture of gases, e.g. N₂ + CO₂}
- U B67D 1/07
 - Cleaning beverage-dispensing apparatus {([B67D 1/0834](#), [B67D 1/0837](#) take precedence)}
- B67D 2001/075
 - • {Sanitising or sterilising the apparatus}
- U B67D 1/08
 - Details
- U B67D 1/0801
 - • {of beverage containers, e.g. casks, kegs}
- B67D 1/0804
 - • • {Shape or materials}
- B67D 1/0805
 - • • {Openings for filling}
- B67D 1/0807
 - • • {Openings for emptying, e.g. taped openings}
- B67D 1/0808
 - • • {Closing means, e.g. bungholes, barrel bungs}
- B67D 1/0809
 - • • {Opening means, e.g. means for assisting the opening}
- U B67D 1/0829
 - • {Keg connection means}
- B67D 1/0841
 - • • {Details}
- B67D 1/0842
 - • • • {Multiple connectors, e.g. for simultaneously connecting several containers}
- B67D 1/0844
 - • • • {for containers in crates}
- B67D 1/0845
 - • • • {Security means}
- B67D 1/0847
 - • • • {Tamper-evident devices}
- B67D 1/0848
 - • • • {Locking means}
- B67D 1/0849
 - • • • {provided with means to open the keg valve when gas pressure is applied to it}
- B67D 1/0851
 - • • • {composed of a piston and ram assembly, e.g. tappet}
- B67D 1/0852
 - • • • {composed of a membrane and ram assembly}
- B67D 1/0854
 - • • • {provided with means to open the keg valve when water pressure is applied to it}
- B67D 1/0872
 - • {Aesthetics, advertising}
- B67D 1/0874
 - • • {Means for illuminating the handle of taps or faucets}
- B67D 1/0875
 - • • {Means for illuminating the beverage to be dispensed}
- B67D 1/0877
 - • • {Advertising means (advertising in general [G09F](#))}
- U B67D 1/0878
 - • {Safety, warning or controlling devices ([B67D 1/12](#) takes precedence)}
- B67D 1/0887
 - • • {Sanitary protection means for dispensing nozzles or taps, e.g. outlet closures}
- B67D 1/0888
 - • {Means comprising electronic circuitry (*e.g. control panels, switching or controlling means*)}(~~e.g. control panels, switching or controlling means~~)}
- U B67D 1/0889
 - • {Supports}
- U B67D 1/0891
 - • • {for the beverage container}
- B67D 1/0892
 - • • • {the beverage container being stored in a rack or shelf}
- U B67D 1/12
 - • Flow or pressure control devices or systems {e.g. valves, gas pressure control, level control in storage containers}
- B67D 1/1202
 - • • {Flow control, e.g. for controlling total amount or mixture ratio of liquids to be dispensed}

- B67D 1/1204 {-for ratio control purposes}
- B67D 1/1206 {-Flow detectors}
- B67D 1/1209 {-combined with a timer}
- B67D 1/1211 {-Flow rate sensor}
- B67D 1/1213 {-combined with a timer}
- B67D 1/1215 {-combined with a counter}
- B67D 1/1218 {-modulating the opening of a valve}
- B67D 1/122 {-modulating a pumping rate}
- B67D 1/1222 {-Pressure gauges}
- B67D 1/1225 {-Weighing}
- B67D 1/1227 {-the cup to be filled}
- B67D 1/1229 {-the storage container}
- B67D 1/1231 {-Metering pumps}
- B67D 1/1234 {-to determine the total amount}
- B67D 1/1236 {-comprising means for detecting the size of vessels to be filled}
- B67D 1/1238 {-comprising means for detecting the liquid level in vessels to be filled
e.g. using ultrasonic waves, optical reflexion, probes}
- B67D 1/124 {-the flow being started or stopped by means actuated by the vessel to
be filled, e.g. by switches, weighing}
- B67D 1/1243 {-comprising flow or pressure sensors, e.g. for controlling pumps}
- B67D 1/1277 . . . {-Flow control valves}
- B67D 1/1279 {-regulating the flow}
- B67D 1/1281 {-responsive to pressure}
- B67D 1/1284 . . . {-Ratio control}
- B67D 1/1286 {-by mechanical construction}
- B67D 1/1288 {-Multi-chamber piston pumps (construction of pumps: [B67D 1/10](#))}
- B67D 1/129 {-Means for changing the ratio by acting on structural parts}
- B67D 1/1293 {-Means for changing the ratio by acting on commands}
- B67D 1/1295 {-Ratio defined by setting flow controllers}
- B67D 1/1297 {-Ratio defined by setting of timers}
- U B67D 1/14 Reducing valves or control taps
- U B67D 1/1405 {-Control taps}
- U B67D 1/1411 {-Means for controlling the build-up of foam in the container to be filled}
- B67D 1/1416 {-comprising foam inducing means}
- U B67D 3/00** **Apparatus or devices for controlling flow of liquids under gravity from
storage containers for dispensing purposes (separating and dispensing
metered quantities of liquids [G01F](#))**
- U B67D 3/0029 {-provided with holders for bottles or similar containers}
- B67D 3/0035 {-the bottle or container being held upside down and not provided with a
closure, e.g. a bottle screwed onto a base of a dispenser}
- B67D 3/0041 {-with provisions for metering the liquid to be dispensed}
- B67D 3/0045 {-by filling a predetermined volume before dispensing}
- B67D 3/0048 {-using siphoning arrangements}
- B67D 3/0051 {-dispensing by tilting}
- B67D 3/0054 {-Mounting or arrangements of dispensing apparatus in shops or bar counters}

- B67D 3/0058 · {-Details}
- B67D 3/0061 · · {-of liquid containers, e.g. filling, emptying, closing or opening means}
- B67D 3/0064 · · · {-Dip tubes}
- B67D 3/0067 · · · {-relating to shape or materials, e.g. bag-in-box packages (BIB), pouches}
- B67D 3/007 · · · {-containers with adjustable volume}
- B67D 3/0074 · · {-Safety or warning devices}
- B67D 3/0077 · · {-Electronic circuitry}
- B67D 3/008 · · {-Supports}
- B67D 3/0083 · · · {-for the liquid container}
- B67D 3/0087 · · · · {-the beverage container being stored in a rack or shelf}
- B67D 3/009 · · · {-for the vessel to be filled}
- B67D 3/0093 · · {-Level indicators}
- B67D 3/0096 · · {-Aesthetics, advertising}

U B67D 7/00

Apparatus or devices for transferring liquids from bulk storage containers or reservoirs into vehicles or into portable containers, e.g. for retail sale purposes (general disposition of plant in stations for supplying fuel to vehicles [B60S 5/02](#); for filling or emptying locomotive water tanks, e.g. water columns, [B61K 11/00](#); for refuelling aircraft during flight [B64D 39/00](#); liquid-handling ground installations specially adapted for fuelling stationary aircraft [B64F 1/28](#))

- B67D 7/002 · {-using articulated pipes}
- B67D 7/005 · {-Spouts}
- B67D 7/007 · {-using siphoning arrangements}
- U B67D 7/02 · for transferring liquids other than fuel or lubricants
- B67D 7/0205 · · {-by manually operable pumping apparatus (Hand-held apparatus with pumps for dispensing or spraying liquids or fluent materials [B05B 11/00](#))}
- B67D 7/0211 · · · {-with pump locking means}
- B67D 7/0216 · · {-by squeezing collapsible or flexible storage containers ([B67D 7/0255](#) takes precedence; for dispensing beverages on draught [B67D 1/0001](#))}
- B67D 7/0222 · · · {-the dispensed quantity of liquid being replaced by air sucked through the dispensing opening}
- B67D 7/0227 · · {-by an ejection plunger ([B67D 7/0238](#) takes precedence)}
- B67D 7/0233 · · · {-the plunger being gas driven}
- B67D 7/0238 · · {-utilising compressed air or other gas acting directly or indirectly on liquids in storage containers (for dispensing beverages on draught [B67D 1/04](#))}
- B67D 7/0244 · · · {-by using elastic expandable bags}
- B67D 7/025 · · · · {-specially adapted for transferring liquids of high purity}
- B67D 7/0255 · · · {-squeezing collapsible or flexible storage containers (for dispensing beverages on draught [B67D 1/0462](#))}
- B67D 7/0261 · · · · {-specially adapted for transferring liquids of high purity}
- B67D 7/0266 · · · {-by gas acting directly on the liquid}
- B67D 7/0272 · · · · {-specially adapted for transferring liquids of high purity}
- B67D 7/0277 · · {-using negative pressure}
- B67D 7/0283 · · · {-specially adapted for transferring liquids of high purity}
- B67D 7/0288 · · {-Container connection means (for dispensing beverages on draught [B67D 1/0829](#))}
- B67D 7/0294 · · · {-Combined with valves}

- U B67D 7/04 · for transferring fuels, lubricants or mixed fuels and lubricants
- B67D 7/0401 · · {-arrangements for automatically fuelling vehicles, i.e. without human intervention}
- B67D 7/0476 · · {-Vapour recovery systems}
- B67D 7/0478 · · · {-constructional features or components (vapour recovery nozzles [B67D 7/54](#))}
- B67D 7/048 · · · · {-Vapour flow control means, e.g. valves, pumps}
- B67D 7/0482 · · · · · {-using pumps driven at different flow rates}
- B67D 7/0484 · · · · · · {-Liquid jet pumps, e.g. venturis}
- B67D 7/0486 · · · · · · · {-Pumps driven in response to electric signals indicative of pressure, temperature or liquid flow}
- B67D 7/0488 · · · · · {-Means for preventing the formation of condensation on, or for removing condensation from, vapour recovery lines}
- B67D 7/049 · · · · · {-Vapour recovery methods, e.g. condensing the vapour}
- B67D 7/0492 · · · · · {-Vapour storing means, e.g. dedicated ullage spaces, separate tanks}
- B67D 7/0496 · · · · {-Performance test devices therefor}
- B67D 7/0498 · · · {-Arrangements specially adapted for transferring biofuels, e.g. ethanol-gasoline mixture}
- U B67D 7/06 · Details or accessories
- B67D 7/061 · · {-Means for transferring liquids from a chosen level of a storage container}
- B67D 7/062 · · · {-from the free surface level of the liquid}
- B67D 7/064 · · · {-Drive-off preventing means, e.g. in case of non-payment}
- B67D 7/065 · · · · {-acting on the vehicle}
- B67D 7/067 · · · · · {-using communication means}
- B67D 7/068 · · · · · {-using imaging means, e.g. cameras}
- U B67D 7/08 · · Arrangements of devices for controlling, indicating, metering or registering quantity or price of liquid transferred (arrangement of flow- or pressure-control valves [B67D 7/36](#); computing, calculating, counting [G06](#); coin-freed apparatus for dispensing fluids [G07F 13/00](#); prepayment devices for metering liquids [G07F 15/00](#))
- B67D 7/085 · · · · {-Testing or calibrating apparatus therefore (testing or calibrating apparatus for measuring volume flow in general [G01F 25/00](#))}
- U B67D 7/10 · · · · operated by keys, push-buttons or cash registers
- B67D 7/103 · · · · · {-operated by keys}
- B67D 7/106 · · · · · · {-operated by push-buttons}
- U B67D 7/14 · · · · responsive to input of recorded programmed information, e.g. on punched cards
- B67D 7/145 · · · · · {-by wireless communication means, e.g. RF, transponders or the like}
- U B67D 7/16 · · · · Arrangements of liquid meters
- B67D 7/163 · · · · · {-of fixed measuring chamber type}
- B67D 7/166 · · · · · · {-comprising at least two chambers}
- U B67D 7/22 · · · · Arrangements of indicators or registers (indicating or recording in fluid meters [G01F 15/06](#))
- B67D 7/221 · · · · · {-using electrical or electro-mechanical means ([B67D 7/224](#) takes precedence)}
- B67D 7/222 · · · · · · {-involving digital counting}
- B67D 7/224 · · · · · · · {-involving price indicators}

- B67D 7/225 {-combined with variators}
- B67D 7/227 {-using electrical or electro-mechanical means}
- B67D 7/228 {-using digital counting}
- U B67D 7/24 with means for producing or issuing a receipt or record of sale
- B67D 7/243 {-using electrical or electro-mechanical means}
- B67D 7/246 {-involving digital counting}
- U B67D 7/26 with resetting or zeroing means
- B67D 7/263 {-using electrical or electro-mechanical means}
- B67D 7/266 {-involving digital counting}
- U B67D 7/30 with means for predetermining quantity of liquid to be transferred
([B67D 7/10](#), [B67D 7/14](#) take precedence)
- B67D 7/301 {-using mechanical means ([B67D 7/306](#) takes precedence)}
- B67D 7/302 {-using electrical or electro-mechanical means ([B67D 7/307](#) takes
precedence)}
- B67D 7/303 {-involving digital counting}
- B67D 7/305 {-in function of money to be spent therefor}
- B67D 7/306 {-using mechanical means}
- B67D 7/307 {-using electrical or electro-mechanical means}
- B67D 7/308 {-involving digital counting}
- U B67D 7/32 Arrangements of safety or warning devices; Means for preventing
unauthorised delivery of liquid
- B67D 7/3209 {-relating to spillage or leakage, e.g. spill containments, leak detection (leak
detectors for underground fuel dispensing systems [G01M 3/2892](#))}
- B67D 7/3218 {-relating to emergency shut-off means}
- B67D 7/3227 {-relating to venting of a container during loading or unloading}
- B67D 7/3236 {-relating to electrostatic charges}
- B67D 7/3245 {-relating to the transfer method}
- B67D 7/3254 {-using a pressurised liquid acting directly or indirectly on the bulk of the
liquid to be transferred}
- B67D 7/3263 {-using a pressurised gas acting directly or indirectly on the bulk of the
liquid to be transferred (use of compressed air or gas for transferring
liquids [B67D 7/0238](#), [B67D 7/72](#))}
- B67D 7/3272 {-using pumps}
- B67D 7/3281 {-Details}
- U B67D 7/34 Means for preventing unauthorised delivery of liquid
- B67D 7/342 {-by discriminating the kind of liquid by analysis or by physical properties,
e.g. vapour-pressure}
- B67D 7/344 {-by checking a correct coupling or coded information}
- B67D 7/346 {-by reading a code}
- B67D 7/348 {-by interrogating an information transmitter, e.g. a transponder
([B67D 7/145](#) takes precedence)}
- U B67D 7/36 Arrangements of flow- or pressure-control valves (associated with nozzles
[B67D 7/42](#))
- B67D 7/362 {-combined with over-fill preventing means (indicating or measuring liquid
level [G01F 23/00](#); level control [G05D 9/00](#))}
- B67D 7/365 {-using floats}
- B67D 7/367 {-the float acting pneumatically on a shut-off valve}

- U B67D 7/38
 - • Arrangements of hoses, e.g. operative connection with pump motor (hoses in general [F16L 11/00](#))
- U B67D 7/40
 - • • Suspending, reeling or storing devices (supports for storing lengths of hoses, in general [B65H 75/34](#))
- B67D 7/403
 - • • • {the hose carrier comprising a sliding unit}
- B67D 7/406
 - • • • {the hose carrier comprising a pivoting unit}
- U B67D 7/42
 - • Filling nozzles
- B67D 7/421
 - • • {comprising protective covers, e.g. anti-splash attachments}
- B67D 7/423
 - • • {specially adapted for blending several fluids (mixing devices [B67D 7/74](#))}
- B67D 7/425
 - • • {including components powered by electricity or light}
- B67D 7/426
 - • • {including means for displaying information, e.g. for advertising ([B67D 7/425](#) takes precedence)}
- B67D 7/428
 - • • {for delivering at least two different liquids into separate containers}
- U B67D 7/44
 - • • automatically closing
- B67D 7/445
 - • • • {after a predetermined time}
- U B67D 7/46
 - • • • when liquid in container to be filled reaches a predetermined level
- B67D 7/465
 - • • • • {Electrical probes sensing the level of the liquid}
- U B67D 7/56
 - • Arrangements of flow-indicators, e.g. transparent compartments, windows, rotary vanes (indicating or recording presence, absence or direction of movement [G01P 13/00](#))
- B67D 7/565
 - • • {for indicating end of flow, e.g. by optical or audible signals}
- U B67D 7/58
 - • Arrangements of pumps
- U B67D 7/62
 - • • power operated
- U B67D 7/64
 - • • • of piston type
- B67D 7/645
 - • • • • {Barrel pumps}
- U B67D 7/72
 - • Devices for applying air or other gas pressure for forcing liquid to delivery point
- B67D 7/725
 - • • {using negative pressure}
- U B67D 7/74
 - • Devices for mixing two or more different liquids to be transferred (coin-freed apparatus [G07F 13/06](#))
- B67D 7/741
 - • • {mechanically operated}
- B67D 7/742
 - • • • {involving mechanical counters, e.g. of clock-work type}
- B67D 7/743
 - • • • {electrically or electro-mechanically operated}
- B67D 7/744
 - • • • {involving digital counting}
- U B67D 7/76
 - • Arrangements of devices for purifying liquids to be transferred, e.g. of filters, of air or water separators
- B67D 7/763
 - • • {of air separators}
- B67D 7/766
 - • • {of water separators}
- U B67D 7/84
 - • Casings, cabinets or frameworks; Trolleys or like movable supports
- B67D 7/845
 - • • {Trolleys or like movable supports}

Project: N/A (B81B)

- U B81B 3/00
 - **Devices comprising flexible or deformable elements, e.g. comprising elastic tongues or membranes ([B81B 5/00](#) takes precedence)**
- B81B 3/0002
 - {Arrangements for avoiding sticking of the flexible or moving parts}
- B81B 3/0005
 - {Anti-stiction coatings}

- B81B 3/0008 . . {Structures for avoiding electrostatic attraction, e.g. avoiding charge accumulation}
- B81B 3/001 . . {Structures having a reduced contact area, e.g. with bumps or with a textured surface}
- B81B 3/0013 . . {Structures dimensioned for mechanical prevention of stiction, e.g. spring with increased stiffness}
- B81B 3/0016 . . {Arrangements for avoiding sticking of the flexible or moving parts not provided for in groups [B81B 3/0005](#) to [B81B 3/0013](#)}
- B81B 3/0018 . {Structures acting upon the moving or flexible element for transforming energy into mechanical movement or vice-versa, i.e. actuators, sensors, generators}
- B81B 3/0021 . . {Transducers for transforming electrical into mechanical energy or vice versa (dynamo-electric machines [H02K 57/00](#); electrostatic machines [H02N 1/00](#); piezo-electric devices [H01L 41/00](#))}
- B81B 3/0024 . . {Transducers for transforming thermal into mechanical energy or vice versa, e.g. thermal or bimorph actuators (electric motors using thermal effects [H02N 10/00](#))}
- B81B 3/0027 . . {Structures for transforming mechanical energy, e.g. potential energy of a spring into translation, sound into translation}
- B81B 3/0029 . . {Transducers for transforming light into mechanical energy or viceversa}
- B81B 3/0032 . . {Structures for transforming energy not provided for in groups [B81B 3/0021](#) to [B81B 3/0029](#)}
- B81B 3/0035 . {Constitution or structural means for controlling the movement of the flexible or deformable elements}
- B81B 3/0037 . . {For increasing stroke, i.e. achieve large displacement of actuated parts}
- B81B 3/004 . . {Angular deflection}
- B81B 3/0043 . . . {Increasing angular deflection}
- B81B 3/0045 . . . {Improve properties related to angular swinging, e.g. control resonance frequency}
- B81B 3/0048 . . . {Constitution or structural means for controlling angular deflection not provided for in groups [B81B 3/0043](#) to [B81B 3/0045](#)}
- B81B 3/0054 . . {For holding or placing an element in a given position}
- B81B 3/0056 . . {Adjusting the distance between two elements, at least one of them being movable, e.g. air-gap tuning}
- B81B 3/0059 . . {Constitution or structural means for controlling the movement not provided for in groups [B81B 3/0037](#) to [B81B 3/0056](#)}
- B81B 3/0064 . {Constitution or structural means for improving or controlling the physical properties of a device}
- B81B 3/0067 . . {Mechanical properties}
- B81B 3/007 . . . {For controlling stiffness, e.g. ribs}
- B81B 3/0072 . . . {For controlling internal stress or strain in moving or flexible elements, e.g. stress compensating layers}
- B81B 3/0075 . . . {For improving wear resistance}
- B81B 3/0078 . . . {Constitution or structural means for improving mechanical properties not provided for in [B81B 3/007](#) to [B81B 3/0075](#)}
- B81B 3/0081 . . {Thermal properties}
- B81B 3/0083 . . {Optical properties}
- B81B 3/0086 . . {Electrical characteristics, e.g. reducing driving voltage, improving resistance to peak voltage}

- B81B 3/0089
- B81B 3/0091
- B81B 3/0094
- B81B 3/0097

U B81B 7/00**Micro-structural systems; {Auxiliary parts of micro-structural devices or systems}**

- B81B 7/0003
- B81B 7/0009
- B81B 7/0012
- B81B 7/0016
- B81B 7/0019
- B81B 7/0022
- B81B 7/0025
- B81B 7/0029
- B81B 7/0032
- B81B 7/0035
- B81B 7/0038
- B81B 7/0041
- B81B 7/0045
- B81B 7/0048
- B81B 7/0051
- B81B 7/0054
- B81B 7/0058
- B81B 7/0061
- B81B 7/0064
- B81B 7/0067
- B81B 7/007
- B81B 7/0074
- B81B 7/0077

- B81B 7/008
- {-MEMS characterised by an electronic circuit specially adapted for controlling or driving the same ([B81B 7/0087](#) takes precedence; arrangements for starting, regulating, braking, or otherwise controlling an actuator [H02N](#); control arrangements or circuits for visual indicators [G09G 3/00](#))}

NOTE

This group covers: only MEMS with an electronic circuit which is not specific to a particular application. This group does not cover: electronic circuits per se, e.g. for controlling or driving application specific MEMS

Project: N/A (B81C)**U B81C 1/00****Manufacture or treatment of devices or systems in or on a substrate ([B81C 3/00](#) takes precedence)**

- B81C 1/00007
- {-Assembling automatically hinged components, i.e. self-assembly processes (self-assembly mechanisms [B81B 7/0003](#))}
- B81C 1/00015
- {-for manufacturing micro-systems}
- B81C 1/00023
- {-without movable or flexible elements (array of static structures for functionalising surfaces in [B81C 1/00206](#); manufacture of MEMS devices for specific applications, see relevant places, e.g. microreactors [B01J 19/0093](#), lab-on-chip [B01L 3/5027](#), micromixers [B01F 13/0059](#))}
- B81C 1/00031
- . . {-Regular or irregular arrays of nanoscale structures, e.g. etch mask layer (photomechanical, e.g. photolithographic, production of textured or patterned surfaces [G03F 7/00](#); lithographic processes for making patterned surfaces using printing and stamping [G03F 7/0002](#))}
- B81C 1/00039
- . . {-Anchors}
- B81C 1/00047
- . . {-Cavities}
- B81C 1/00055
- . . {-Grooves}
- B81C 1/00063
- . . . {-Trenches}
- B81C 1/00071
- . . . {-Channels}
- B81C 1/00079
- . . . {-Grooves not provided for in groups [B81C 1/00063](#) to [B81C 1/00071](#)}
- B81C 1/00095
- . . {-Interconnects}
- B81C 1/00103
- . . {-Structures having a predefined profile, e.g. sloped or rounded grooves}
- B81C 1/00111
- . . {-Tips, pillars, i.e. raised structures (microneedles [A61M 37/0015](#))}
- B81C 1/00119
- . . {-Arrangement of basic structures like cavities or channels, e.g. suitable for microfluidic systems}
- B81C 1/00126
- . . {-Static structures not provided for in groups [B81C 1/00031](#) to [B81C 1/00119](#)}
- B81C 1/00134
- {-comprising flexible or deformable structures (manufacture of MEMS devices for specific applications, see relevant places, e.g. gyroscopes [G01C 19/5719](#), pressure sensors [G01L 9/0042](#), accelerometers [G01P 15/0802](#), acoustic transducers or diaphragms therefor [H04R 31/00](#))}
- B81C 1/00166
- . . {-Electrodes}
- B81C 1/00174
- . . {-See-saws}
- B81C 1/00182
- . . {-Arrangements of deformable or non-deformable structures, e.g. membrane and cavity for use in a transducer}
- B81C 1/0019
- . . {-Flexible or deformable structures not provided for in groups [B81C 1/00142](#) to [B81C 1/00182](#)}
- B81C 1/00198
- {-comprising elements which are movable in relation to each other, e.g. comprising slidable or rotatable elements}
- B81C 1/00206
- {-Processes for functionalising a surface, e.g. provide the surface with specific mechanical, chemical or biological properties}

- B81C 1/00214 . . {Processes for the simultaneous manufacturing of a network or an array of similar micro-structural devices}
- B81C 1/00222 . . {Integrating an electronic processing unit with a micromechanical structure}
- B81C 1/0023 . . . {Packaging together an electronic processing unit die and a micromechanical structure die (MEMS packages [B81B 7/0032](#); MEMS packaging processes [B81C 1/00261](#))}
- B81C 1/00238 . . . {Joining a substrate with an electronic processing unit and a substrate with a micromechanical structure}
- B81C 1/00246 . . . {Monolithic integration, i.e. micromechanical structure and electronic processing unit are integrated on the same substrate}
- B81C 1/00253 . . . {Processes for integrating an electronic processing unit with a micromechanical structure not provided for in [B81C 1/0023](#) to [B81C 1/00246](#)}
- B81C 1/00261 . . {Processes for packaging MEMS devices (MEMS packages [B81B 7/0032](#), packaging of smart-MEMS [B81C 1/0023](#))}
- B81C 1/00269 . . . {Bonding of solid lids or wafers to the substrate}
- B81C 1/00277 . . . {for maintaining a controlled atmosphere inside of the cavity containing the MEMS}
- B81C 1/00285 {using materials for controlling the level of pressure, contaminants or moisture inside of the package, e.g. getters}
- B81C 1/00293 {maintaining a controlled atmosphere with processes not provided for in [B81C 1/00285](#)}
- B81C 1/00301 . . . {Connecting electric signal lines from the MEMS device with external electrical signal lines, e.g. through vias}
- B81C 1/00309 . . . {suitable for fluid transfer from the MEMS out of the package or vice-versa, e.g. transfer of liquid, gas, sound}
- B81C 1/00317 . . . {Packaging optical devices}
- B81C 1/00325 . . . {for reducing stress inside of the package structure}
- B81C 1/00333 . . . {Aspects relating to packaging of MEMS devices, not covered by groups [B81C 1/00269](#) to [B81C 1/00325](#)}
- B81C 1/00341 . . {Processes for manufacturing micro-systems not provided for in groups [B81C 1/00023](#) to [B81C 1/00261](#)}
- B81C 1/00349 . {Creating layers of material on a substrate}
- B81C 1/00357 . . {involving bonding one or several substrates on a non-temporary support, e.g. another substrate}
- B81C 1/00365 . . {having low tensile stress between layers}
- B81C 1/00373 . . {Selective deposition, e.g. printing or micro-contact printing}
- B81C 1/0038 . . {Processes for creating layers of materials not provided for in groups [B81C 1/00357](#) to [B81C 1/00373](#)}
- B81C 1/00388 . {Etch mask forming}
- B81C 1/00396 . . {Mask characterised by its composition, e.g. multilayer masks}
- B81C 1/00404 . . {Mask characterised by its size, orientation or shape}
- B81C 1/00412 . . {Mask characterised by its behaviour during the etching process, e.g. soluble masks}
- B81C 1/0042 . . {Compensation masks in orientation dependent etching}
- B81C 1/00428 . . {Etch mask forming processes not provided for in groups [B81C 1/00396](#) to [B81C 1/0042](#)}
- B81C 1/00436 . {Shaping materials, i.e. techniques for structuring the substrate or the layers on the substrate}

- B81C 1/00444 . . {Surface micromachining, i.e. structuring layers on the substrate}
- B81C 1/0046 . . . {using stamping, e.g. imprinting (nano-imprinting for making etch masks [G03F 7/0002](#))}
- B81C 1/00468 . . . {Releasing structures}
- B81C 1/00476 {removing a sacrificial layer ([B81C 1/00912](#) takes precedence)}
- B81C 1/00484 {Processes for releasing structures not provided for in group [B81C 1/00476](#)}
- B81C 1/00492 . . . {Processes for surface micromachining not provided for in groups [B81C 1/00055](#) to [B81C 1/00484](#)}
- B81C 1/005 . . {Bulk micromachining}
- B81C 1/00507 . . . {Formation of buried layers by techniques other than deposition, e.g. by deep implantation of elements (SIMOX techniques [H01L 21/762](#)-)}
- B81C 1/00515 . . . {Bulk micromachining techniques not provided for in [B81C 1/00507](#)}
- B81C 1/00523 . . {Etching material}
- B81C 1/00531 . . . {Dry etching}
- B81C 1/00539 . . . {Wet etching}
- B81C 1/00547 . . . {Etching processes not provided for in groups [B81C 1/00531](#) to [B81C 1/00539](#)}
- B81C 1/00555 . . {Achieving a desired geometry, i.e. controlling etch rates, anisotropy or selectivity ([B81C 1/00023](#) to [B81C 1/0019](#) take precedence)}
- B81C 1/00563 . . . {Avoid or control over-etching}
- B81C 1/00571 {Avoid or control under-cutting}
- B81C 1/00579 {Avoid charge built-up}
- B81C 1/00587 {Processes for avoiding or controlling over-etching not provided for in [B81C 1/00571](#) to [B81C 1/00579](#)}
- B81C 1/00595 . . . {Control etch selectivity}
- B81C 1/00603 . . . {Aligning features and geometries on both sides of a substrate, e.g. when double side etching}
- B81C 1/00611 . . . {Processes for the planarisation of structures (planarising depositions [C23C](#), [H01L](#))}
- B81C 1/00619 . . . {Forming high aspect ratio structures having deep steep walls}
- B81C 1/00626 . . . {Processes for achieving a desired geometry not provided for in groups [B81C 1/00563](#) to [B81C 1/00619](#)}
- B81C 1/00634 . . {Processes for shaping materials not provided for in groups [B81C 1/00444](#) to [B81C 1/00626](#)}
- B81C 1/00642 . {for improving the physical properties of a device}
- B81C 1/0065 . . {Mechanical properties}
- B81C 1/00658 . . . {Treatments for improving the stiffness of a vibrating element}
- B81C 1/00666 . . . {Treatments for controlling internal stress or strain in MEMS structures}
- B81C 1/00674 . . . {Treatments for improving wear resistance}
- B81C 1/00682 . . . {Treatments for improving mechanical properties, not provided for in [B81C 1/00658](#) to [B81C 1/0065](#)}
- B81C 1/0069 . . {Thermal properties, e.g. improve thermal insulation}
- B81C 1/00698 . . {Electrical characteristics, e.g. by doping materials}
- B81C 1/00706 . . {Magnetic properties}
- B81C 1/00714 . . {Treatment for improving the physical properties not provided for in groups [B81C 1/0065](#) to [B81C 1/00706](#)}

- B81C 1/00777 · {-Preserve existing structures from alteration, e.g. temporary protection during manufacturing}
- B81C 1/00785 · {-Avoid chemical alteration, e.g. contamination, oxidation or unwanted etching ([B81C 1/00563](#) to [B81C 1/00595](#) take precedence)}
- B81C 1/00793 · · {-Avoid contamination, e.g. absorption of impurities or oxidation}
- B81C 1/00801 · · {-Avoid alteration of functional structures by etching, e.g. using a passivation layer or an etch stop layer ([B81C 1/00595](#), [B81C 1/00468](#) take precedence)}
- B81C 1/00809 · · {-Methods to avoid chemical alteration not provided for in groups [B81C 1/00793](#) to [B81C 1/00801](#)}
- B81C 1/00817 · {-Avoid thermal destruction}
- B81C 1/00825 · {-Protect against mechanical threats, e.g. against shocks, or residues ([B81C 1/00261](#) take precedence)}
- B81C 1/00833 · {-Methods for preserving structures not provided for in groups [B81C 1/00785](#) to [B81C 1/00825](#)}
- U B81C 1/00865 · {Multistep processes for the separation of wafers into individual elements}
- B81C 1/00896 · {-Temporary protection during separation into individual elements}
- B81C 1/00904 · {-Multistep processes for the separation of wafers into individual elements not provided for in groups [B81C 1/00873](#) to [B81C 1/00896](#)}
- B81C 1/00912 · {-Treatments or methods for avoiding stiction of flexible or moving parts of MEMS}
- B81C 1/0092 · {-For avoiding stiction during the manufacturing process of the device, e.g. during wet etching}
- B81C 1/00928 · · {-Eliminating or avoiding remaining moisture after the wet etch release of the movable structure}
- B81C 1/00936 · · {-Releasing the movable structure without liquid etchant}
- B81C 1/00944 · · {-Maintaining a critical distance between the structures to be released}
- B81C 1/00952 · · {-Treatments or methods for avoiding stiction during the manufacturing process not provided for in groups [B81C 1/00928](#) to [B81C 1/00944](#)}
- B81C 1/0096 · {-For avoiding stiction when the device is in use, i.e. after manufacture has been completed}
- B81C 1/00968 · · {-Methods for breaking the stiction bond}
- B81C 1/00976 · · {-Control methods for avoiding stiction, e.g. controlling the bias voltage}
- B81C 1/00984 · · {-Methods for avoiding stiction when the device is in use not provided for in groups [B81C 1/00968](#) to [B81C 1/00976](#)}
- B81C 1/00992 · {-Treatments or methods for avoiding stiction of flexible or moving parts of MEMS not provided for in groups [B81C 1/0092](#) to [B81C 1/00984](#)}
- U **B81C 3/00** **Assembling of devices or systems from individually processed components**
- B81C 3/001 · {-Bonding of two components}
- B81C 3/002 · {-Aligning micro-parts}
- B81C 3/004 · {-Active alignment, i.e. moving the elements in response to the detected position of the elements using internal or external actuators}
- B81C 3/005 · {-Passive alignment, i.e. without a detection of the position of the elements or using only structural arrangements or thermodynamic forces}
- B81C 3/007 · {-Methods for aligning micro-parts not provided for in groups [B81C 3/004](#) to [B81C 3/005](#)}
- B81C 3/008 · {-Aspects related to assembling from individually processed components, not covered by groups [B81C 3/001](#) to [B81C 3/002](#)}

U B81C 99/00	Subject matter not provided for in other groups of this subclass
B81C 99/0005	· {-Apparatus specially adapted for the manufacture or treatment of micro-structural devices or systems, or methods for manufacturing the same}
B81C 99/001	· · {-for cutting, cleaving or grinding}
B81C 99/0015	· · {-for micro extrusion (extrusion heads in general B29C 47/12)}
B81C 99/002	· · {-Apparatus for assembling MEMS, e.g. micro-manipulators (micro-manipulators per se B25J 7/00)}
B81C 99/0025	· · {-Apparatus specially adapted for the manufacture or treatment of micro-structural devices or systems not provided for in B81C 99/001 to B81C 99/002 }
B81C 99/003	· {-Characterising MEMS devices, e.g. measuring and identifying electrical or mechanical constants}
B81C 99/0035	· {-Testing}
B81C 99/004	· · {-during manufacturing}
B81C 99/0045	· · {-End test of the packaged device}
B81C 99/005	· · {-Test apparatus}
B81C 99/0055	· {-Manufacturing logistics}
B81C 99/006	· · {-Design; Simulation}
B81C 99/0065	· · {-Process control; Yield prediction}
B81C 99/007	· · {-Marking}
B81C 99/0075	· {-Manufacture of substrate-free structures}
B81C 99/008	· · {-separating the processed structure from a mother substrate}
B81C 99/0085	· · {-using moulds and master templates, e.g. for hot-embossing}
B81C 99/009	· · {-Manufacturing the stamps or the moulds}
B81C 99/0095	· · {-Aspects relating to the manufacture of substrate-free structures, not covered by groups B81C 99/008 to B81C 99/009 }

Project: N/A (B82B)

U B82B 1/00	Nano-structures formed by manipulation of individual atoms or molecules, or limited collections of atoms or molecules as discrete units
B82B 1/001	· {-Devices without movable or flexible elements}
B82B 1/002	· {-Devices comprising flexible or deformable elements}
B82B 1/003	· {-Devices comprising elements which are movable in relation to each other, e.g. slidable or rotatable}
B82B 1/005	· {-Constitution or structural means for improving the physical properties of a device}
B82B 1/006	· {-Controlling the movement of the flexible or movable, e.g. slidable or rotatable, elements}
B82B 1/007	· {-Processes for preserving or protecting existing structures}
B82B 1/008	· {-Nano-structures not provided for in groups B82B 1/001 to B82B 1/007 }
U B82B 3/00	Manufacture or treatment of nano-structures by manipulation of individual atoms or molecules, or limited collections of atoms or molecules as discrete units
B82B 3/0004	· {-Apparatus specially adapted for the manufacture or treatment of nano-structural devices or systems or methods for manufacturing the same}
B82B 3/0009	· {-Forming specific nano-structures}
B82B 3/0014	· · {-Array or network of similar nano-structural elements}

- B82B 3/0019 · · {-without movable or flexible elements}
- B82B 3/0023 · · {-comprising flexible or deformable elements}
- B82B 3/0028 · · {-comprising elements which are movable in relation to each other, e.g. slidable or rotatable}
- B82B 3/0033 · · {-Manufacture or treatment of substrate-free structures, i.e. not connected to any support}
- B82B 3/0038 · · {-Manufacturing processes for forming specific nano-structures not provided for in groups [B82B 3/0014](#) to [B82B 3/0033](#)}
- B82B 3/0042 · {-Assembling discrete nano-structures into nano-structural devices}
- B82B 3/0047 · · {-Bonding two or more elements}
- B82B 3/0052 · · {-Aligning two or more elements}
- B82B 3/0057 · · {-Processes for assembling discrete nano-structures not provided for in groups [B82B 3/0047](#) to [B82B 3/0052](#)}
- B82B 3/0061 · {-Methods for manipulating nanostructures}
- B82B 3/0066 · · {-Orienting nanostructures}
- B82B 3/0071 · · {-Sorting nanostructures}
- B82B 3/0076 · · {-Methods for manipulating nanostructures not provided for in groups [B82B 3/0066](#) to [B82B 3/0071](#)}
- B82B 3/008 · {-Processes for improving the physical properties of a device}
- B82B 3/0085 · {-Testing nano-structures}
- B82B 3/009 · {-Characterizing nano-structures, i.e. measuring and identifying electrical or mechanical constants}
- B82B 3/0095 · {-Manufacture or treatments or nano-structures not provided for in groups [B82B 3/0009](#) to [B82B 3/009](#)}

Project: N/A (C01B)**C01B 3/00**

Hydrogen; Gaseous mixtures containing hydrogen; Separation of hydrogen from mixtures containing it (separation of gases by physical means [B01D](#)); Purification of hydrogen (production of water gas or synthesis gas from solid carbonaceous material [C10J](#); purifying or modifying the chemical compositions of combustible technical gases containing carbon monoxide [C10K](#))

NOTE

1. In this group it is desirable to add the indexing codes of groups [B01J 2208/00](#) and [B01J 2219/00](#), for details relating to the reactors used in the generation of hydrogen or synthesis gas. 2. In groups [C01B 3/12](#) to [C01B 3/18](#) and in groups [C01B 3/22](#) to [C01B 3/586](#) it is desirable to add the indexing codes of group [C01B 2203/00](#), for aspects relating to hydrogen or synthesis gas generation processes.

- C01B 3/0005 · {-Reversible uptake of hydrogen by an appropriate medium, i.e. based on physical or chemical sorption phenomena or on reversible chemical reactions, e.g. for hydrogen storage purposes (-purification of hydrogen [C01B 3/508](#)-); Reversible gettering of hydrogen; Reversible uptake of hydrogen by electrodes}
- C01B 3/02 · Production of hydrogen or of gaseous mixtures containing (a substantial proportion of) hydrogen
- C01B 3/04 · · by decomposition of inorganic compounds, e.g. ammonia{(-[C01B 3/0005](#) takes precedence-)}
- C01B 3/06 · · by reaction of inorganic compounds containing electro-positively bound hydrogen, e.g. water, acids, bases, ammonia, with inorganic reducing agents (-by electrolysis of water [C25B 1/04](#)-)}

- C01B 3/068
- • {the hydrogen being generated from the water as a result of a cyclus of reactions, not covered by groups [C01B 3/063](#) or [C01B 3/105](#)}
- C01B 3/22
- • by decomposition of gaseous or liquid organic compounds ({ [C01B 3/0005](#) takes precedence } ; coking liquid carbonaceous materials [C10B 55/00](#))
- C01B 3/50
- Separation of hydrogen or hydrogen containing gases from gaseous mixtures, e.g. purification (~~C01B 3/14~~ takes precedence)
- C01B 3/508
- • {by selective and reversible uptake by an appropriate medium, i.e. the uptake being based on physical or chemical sorption phenomena or on reversible chemical reactions (the appropriate mediums per se [C01B 3/0005](#))}
- C01B 3/52
- • by contacting with liquids; Regeneration of used liquids(~~C01B 3/508~~ takes precedence)}
- C01B 3/56
- • by contacting with solids; Regeneration of used solids(~~C01B 3/508~~ takes precedence)}
- C01B 4/00**
- Hydrogen isotopes; Inorganic compounds thereof prepared by isotope exchange, e.g. $\text{NH}_3 + \text{D}_2 \rightarrow \text{NH}_2\text{D} + \text{HD}$ (separation of isotopes [B01D 59/00](#) ; other chemical reactions to form compounds of hydrogen isotopes, see the relevant groups for hydrogen compounds in class [C01](#))**
- C01B 6/00**
- Hydrides of metals {including fully or partially hydrided metals, alloys or intermetallic compounds (use of some thereof for reversible sorption of hydrogen [C01B 3/0005](#) , [C01B 3/508](#)); Compounds containing at least one metal-hydrogen bond, e.g. $(\text{GeH}_3)_2\text{S}$, SiH GeH }; Monoborane or diborane; Addition complexes thereof (higher hydrides of boron, substituted hydrides of boron [C01B 35/00](#))**
- C01B 6/24
- Hydrides containing at least two metals; Addition complexes thereof (~~C01B 6/13~~ to [C01B 6/23](#) take precedence)
- C01B 7/00**
- Halogens; Halogen acids (oxyacids [C01B 11/00](#))**
- U C01B 7/01
- Chlorine; Hydrogen chloride
- C01B 7/017
- • {Preparation of hydrogen chloride by reacting together chlorine, water and carbon or carbon monoxide (the carbon not acting only as catalyst)}(~~the carbon not acting only as catalyst~~)
- C01B 7/07
- • Purification; {Separation (~~C01B 7/015~~ takes precedence)}
- C01B 9/00**
- General methods of preparing halides (particular individual halides, see the relevant groups in [C01B](#) to [C01G](#) according to the element combined with the halogen; electrolytic production of inorganic compounds [C25B](#))**
- U **C01B 11/00**
- Oxides or oxyacids of halogens; Salts thereof**
- C01B 11/24
- Oxygen compounds of fluorine
- U **C01B 13/00**
- Oxygen; Ozone; Oxides or hydroxides in general**
- C01B 13/02
- Preparation of oxygen (by liquefying [F25J](#))
- C01B 13/0296
- • {Generators releasing in a self-sustaining way pure oxygen from a solid charge, without interaction of it with a fluid nor external heating, e.g. chlorate candles or canisters containing them (charges per se [C01B 13/02](#))}
- C01B 13/08
- • from air with the aid of metal oxides, e.g. barium oxide, manganese oxide(~~C01B 13/0292~~ takes precedence)}
- C01B 13/14
- Methods for preparing oxides or hydroxides in general (particular individual oxides or hydroxides, see the relevant groups of subclasses [C01B](#) to [C01G](#) or [C25B](#), according to the element combined with the oxygen or hydroxy group)
- C01B 13/32
- • by oxidation or hydrolysis of elements or compounds in the liquid or solid state {or in non-aqueous solution, e.g. sol-gel process}

- C01B 13/36
- • by precipitation reactions in {aqueous} solutions {(-C01B 13/328 takes precedence-)}
- U C01B 15/00 Peroxides; Peroxyhydrates; Peroxyacids or salts thereof; Superoxides; Ozonides**
- U C01B 15/04
- Metal peroxides or peroxyhydrates thereof; {Metal} superoxides; {Metal} ozonides; {Peroxyhydrates thereof}
- C01B 15/043
- • of alkali metals, alkaline earth metals or magnesium {or beryllium or aluminium}
- C01B 15/055
- Peroxyhydrates {(-C01B 15/04 takes precedence-)}; Peroxyacids or salts thereof
- C01B 15/16
- • containing phosphorus
- U C01B 17/00 Sulfur; Compounds thereof**
- U C01B 17/02
- Preparation of sulfur; Purification
- C01B 17/027
- • Recovery of sulfur from material containing elemental sulfur, e.g. luxmasses {or sulfur containing ores}; Purification {of the recovered sulfur}
- C01B 17/20
- Methods for preparing sulfides or polysulfides, in general {(-ammonium sulfides or polysulfides C01C ; sulfides or polysulfides of metals, other than alkali metals, magnesium, calcium, strontium and barium, see the relevant groups of subclasses C01F or C01G , according to the metal-)}
- U C01B 17/48
- Sulfur dioxide; Sulfurous acid
- U C01B 17/50
- • Preparation of sulfur dioxide
- U C01B 17/501
- • • {by reduction of sulfur compounds}
- C01B 17/504
- • • • {of ammonium sulfates (-of ammonium sulfates containing sulfuric acid solutions C01B 17/585-)}
- C01B 17/52
- • • by roasting sulfides (-C22B 1/00 takes precedence-)
- C01B 17/58
- • • Recovery of sulfur dioxide from acid tar or the like {or from any waste sulfuric acid}
- C01B 17/62
- Methods of preparing sulfites in general {(-particular individual sulfites, see the relevant groups of subclasses C01B to C01G , according to the cation-)}
- U C01B 17/64
- Thiosulfates; Dithionites; Polythionates
- C01B 17/66
- • Dithionites {or hydrosulfites (S2O4 2-)}
- U C01B 17/69
- Sulfur trioxide; Sulfuric acid
- U C01B 17/90
- • Separation; Purification
- C01B 17/901
- • • {Recovery from spent acids containing metallic ions, e.g. hydrolysis acids, pickling acids {(-obtaining sulfur dioxide as an intermediate in sulfur trioxide recovery from sulfates, e.g. iron sulfates C01B 17/501 , from spent acids C01B 17/58-)}
- C01B 17/92
- • • Recovery from acid tar or the like, {e.g. alkylation acids (-obtaining sulfur dioxide as an intermediate in sulfur trioxide recovery therefrom C01B 17/58-)}
- C01B 17/96
- Methods for the preparation of sulfates in general {(-particular individual sulfates, see the relevant groups of subclasses C01B to C01G , according to the cation-)}
- C01B 17/98
- Other compounds containing sulfur and oxygen {(-persulfuric acids C01B 15/06 ; persulfates C01B 15/08-)}
- C01B 19/00 Selenium; Tellurium; Compounds thereof (-phosphorus compounds C01B 25/14-)**
- C01B 19/007
- {Tellurides or selenides of metals {(-C01B 19/002 takes precedence-)}
- C01B 19/04
- Binary compounds {including binary selenium-tellurium compounds {(-C01B 19/004 , C01B 19/005 , C01B 19/007 take precedence-)}

U C01B 21/00**Nitrogen; Compounds thereof**

- C01B 21/02 • Preparation of nitrogen (by decomposition of ammonia{ [C01B 3/047](#) })
- C01B 21/04 • Purification or separation of nitrogen (-by liquefying [F25J](#)-)
- C01B 21/06 • Binary compounds of nitrogen with metals, with silicon, or with boron, {or with carbon, i.e. nitrides; Compounds of nitrogen with more than one metal, silicon or boron} (-azides [C01B 21/08](#)-)

NOTES

Binary compounds, i.e. compounds of nitrogen with only one other element chosen from metals, silicon, boron or carbon, are classified in groups [C01B 21/06](#) or [C01B 21/0605](#) to [C01B 21/076](#). Compounds of nitrogen with more than one element chosen from metals, silicon or boron are classified in [C01B 21/0602](#)

Documents relating to several specific binary compounds are classified in [C01B 21/06](#) only and receive the indexing codes chosen from [C01B 21/0602](#) to [C01B 21/076](#) to identify the specific compounds

- C01B 21/0637 • {-with metals not specified in groups [C01B 21/0607](#) to [C01B 21/0635](#), other than aluminium, titanium, zirconium or hafnium-}
- U C01B 21/064 • • with boron
- C01B 21/0648 • • • {After-treatment, e.g. grinding, purification (-transformation of hexagonal into cubic or wurtzitic boron nitride [C04B 35/5831](#)-)}
- C01B 21/076 • • with titanium or zirconium {or hafnium}
- C01B 21/082 • Compounds containing nitrogen and non-metals {and optionally metals} (-[C01B 21/06](#), [C01B 21/08](#) take precedence-)
- U C01B 21/087 • • containing one or more hydrogen atoms
- U C01B 21/092 • • • containing also one or more metal atoms
- C01B 21/0923 • • • • {Metal imides or amides (-silicon imides or amides [C01B 21/087](#)-)}
- C01B 21/12 • • Carbamic acid {or thiocarbamic acid}; Salts thereof
- U C01B 21/14 • • Hydroxylamine; Salts thereof
- U C01B 21/1409 • • • {Preparation}
- C01B 21/1454 • • • • {-of hydroxylamine salts by processes not covered by one or more of groups [C01B 21/1418](#) to [C01B 21/1445](#), e.g. by conversion of one salt into another-}
- U C01B 21/20 • Nitrogen oxides; Oxyacids of nitrogen; Salts thereof
- C01B 21/206 • • {Nitric anhydride (N_2O_5)}(-[C01B 21/203](#) takes precedence-)}
- C01B 21/22 • • Nitrous oxide (N_2O){(-[C01B 21/203](#) takes precedence-)}
- C01B 21/24 • • Nitric oxide (NO){(-[C01B 21/203](#) takes precedence-)}
- C01B 21/26 • • • Preparation by catalytic {or non-catalytic}oxidation of ammonia
- C01B 21/30 • • • Preparation by oxidation of nitrogen{(-[C01B 21/26](#) takes precedence-)}
- C01B 21/34 • • Nitrogen trioxide (N_2O_3){(-[C01B 21/203](#) takes precedence-)}
- C01B 21/36 • • Nitrogen dioxide (NO_2 , N_2O_4){ [C01B 21/203](#) }, [C01B 21/26](#) , [C01B 21/30](#) take precedence-}
- U C01B 21/38 • • Nitric acid
- C01B 21/40 • • • Preparation by absorption of oxides of nitrogen{(-[C01B 21/26](#) takes precedence-)}
- C01B 21/44 • • • Concentration{(-[C01B 21/40](#) takes precedence-)}
- C01B 21/46 • • • Purification; Separation; {Stabilisation (-[C01B 21/40](#) takes precedence-)}

- C01B 21/48
- • Methods for the preparation of nitrates in general (particular individual nitrates, see the relevant groups of subclasses [C01B](#) to [C01G](#), according to the cation)
- C01B 23/00** **Noble gases; Compounds thereof (liquefying [F25J](#); { noble gases obtained by rectification [F25J 3/028](#) })**
- C01B 25/00** **Phosphorus; Compounds thereof ({ [C01B 6/00](#) }, [C01B 21/00](#), [C01B 23/00](#) take precedence; perphosphates [C01B 15/16](#)-)**
- U C01B 25/003 • {Phosphorus}
- C01B 25/006 • • {Stabilisation (C01B 25/04 takes precedence)}
- C01B 25/16 • Oxyacids of phosphorus; Salts thereof (peroxyacids or salts thereof [C01B 15/00](#)-)
- U C01B 25/18 • • Phosphoric acid
- C01B 25/234 • • • Purification; Stabilisation; Concentration (purification concomitant with preparation [C01B 25/22](#); preparation involving solvent-solvent extraction [C01B 25/46](#)-)
- C01B 25/237 • • • • Selective elimination of impurities (C01B 25/2343 takes precedence)}
- C01B 25/26 • • Phosphates (perphosphates [C01B 15/16](#)-)
- U C01B 25/30 • • • Alkali metal phosphates
- C01B 25/301 • • • • {Preparation from liquid orthophosphoric acid or from an acid solution or suspension of orthophosphates (using ion-exchangers [C01B 25/30](#)-)}
- U C01B 25/32 • • • Phosphates of magnesium, calcium, strontium, or barium
- C01B 25/321 • • • • {Methods for converting an alkaline earth metal ortho-phosphate into another ortho-phosphate (by reaction, e.g. of phosphate rock with phosphoric acid [C01B 25/322](#)-)}
- C01B 25/327 • • • • {After-treatment (increasing the phosphate content of ores [C01B 25/32](#)-)}
- C01B 25/455 • • • containing halogen (completely halogenated alkali metal phosphates [C01D](#), e.g. lithium hexafluorophosphate [C01D 15/005](#)-)}
- C01B 25/46 • • Preparation involving solvent-solvent extraction (solvent extraction in general [B01D 11/00](#)-)
- C01B 25/461 • • • {the phosphoric acid present in the medium obtained after reaction being first extracted from the liquid phase formed or separated then re-extracted as free acid by using water or as a phosphate by using a basic compound (selective extraction of impurities contained in acid [C01B 25/237](#)-)}
- NOTES**
- The extracting agent may be diluted with a compound or a mixture of compounds which are not solvents for phosphoric acid, e.g. a hydrocarbon
- Documents which belong to more than one subgroup of [C01B 25/462](#) to [C01B 25/466](#) are classified by a combination, e.g. [C01B 25/462](#) +B4+B8
- C01B 25/468 • • • {the extraction being performed on the reaction slurry itself, i.e. without separating the acid (C01B 25/232 takes precedence)}
- C01B 31/00** **Carbon; Compounds thereof ({ [C01B 6/00](#) }, [C01B 21/00](#), [C01B 23/00](#) take precedence; percarbonates [C01B 15/10](#); carbon black [C09C 1/48](#); gas carbon production [C10B](#)-)**
- C01B 31/005 • {Carbon fluorides, e.g. (CF)_n or (C₂F)_n (preparation of intercalation compounds of graphite with fluorine [C01B 31/0415](#)-)}
- C01B 31/02 • Preparation of carbon (by using ultra high pressure, e.g. for the formation of diamonds, [B01J 3/06](#); by crystal growth [C30B](#)-); Purification; {After-treatment}
- C01B 31/0206 • • {Nanosized carbon materials (graphene [C01B 31/0438](#)-)}

- U C01B 31/08 · Active carbon
- C01B 31/083 · · {After-treatment, e.g. purification (-granulation [C01B 31/14-](#))}
- C01B 31/087 · · {Reactivation or regeneration (-by a physical process [C01B 31/086-](#))}
- C01B 31/088 · · {Apparatus (-[C01B 31/086](#) takes precedence-)}
- C01B 31/089 · · {Making shaped products, e.g. fibres, spheres, membranes, foam, or the like (-granulation [C01B 31/14-](#))}
- C01B 31/10 · · Preparation by using gaseous activating agents{(-[C01B 31/086](#) , [C01B 31/088](#) take precedence-)}
- C01B 31/12 · · Preparation by using non-gaseous activating agents{(-[C01B 31/086](#) , [C01B 31/088](#) take precedence-)}
- C01B 31/14 · · Granulation (-apparatus [B01J 2/00-](#))
- NOTE
 In this group, the term granulation covers the methods of preparation of active carbon using carbonaceous precursors per se and binders, e.g. pitch, and producing the granules
- C01B 31/18 · Carbon monoxide (-metal carbonyls [C01G-](#))
- C01B 31/24 · Methods for the preparation of carbonates or bicarbonates in general (-percarbonates [C15/10](#); particular individual carbonates, see the relevant groups in [C01B](#) to [C01G](#) according to the cation-)
- C01B 31/30 · Carbides (-alloys [C22-](#))
- C01B 33/00 Silicon; Compounds thereof ({ [C01B 6/00](#) } , [C01B 21/00](#) , [C01B 23/00](#) take precedence; persilicates [C01B 15/14](#) ; carbides [C01B 31/36-](#))**
- C01B 33/02 · Silicon (-forming single crystals or homogeneous polycrystalline material with defined structure [C30B-](#))
- C01B 33/021 · · Preparation (-chemical coating from the vapour phase [C23C 16/00-](#))
- C01B 33/023 · · · by reduction of silica or {free}silica-containing material
- C01B 33/037 · · Purification (-by zone-melting [C30B 13/00-](#))
- C01B 33/06 · Metal silicides (-alloys [C22-](#))
- C01B 33/113 · Silicon oxides; Hydrates thereof{(-preparing monoxide by reduction of siliceous material [C01B 33/182-](#))}
- U C01B 33/12 · · Silica; Hydrates thereof, e.g. lepidic silicic acid
- U C01B 33/14 · · · Colloidal silica, e.g. dispersions, gels, sols
- C01B 33/146 · · · · After-treatment of sols ({ preparation of hydrosols or aqueous dispersions from hydroorganosols, organosols or dispersions in an organic medium [C01B 33/141](#) } ; preparation of hydroorganosols, organosols or dispersions in an organic medium from hydrosols{or aqueous dispersions} [C01B 33/145-](#))
- C01B 33/148 · · · · · Concentration; Drying; Dehydration; Stabilisation; Purification{(-[C01B 33/1465](#) takes precedence-)}
- C01B 33/18 · · · Preparation of finely divided silica neither in sol nor in gel form; After-treatment thereof (-preparation of aerogels by dehydrating gels [C01B 33/158](#) ; treatment to enhance the pigmenting or filling properties [C09C-](#))
- C01B 33/20 · Silicates (-persilicates [C01B 15/14](#) ; { containing aluminium [C01B 33/26](#) })
- U C01B 33/26 · · Aluminium-containing silicates,{i.e. silico-aluminates}
- C01B 33/28 · · · Base exchange silicates, e.g. zeolites (-regeneration [B01J 49/00-](#))

- C01B 33/2807 {Zeolitic silicoaluminates with a tridimensional crystalline structure possessing molecular sieve properties; Isomorphous compounds wherein a part of the aluminium ore of the silicon present may be replaced by other elements such as gallium, germanium, phosphorus; Preparation of zeolitic molecular sieves from molecular sieves of another type or from preformed reacting mixtures (not used, see subgroups)}
- U C01B 33/2815 {of type A (UNION CARBIDE trade name; corresponds to GRACE` s types Z-12 or Z-12L)}
- C01B 33/283 {from a reaction mixture containing at least one aluminium silicate or aluminosilicate of a clay-type, e.g. kaolin or metakaolin or its exotherm modification or allophane (-containing a single clay substantially chemically modified with an acid, i.e. beyond the activation state [C01B 33/2815](#)-)}
- C01B 33/32 . . Alkali metal silicates ({ [C01B33/20B](#) } , [C01B 33/26](#) take precedence)-}
- C01B 33/36 . . having base-exchange properties but not having molecular sieve properties (-regeneration thereof [B01J 49/00](#)-)
- C01B 33/38 . . . Layered base-exchange silicates, e.g. clays, micas or alkali metal silicates of kenyaite or magadiite type{-activation of naturally occurring clays [B01J 20/12](#) ; pillared layered base-exchange silicates [B01J 29/049](#)-)}
- C01B 33/42 Micas; {Interstratified clay-mica products (-delaminated mica or vermiculite platelets obtained by a process involving cation-exchange [C04B 14/208](#)-)}
- C01B 33/46 . . . Amorphous silicates, e.g. so-called "amorphous zeolites"(-crystalline zeolites [C01B 39/00](#)-)
- C01B 35/00 Boron; Compounds thereof (-monoborane, diborane, metal borohydrides or addition complexes thereof [C01B 6/00](#) ; perborates [C01B 15/12](#) ; binary compounds with nitrogen [C01B 21/06](#) ; { compounds of noble gases [C01B 23/0005](#) } ; phosphides [C01B 25/08](#) ; carbides [C01B 31/36](#) ; alloys containing boron [C22](#)-)**
- U C01B 35/08 . Compounds containing boron and nitrogen, phosphorus, oxygen, sulfur, selenium or tellurium
- C01B 35/10 . . Compounds containing boron and oxygen (-[C01B 35/06](#) takes precedence-)
- C01B 35/12 . . . Borates{-[C01B 35/1063](#) takes precedence-}
- U C01B 35/14 . . Compounds containing boron and nitrogen, phosphorus, sulfur, selenium or tellurium
- C01B 35/146 . . . {Compounds containing boron and nitrogen, e.g. borazoles (-ammonium tetrafluoroborates [C01B 35/063](#) ; ammonium borates [C01B 35/12](#))}
- U C01B 37/00 Compounds having molecular sieve properties but not having base-exchange properties**
- NOTE
Compounds classified in main group [C01B 37/00](#) are also classified in other groups of class [C01](#) according to their composition
- C01B 37/02 . Crystalline silica-polymorphs, e.g. silicalites {dealuminated aluminosilicate zeolites}
- C01B 37/04 . Aluminophosphates ([APO compounds](#))([APO compounds](#))
- U C01B 37/06 . Aluminophosphates containing other elements, e.g. metals, boron
- C01B 37/08 . . [Silicoaluminophosphates\(SAPO compounds\)](#)[Silicoaluminophosphates \(SAPO compounds\)](#),{e.g. CoSAPO}

C01B 39/00 **Compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites; Their preparation; After-treatment, e.g. ion-exchange or dealumination** (~~treatment to modify the sorption properties, e.g. shaping using a binder, [B01J 20/10](#) ; treatment to modify the catalytic properties, e.g. combination of treatments to make the zeolites appropriate to their use as a catalyst, [B01J 29/04](#) ; treatment to improve the ion-exchange properties [B01J 39/14](#) ; regeneration or reactivation of ion-exchange properties [B01J 49/00](#) ; preparation of stabilised suspensions used in detergents [C11D 3/12](#)~~)

NOTES

In this group, the following term is used with the meaning indicated:

- "zeolites" means:

- (i) crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional, microporous lattice framework structure of tetrahedral oxide units;
- (ii) compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron.

Compounds classified in main group [C01B 39/00](#) are also classified in other groups of class [C01](#) according to their composition

- U C01B 39/02 • Crystalline aluminosilicate zeolites; Isomorphous compound thereof; Direct preparation thereof; Preparation thereof starting from a reaction mixture containing a crystalline zeolite of another type, or from preformed reactants; After-treatment thereof
- C01B 39/023 • • {Preparation of physical mixtures or intergrowth products of zeolites chosen from group [C01B 39/04](#) or two or more of groups [C01B 39/14](#) to [C01B 39/48](#)}
- U C01B 39/06 • • Preparation of isomorphous zeolites characterised by measures to replace the aluminium or silicon atoms in the lattice framework by atoms of other elements,{i.e. by direct or secondary synthesis}
- C01B 39/10 • • • the replacing atoms being {at least}phosphorus atoms
- C01B 39/12 • • • the replacing atoms being {at least}boron atoms
- U C01B 39/14 • • Type A
- C01B 39/16 • • • from aqueous solutions of an alkali metal aluminate and an alkali metal silicate excluding any other source of alumina or silica but seeds{(-[C01B 39/145](#) takes precedence-)}
- C01B 39/18 • • • from a reaction mixture containing at least one aluminium silicate or aluminosilicate of a clay type, e.g. kaolin or metakaolin or its exotherm modification or allophane{(-[C01B 39/145](#) takes precedence-)}
- U C01B 39/20 • • Faujasite type, e.g. type X or Y
- C01B 39/22 • • • Type X{(-[C01B 39/205](#) takes precedence-)}
- C01B 39/24 • • • Type Y{(-[C01B 39/205](#) takes precedence-)}
- C01B 39/26 • • Mordenite type{(-[C01B 39/023](#) , [C01B 39/026](#) , [C01B 39/06](#) take precedence-)}
- C01B 39/28 • • Phillipsite or harmotome type{(-[C01B 39/023](#) , [C01B 39/026](#) , [C01B 39/06](#) take precedence-)}
- C01B 39/46 • • Other types characterised by their X-ray diffraction pattern and their defined composition{(-[C01B 39/023](#) , [C01B 39/026](#) , [C01B 39/06](#) take precedence-)}
- C01B 39/50 • Zeolites wherein inorganic bases or salts occlude channels in the lattice framework, e.g. sodalite, cancrinite, nosean, hauynite{(-ultramarine [C09C 1/32](#)-)}

C01B 2203/00**Integrated processes for the production of hydrogen or synthesis gas (reactors or details thereof [B01J 2208/00](#) to [B01J 2219/00](#))**

- U C01B 2203/08 · Methods of heating or cooling
- U C01B 2203/0805 · · Methods of heating the process for making hydrogen or synthesis gas
- U C01B 2203/0838 · · · by heat exchange with exothermic reactions, other than by combustion of fuel
- C01B 2203/0844 · · · · the non-combustive exothermic reaction being another reforming reaction as defined in groups [C01B 2203/02](#) to [C01B 2203/0294](#)
- C01B 2203/80 · Aspect of integrated processes for the production of hydrogen or synthesis gas not covered by groups [C01B 2203/02](#) to [C01B 2203/1695](#)
- C01B 2203/82 · · Several process steps of [C01B 2203/02](#) to [C01B 2203/08](#) integrated into a single apparatus

Project: N/A (C01C)**U C01C 1/00****Ammonia; Compounds thereof {([C01C 3/08](#), [C01C 3/14](#), [C01C 3/16](#), [C01C 3/20](#) take precedence)}**NOTE

Complex ammine salts, e.g. $[\text{Pd}(\text{NH}_3)_4]\text{Cl}_2$, are { also } classified in the relevant groups of subclasses [C01D](#) to [C01G](#), according to the metal

- C01C 1/003 · {-Storage or handling of ammonia}
- C01C 1/006 · · {-making use of solid ammonia storage materials, e.g. complex ammine salts}
- U C01C 1/02 · Preparation, {purification} or separation of ammonia
- C01C 1/026 · · {-Preparation of ammonia from inorganic compounds}
- U C01C 1/04 · · Preparation of ammonia by synthesis { in the gas phase}(preparation or purification of gas mixtures for ammonia synthesis { [C01B 3/025](#)})
- U C01C 1/0405 · · · {from N_2 and H_2 in presence of a catalyst}
- U C01C 1/0417 · · · · {characterised by the synthesis reactor, e.g. arrangement of catalyst beds and heat exchangers in the reactor (arrangement of several reactors [C01C 1/0405](#); fixed-bed reactors in general [B01J 8/02](#))}
- C01C 1/0423 · · · · · {-Cold wall reactors}
- C01C 1/0429 · · · · · {-Fluidized or moving bed reactors}
- C01C 1/0435 · · · · · {-Horizontal reactors}
- C01C 1/0441 · · · · · {-Reactors with the catalyst arranged in tubes}
- C01C 1/0458 · · · · {Separation of NH_3 (during purge gas treatment [C01C 1/0476](#))}

Project: N/A (C01F)**U C01F 7/00****Compounds of aluminium**

- U C01F 7/02 · Aluminium oxide; Aluminium hydroxide; Aluminates
- U C01F 7/04 · · Preparation of alkali metal aluminates; Aluminium oxide or hydroxide therefrom {([C01F 7/028](#) takes precedence)}
- C01F 7/06 · · · by treating aluminous minerals {or waste-like raw materials} with alkali hydroxide, {e.g. leaching of bauxite according to the Bayer process (obtaining aluminium oxide or hydroxide from the resulting aluminate solution [C01F 7/14](#))}
- C01F 7/08 · · · by treating aluminous minerals with sodium carbonate, {e.g. sinter processes ([C01F 7/0613](#) and [C01F 7/066](#) take precedence)}

Project: N/A (C01G)

- U C01G 45/00 Compounds of manganese**
- C01G 45/006 · {-Compounds containing, besides manganese, two or more other elements, with the exception of oxygen or hydrogen (manganates, manganites or permanganates [C01G 45/12](#))}
- U C01G 45/12 · Manganates { manganites or} permanganates
- C01G 45/1207 · · {-Permanganates ($[\text{MnO}_4]^{2-}$) or manganates ($[\text{MnO}_4]^{2-}$)}
- C01G 45/1214 · · · {-containing alkali metals}
- C01G 45/1221 · · {-Manganates or manganites with a manganese oxidation state of Mn(III), Mn(IV) or mixtures thereof}
- C01G 45/1228 · · · {-of the type $[\text{MnO}_2]^{n-}$, e.g. LiMnO_2 , $\text{Li}[\text{M}_x\text{Mn}_{1-x}\text{O}_2]$ }
- C01G 45/1235 · · · {-of the type $[\text{Mn}_2\text{O}_4]^{2-}$, e.g. $\text{Li}_2\text{Mn}_2\text{O}_4$, $\text{Li}_2[\text{M}_x\text{Mn}_{2-x}\text{O}_4]$ }
- C01G 45/1242 · · · {-of the type $[\text{Mn}_2\text{O}_4]^-$, e.g. LiMn_2O_4 , $\text{Li}[\text{M}_x\text{Mn}_{2-x}\text{O}_4]$ }
- C01G 45/125 · · · {-of the type $[\text{MnO}_3]^{n-}$, e.g. Li_2MnO_3 , $\text{Li}_2[\text{M}_x\text{Mn}_{1-x}\text{O}_3]$, $(\text{La},\text{Sr})\text{MnO}_3$ }
- C01G 45/1257 · · · · {-containing lithium, e.g. Li_2MnO_3 , $\text{Li}_2[\text{M}_x\text{Mn}_{1-x}\text{O}_3]$ }
- C01G 45/1264 · · · · {-containing rare earth, e.g. $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$, LaMnO_3 }
- C01G 45/1271 · · · {-of the type $[\text{Mn}_2\text{O}_8]^{n-}$, e.g. $(\text{LaSr}_3)\text{Mn}_2\text{O}_8$ }
- C01G 45/1278 · · · {-of the type $[\text{Mn}_2\text{O}_7]^{n-}$, e.g. $(\text{Sr}_2-x\text{Nd}_x)\text{Mn}_2\text{O}_7$, $\text{Ti}_2\text{Mn}_2\text{O}_7$ }
- C01G 45/1285 · · · {-of the type $[\text{Mn}_2\text{O}_5]^{n-}$ }
- C01G 45/1292 · · · {-of the type $[\text{Mn}_5\text{O}_{12}]^{n-}$ }
- U C01G 51/00 Compounds of cobalt**
- C01G 51/006 · {-Compounds containing, besides cobalt, two or more other elements, with the exception of oxygen or hydrogen (cobaltates [C01G 51/40](#))}
- C01G 51/30 · {-Sulfides}
- C01G 51/40 · {-Cobaltates}
- C01G 51/42 · · {-containing alkali metals, e.g. LiCoO_2 }
- C01G 51/44 · · · {-containing manganese}
- C01G 51/50 · · · · {-of the type $[\text{MnO}_2]^{n-}$, e.g. $\text{Li}(\text{CoxMn}_{1-x})\text{O}_2$, $\text{Li}(\text{MyCoxMn}_{1-x-y})\text{O}_2$ }
- C01G 51/52 · · · · {-of the type $[\text{Mn}_2\text{O}_4]^{2-}$, e.g. $\text{Li}_2(\text{CoxMn}_{2-x})\text{O}_4$, $\text{Li}_2(\text{MyCoxMn}_{2-x-y})\text{O}_4$ }
- C01G 51/54 · · · · {-of the type $[\text{Mn}_2\text{O}_4]^-$, e.g. $\text{Li}(\text{CoxMn}_{2-x})\text{O}_4$, $\text{Li}(\text{MyCoxMn}_{2-x-y})\text{O}_4$ }
- C01G 51/56 · · · · {-of the type $[\text{MnO}_3]^{2-}$, e.g. $\text{Li}_2[\text{CoxMn}_{1-x}\text{O}_3]$, $\text{Li}_2[\text{MyCoxMn}_{1-x-y}\text{O}_3]$ }
- C01G 51/58 · · · · {-of the type $[\text{Mn}_2\text{O}_8]^{n-}$ }
- C01G 51/60 · · · · {-of the type $[\text{Mn}_2\text{O}_7]^{n-}$ }
- C01G 51/62 · · · · {-of the type $[\text{Mn}_2\text{O}_5]^{n-}$ }
- C01G 51/64 · · · · {-of the type $[\text{Mn}_5\text{O}_{12}]^{n-}$ }
- C01G 51/66 · · {-containing alkaline earth metals, e.g. SrCoO_3 }
- C01G 51/68 · · · {-containing rare earth, e.g. $\text{La}_{0.3}\text{Sr}_{0.7}\text{CoO}_3$ }
- C01G 51/70 · · {-containing rare earth, e.g. LaCoO_3 ([C01G 51/68](#) takes precedence)}
- U C01G 53/00 Compounds of nickel**
- C01G 53/006 · {-Compounds containing, besides nickel, two or more other elements, with the exception of oxygen or hydrogen (nickelates [C01G 53/40](#))}

- C01G 53/40
- ~~{Nickelates}~~
- WARNING
Groups [C01G 53/40](#) to [C01G 53/70](#) are not complete pending a reorganisation, see also [C01G 53/006](#) and [C01G 53/00](#)
- C01G 53/42
- · {containing alkali metals, e.g. LiNiO₂}
- C01G 53/44
- · · {containing manganese}
- C01G 53/50
- · · · {of the type [MnO₂]}_{n-}, e.g. Li(NixMn1-x)O₂, Li(MyNixMn1-x-y)O₂†}
- C01G 53/52
- · · · {of the type [Mn₂O₄]}₂₋, e.g. Li₂(NixMn2-x)O₄, Li₂(MyNixMn2-x-y)O₄†}
- C01G 53/54
- · · · {of the type [Mn₂O₄]}₋, e.g. Li(NixMn2-x)O₄, Li(MyNixMn2-x-y)O₄†}
- C01G 53/56
- · · · {of the type [MnO₃]}₂₋, e.g. Li₂[NixMn1-xO₃], Li₂[MyNixMn1-x-yO₃†}
- C01G 53/58
- · · · {of the type [Mn₂O₈]}_{n-†}}
- C01G 53/60
- · · · {of the type [Mn₂O₇]}_{n-†}}
- C01G 53/62
- · · · {of the type [Mn₂O₅]}_{n-†}}
- C01G 53/64
- · · · {of the type [Mn₅O₁₂]}_{n-†}}
- C01G 53/66
- · {containing alkaline earth metals, e.g. SrNiO₃, SrNiO₂}
- C01G 53/68
- · · {containing rare earth, e.g. La_{1.62} Sr_{0.38}NiO₄}
- C01G 53/70
- {containing rare earth, e.g. LaNiO₃ ‡([C01G 53/68](#) takes precedence)}

U C01G 99/00**Subject matter not provided for in other groups of this subclass**

- C01G 99/003
- {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- C01G 99/006
- {Compounds containing, besides a metal not provided for elsewhere in this subclass, two or more other elements other than oxygen or hydrogen ([C01G 99/003](#) takes precedence)}

Project: N/A (C02F)**C02F**

TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE (~~separation in general [B01D](#); special arrangements on waterborne vessels of installations for treating water, waste water or sewage, e.g. for producing fresh water, [B63J](#); adding materials to water to prevent corrosion [C23F](#); treating radioactively-contaminated liquids [G21F 9/04](#) ; regeneration of reactants for recirculation into processes, see the relevant places for the processes)~~)

NOTE

When classifying in this subclass, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups: [C02F 9/02](#) to [C02F 9/14](#) covered by [C02F 9/00](#) and subgroup

C02F 1/00

Treatment of water, waste water, or sewage (~~[C02F 3/00](#) to [C02F 9/00](#) take precedence~~)

C02F 1/001

- {Processes for the treatment of water whereby the filtration technique is of importance (~~[C02F 1/44](#) takes precedence; construction of filters in general [B01D 24/00](#) to [B01D 41/00](#)~~)}

- C02F 1/002
- {using small portable filters for producing potable water, e.g. personal travel or emergency equipment, survival kits, combat gear ([-C02F 1/003](#) takes precedence-)}
- C02F 1/003
- {using household-type filters for producing potable water, e.g. pitchers, bottles, faucet mounted devices ([-C02F 9/005](#) takes precedence-)}
- C02F 1/006
- {Water distributors either inside a treatment tank or directing the water to several treatment tanks; Water treatment plants incorporating these distributors, with or without chemical or biological tanks ([-for settling tanks B01D 21/24-](#))}
- C02F 1/02
- by heating ([-methods of steam generation F22B](#) ; preheating boiler feed-water or accumulating preheated boiler feed-water [F22D-](#))
- C02F 1/20
- by degassing, i.e. liberation of dissolved gases ([-degasification of liquids in general B01D 19/00](#) ; arrangement of degassing apparatus in boiler feed supply [F22D-](#))
- C02F 1/24
- by flotation ([-C02F 1/465](#) takes precedence-)
- C02F 1/28
- by sorption ([-using ion-exchange C02F 1/42](#) ; sorbent compositions [B01J-](#))
- U C02F 1/38
- by centrifugal separation
- C02F 1/385
- {by centrifuging suspensions ([-centrifuges B04B-](#))}
- C02F 1/40
- Devices for separating or removing fatty or oily substances or similar floating material ([-cleaning or keeping clear the surface of open water from oil or like materials E02B 15/04](#) ; devices in sewers for separating liquid or solid substances from sewage [E03F 5/14](#) , e.g. for use in drains leading to the sewer [E03F 5/16-](#))
- C02F 1/42
- by ion-exchange ([-ion-exchange in general B01J-](#))
- NOTE
- When classifying in group [C02F 1/42](#) , details of ion-exchangers can be further indexed by using indexing codes chosen from [C02F 2001/422](#) to [C02F 2001/427](#)
- C02F 1/44
- by dialysis, osmosis or reverse osmosis ([-general membrane separation processes B01D 61/00](#) , membrane modules [B01D 63/00](#) , electrodialysis [C02F 1/4693](#) , combination of membrane modules and bioreactors [C02F 3/1268-](#))}
- C02F 1/447
- {by membrane distillation ([-distillation and evaporation without the use of membranes C02F 1/04-](#))}
- U C02F 1/46
- by electrochemical methods
- U C02F 1/461
- • by electrolysis
- U C02F 1/46104
- • • {Devices therefor; Their operating or servicing}
- U C02F 1/46109
- • • • {Electrodes}
- NOTE
- When classifying in group [C02F 1/46109](#) , details of devices for electrolysis can be further indexed by using indexing codes chosen from [C02F 2001/46119](#) to [C02F 2001/46166](#)]
- C02F 2001/46152
- • • • {characterised by the shape or form ([-electrodes in particulate form or with conductive or non-conductive particles between them C02F 1/46114-](#))}
- C02F 1/48
- with magnetic or electric fields ([-C02F 1/46](#) takes precedence-)
- C02F 1/50
- by addition or application of a germicide or by oligodynamic treatment ([{C02F 1/4606, C02F 1/467 , C02F 1/76](#) take precedence })
- C02F 1/52
- by flocculation or precipitation of suspended impurities ([-C02F 1/463](#) takes precedence-)

- C02F 1/58
 - by removing specified dissolved compounds (-using ion-exchange [C02F 1/42](#) ; softening water [C02F 5/00](#)-)
- C02F 1/586
 - • {by removing ammoniacal nitrogen (-for biological methods [C02F 3/00](#)-)}
- C02F 1/60
 - • Silicon compounds{(-[C02F 1/583](#) takes precedence-)}
- C02F 1/66
 - by neutralisation; pH adjustment (-for degassing [C02F 1/20](#) ; using ion-exchange [C02F 1/42](#) ; for flocculation or precipitation of suspended impurities [C02F 1/52](#) ; for removing dissolved compounds [C02F 1/58](#)-)
- C02F 1/68
 - by addition of specified substances, e.g. trace elements, for ameliorating potable water (-medicinal water [A61K](#)-)
- C02F 1/70
 - by reduction{(-[C02F 1/4676](#) takes precedence-)}
- C02F 1/72
 - by oxidation{(-[C02F 1/4672](#) takes precedence-)}
- C02F 1/74
 - • with air (-aeration of stretches of water [C02F 7/00](#)-)
- C02F 1/76
 - • with halogens or compounds of halogens{(-[C02F 1/4674](#) takes precedence-)}
- C02F 1/78
 - • with ozone{(-[C02F 1/4672](#) takes precedence-)}
- C02F 3/00**
 - Biological treatment of water, waste water, or sewage{(-[C02F 1/006](#) takes precedence-)}**
- C02F 3/005
 - {Combined electrochemical biological processes (-aeration by electrolytically produced oxygen bubbles [C02F 3/202](#)-)}
- U C02F 3/02
 - Aerobic processes
- C02F 3/10
 - • Packings; Fillings; Grids (-packing elements in general [B01J 19/30](#) , [B01J 19/32](#)-)
- C02F 3/109
 - • • {Characterized by the shape (-[C02F 3/104](#) takes precedence-)}
- U C02F 3/12
 - • Activated sludge processes
- U C02F 3/20
 - • • using diffusers
- C02F 3/208
 - • • • {Membrane aeration (-[C02F 3/201](#) takes precedence-)}
- U C02F 3/30
 - Aerobic and anaerobic processes
- C02F 3/302
 - • {Nitrification and denitrification treatment (-[C02F 3/308](#) takes precedence-)}
- U C02F 3/34
 - characterised by the micro-organisms used
- C02F 3/347
 - • {Use of yeasts or fungi (-[C02F 3/322](#) takes precedence-)}
- C02F 5/00**
 - Softening water; Preventing scale; Adding scale preventatives or scale removers to water, e.g. adding sequestering agents (-softening using ion-exchange [C02F 1/42](#)-)**
- U C02F 5/02
 - Softening water by precipitation of the hardness
- C02F 5/04
 - • using phosphates (-[C02F 5/06](#) takes precedence-)
- U C02F 5/08
 - Treatment of water with complexing chemicals or other solubilising agents for softening, scale prevention or scale removal, e.g. adding sequestering agents
- U C02F 5/10
 - • using organic substances
- C02F 5/12
 - • • containing nitrogen (-[C02F 5/14](#) takes precedence-)
- U C02F 9/00**
 - Multistage treatment of water, waste water, or sewage**

NOTES

This group covers only those combined treating operations where the interest is directed to the relationship between the steps.

This group does not cover, for example, chemical treatment followed by settlement or biological treatment involving normal mechanical treatment.

- C02F 9/005 · {Portable or detachable small-scale multistage treatment devices, e.g. point of use or laboratory water purification systems (-single-stage processes in combination with filtration techniques [C02F 1/002](#) or [C02F 1/003](#)-)}
- U C02F 11/00 Treatment of sludge; Devices therefor**
- C02F 11/06 · by oxidation (-incinerators for burning waste liquors, e.g. sulfite liquor from paper-making plant [F23G 7/04](#)-)
- U C02F 11/12 · by de-watering, drying, or thickening
- U C02F 11/121 · · {Processes for mechanical dehydration of sludge, e.g. by filters}
- C02F 11/122 · · · using press filters (-[C02F 11/123](#) takes precedence-)
- C02F 11/18 · by thermal conditioning (-by pyrolysis [C02F 11/10](#)-)
- U C02F 2103/00 Nature of the water, waste water, sewage or sludge to be treated**
- C02F 2103/34 · from industrial activities not provided for in groups [C02F 2103/12](#) to [C02F 2103/32](#)
- U C02F 2103/36 · · from the manufacture of organic compounds
- C02F 2103/365 · · · from petrochemical industry (e.g. refineries)(e.g. refineries)
- U C02F 2201/00 Apparatus for treatment of water, waste water or sewage**
- C02F 2201/001 · Build in apparatus for autonomous on board water supply and wastewater treatment (e.g. for aircrafts, cruiseships, oil drilling platforms, railway trains, space stations)(e.g. for aircrafts, cruiseships, oil drilling platforms, railway trains, space stations)
- C02F 2201/008 · Mobile apparatus and plants, e.g. mounted on a vehicle (-for biological treatment [C02F 2203/008](#)-)
- C02F 2201/009 · Apparatus with independent power supply, e.g. solar cells, windpower, fuel cells (-for electrolysis apparatus [C02F 2201/46165](#)-)
- U C02F 2201/46 · Apparatus for electrochemical processes
- U C02F 2201/461 · · Electrolysis apparatus
- U C02F 2201/46105 · · · Details relating to the electrolytic devices
- C02F 2201/4619 · · · · Supplying gas to the electrolyte (-gas diffusion electrodes [C02F 2201/46166](#)-)
- U C02F 2303/00 Specific treatment goals**
- C02F 2303/22 · Eliminating or preventing deposits, scale removal, scale prevention (-[C02F 1/042](#) , [C02F 1/4602](#) , [C02F 5/00](#) take precedence-)
- U C02F 2305/00 Use of specific compounds during water treatment**
- C02F 2305/12 · Inert solids used as ballast for improving sedimentation (-[C02F 3/1226](#) takes precedence-)

Project: N/A (C03B)

- C03B 1/00 Preparing the batches (-chemical compositions [C03C](#)-)**
- U C03B 5/00 Melting in furnaces; Furnaces so far as specially adapted for glass manufacture**
- C03B 5/005 · {of glass-forming waste materials (-disposal or transformation of solid waste in general [B09B](#) ; treatment of radioactive waste [G21F 9/00](#)-)}
- C03B 5/02 · in electric furnaces,(e.g. by dielectric heating (electric heating in general [H05B](#)))
- U C03B 5/027 · · by passing an electric current between electrodes immersed in the glass bath, i.e. by direct resistance heating
- C03B 5/0275 · · · {Shaft furnaces (-[C03B 5/0277](#) takes precedence-)}

- U C03B 5/033
 - • by using resistance heaters above or in the glass bath, i.e. by indirect resistance heating
- C03B 5/0336
 - • • {Shaft furnaces (~~C03B 5/0338~~ takes precedence)}
- C03B 5/04
 - in tank furnaces(~~C03B 5/02~~ takes precedence)}
- C03B 5/06
 - in pot furnaces(~~C03B 5/02~~ takes precedence)}
- C03B 5/10
 - in combined tank furnaces and pots(~~C03B 5/02~~ takes precedence)}
- C03B 5/12
 - in shaft furnaces(~~C03B 5/02~~ takes precedence)}
- C03B 5/14
 - in revolving cylindrical furnaces(~~C03B 5/02~~ takes precedence)}
- U C03B 5/16
 - Special features of the melting process; Auxiliary means specially adapted for glass-melting furnaces
- C03B 5/163
 - • {Electrochemical treatments, e.g. to prevent bubbling or to create bubbles (~~C03B 5/1672~~ , ~~C03B 5/185~~ take precedence)}
- C03B 5/167
 - • Means for preventing damage to equipment, e.g. by molten glass, hot gases, batches (~~C03B 5/20~~ , ~~C03B 5/42~~ take precedence)}
- C03B 5/173
 - • Apparatus for changing the composition of the molten glass in glass furnaces, e.g. for colouring the molten glass (~~chemical aspects C03C~~)
- C03B 5/225
 - • Refining (~~C03B 5/18~~ takes precedence; { Refining agents ~~C03C 1/004~~ })
- C03B 5/23
 - • Cooling the molten glass (~~C03B 5/18~~ , ~~C03B 5/225~~ take precedence)}
- C03B 5/235
 - • Heating the glass (~~C03B 5/02~~ , ~~C03B 5/18~~ , ~~C03B 5/225~~ take precedence)}
- NOTE
- Devices for withholding dirt, foam, or batch are also classified in [C03B 5/202](#)
- C03B 5/2356
 - • • {Submerged heating, e.g. by using heat pipes, hot gas or submerged combustion burners (~~bubblers C03B 5/193~~)}
- U C03B 5/237
 - • • Regenerators or recuperators specially adapted for glass-melting furnaces
- C03B 5/2375
 - • • • {Regenerator brick design (~~brick shapes in general F27D 1/042~~); Use of materials therefor; Brick stacking arrangements}
- U C03B 5/42
 - • Details of construction of furnace walls, e.g. to prevent corrosion; Use of materials for furnace walls
- C03B 5/425
 - • • Preventing corrosion or erosion (~~C03B 5/44~~ takes precedence)}
- U **C03B 7/00**
 - Distributors for the molten glass; Means for taking-off charges of molten glass; Producing the gob,{e.g. controlling the gob shape, weight or delivery tact}**
- C03B 7/01
 - Means for taking-off charges of molten glass(~~C03B 7/08~~ , ~~C03B 7/14~~ to ~~C03B 7/22~~ take precedence)}
- U C03B 7/08
 - Feeder spouts, e.g. gob feeders
- C03B 7/092
 - • Stirring devices; Homogenisation (~~C03B 5/18~~ takes precedence)}
- C03B 7/10
 - Cutting-off {or severing}the glass flow with the aid of knives or scissors {or non-contacting cutting means, e.g. a gas jet}; Construction of the blades used
- C03B 7/12
 - • Cutting-off {or severing}a free-hanging glass stream,{e.g. by the combination of gravity and surface tension forces}
- C03B 7/14
 - Transferring molten glass or gobs to glass blowing or pressing machines (~~C03B 7/18~~ to ~~C03B 7/22~~ take precedence)}
- C03B 9/00 - C03B 23/00**
 - Shaping of glass (~~manufacture of fibres C03B 37/00~~)**
- C03B 9/13
 - in gob feeder machines (~~C03B 9/28~~ , ~~C03B 9/29~~ take precedence)}
- C03B 9/14
 - • in "blow" machines or in "blow-and-blow" machines (~~C03B 9/193~~ , ~~C03B 9/20~~ take precedence)}

- U C03B 9/16
 - • • in machines with turn-over moulds
- C03B 9/165
 - • • • {Details of such machines, e.g. guide funnels, turn-over mechanisms (~~C03B 9/18~~ takes precedence)}
- U C03B 9/193
 - • in "press-and-blow" machines
- C03B 9/1932
 - • • {Details of such machines, e.g. plungers or plunger mechanisms for the press-and-blow machine, cooling of plungers (~~C03B 9/195~~ takes precedence)}
- C03B 9/28
 - in machines of the endless-chain type (~~C03B 9/12~~ takes precedence)
- C03B 9/29
 - Paste mould machines (~~C03B 9/28~~ takes precedence)
- C03B 9/292
 - • {Details of such machines (~~C03B 9/295~~ takes precedence)}
- C03B 9/30
 - Details of blowing glass (~~for blowing with the mouth C03B 9/02~~); Use of materials for the moulds
- U C03B 9/34
 - • Glass-blowing moulds not otherwise provided for
- C03B 9/342
 - • • {Neck moulds (~~C03B 9/325~~ takes precedence)}
- C03B 9/344
 - • • {Bottom moulds (~~C03B 9/335~~ takes precedence)}
- C03B 9/38
 - • Means for cooling, heating, or insulating glass-blowing machines {or for cooling the glass moulded by the machine}
- U C03B 9/40
 - • Gearing or controlling mechanisms specially adapted for glass-blowing machines
- C03B 9/41
 - • • Electric or electronic systems (~~in general G05B 19/00~~)
- C03B 9/42
 - • Means for fusing, burning-off, or edge-melting combined with glass-blowing machines (~~uniting glass pieces by fusing C03B 23/20~~)
- C03B 9/46
 - • Means for cutting the hot glass in glass-blowing machines (~~burning-off C03B 9/42~~)
- C03B 11/00**

Pressing {molten}glass {or performed glass reheated to equivalent low viscosity without blowing} (~~shaping molten glass by a press-blow process C03B 9/00 , e.g. C03B 9/193 ; re-forming shaped glass C03B 23/00 ; re-heating the performed glass C03B 29/00 ; transporting the performed or pressed glass during its manufacture C03B 35/00~~)
- U C03B 11/06
 - Construction of plunger or mould
- U C03B 11/08
 - • for making solid articles, e.g. lenses
- U C03B 11/084
 - • • {material composition or material properties of press dies therefor}
- C03B 11/086
 - • • • {of coated dies (~~use of materials as release or lubricating compositions C03B 40/02~~)}
- C03B 11/10
 - • for making hollow {or semi-hollow}articles
- C03B 11/12
 - Cooling, heating, or insulating the plunger, the mould, or the glass-pressing machine; {cooling or heating of the glass in the mould} (~~C03B 9/38~~ takes precedence)
- C03B 11/14
 - {Pressing laminated glass articles or glass}with metal inserts {or enclosures, e.g. wires, bubbles, coloured parts}
- C03B 13/00**

Rolling {molten}glass,{i.e. where the molten glass is shaped by rolling} (~~re-forming shaped glass by rolling C03B 23/004 , C03B 23/033 , C03B 23/055~~)
- C03B 13/14
 - Rolling other articles,{ i.e. not covered by C03B 13/01 to C03B 13/12 , e.g. channeled articles, briquette-shaped articles}
- C03B 17/00**

Forming {molten}glass by flowing-out, pushing-out,{extruding}or drawing downwardly or laterally from forming slits or by overflowing over lips

- C03B 17/02
- Forming {molten}glass coated with coloured layers; {Forming molten glass of different compositions or layers; Forming molten glass comprising reinforcements or inserts}
- U C03B 18/00 Shaping glass in contact with the surface of a liquid**
- U C03B 18/02
- Forming sheets
- C03B 18/12
- • Making multi-layer, coloured or armoured glass (-chemical aspects [C03C-](#))
- C03B 18/14
- • Changing the surface of the glass ribbon, e.g. roughening (-by chemical methods [C03C-](#))
- C03B 19/00 Other methods of shaping glass (- manufacture or treatment of flakes, fibres or filaments from softened glass, minerals or slags [C03B 37/00-](#))**
- C03B 19/01
- by progressive fusion {or sintering}of powdered glass onto a shaping substrate, i.e. accretion,{e.g. plasma oxidation deposition (-making fibre preforms [C03B 37/01291-](#))}
- C03B 19/02
- by casting {molten glass, e.g. injection moulding}
- C03B 19/04
- by centrifuging{(-[C03B 19/095](#) takes precedence-)}
- U C03B 19/06
- by sintering,{e.g. by cold isostatic pressing of powders and subsequent sintering, by hot pressing of powders, by sintering slurries or dispersions not undergoing a liquid phase reaction}
- C03B 19/066
- • {for the production of quartz or fused silica articles (-other processes specially adapted for the production of quartz or fused silica articles [C03B 20/00-](#))}
- U C03B 19/09
- by fusing powdered glass in a shaping mould
- C03B 19/095
- • {by centrifuging, e.g. arc discharge in rotating mould (-crucibles for crystal pulling in general [C30B 15/10](#) , [C30B 35/002-](#))}
- U C03B 19/10
- Forming beads
- C03B 19/1005
- • {Forming solid beads (-chemical aspects [C03C 12/00-](#))}
- C03B 19/107
- • {Forming hollow beads (-chemical aspects [C03C 11/002-](#))}
- C03B 19/108
- • {Forming porous, sintered or foamed beads (-chemical aspects [C03C 11/00-](#))}
- U C03B 19/14
- by gas-{or vapour-}phase reaction processes
- C03B 19/1476
- • {Means for heating during or immediately prior to deposition (-[C03B 19/1415](#) takes precedence-)}
- C03B 20/00 Processes specially adapted for the production of quartz or fused silica articles,{not otherwise provided for (- [C03B 19/01](#) , [C03B 19/066](#) , [C03B 19/106](#) , [C03B 19/12](#) , [C03B 19/14](#) , [C03B 37/00](#) take precedence-)}**
- U C03B 21/00 Severing glass sheets, tubes or rods while still plastic**
- C03B 21/02
- by cutting (-[C03B 9/46](#) takes precedence-)
- C03B 21/06
- by flashing-off, burning-off or fusing (-[C03B 9/42](#) takes precedence)
- C03B 23/00 Re-forming shaped glass (-re-forming fibres or filaments [C03B 37/14-](#))**
- C03B 23/0006
- {by drawing (-[C03B 23/02](#) , [C03B 23/04](#) , [C03B 23/18](#) take precedence-)}
- C03B 23/0013
- {by pressing (-[C03B 21/04](#) , [C03B 23/02](#) , [C03B 23/04](#) , [C03B 23/18](#) , [C03B 23/26](#) take precedence-)}
- C03B 23/0026
- {by gravity, e.g. sagging (-[C03B 23/02](#) , [C03B 23/04](#) , [C03B 23/18](#) take precedence-)}
- C03B 23/0033
- {by centrifuging (-[C03B 23/02](#) , [C03B 23/04](#) , [C03B 23/18](#) take precedence-)}
- C03B 23/004
- {by rolling (-[C03B 23/02](#) , [C03B 23/04](#) , [C03B 23/18](#) take precedence-)}
- C03B 23/006
- {by fusing, e.g. for flame sealing (-[C03B 9/42](#) , [C03B 21/06](#) , [C03B 23/02](#) , [C03B 23/04](#) , [C03B 23/18](#) , [C03B 33/08](#) take precedence-)}
- C03B 23/0066
- {by bending (-[C03B 23/02](#) , [C03B 23/04](#) , [C03B 23/18](#) take precedence-)}

- C03B 23/0073 · {by blowing (~~C03B 23/02~~ , ~~C03B 23/04~~ , ~~C03B 23/18~~ take precedence-)}
- C03B 23/0086 · {Heating devices specially adapted for re-forming shaped glass articles in general, e.g. burners (~~C03B 23/02~~ , ~~C03B 23/04~~ , ~~C03B 23/18~~ take precedence-)}
- C03B 23/0093 · {Tools and machines specially adapted for re-forming shaped glass articles in general, e.g. chucks (~~C03B 23/0086~~ , ~~C03B 23/02~~ , ~~C03B 23/04~~ , ~~C03B 23/18~~ take precedence-)}
- U C03B 23/02 · Re-forming glass sheets
- U C03B 23/023 · · by bending
- U C03B 23/025 · · · by gravity
- C03B 23/0252 · · · · {by gravity only, e.g. sagging (~~C03B 23/035~~ takes precedence-)}
- U C03B 23/03 · · · by press-bending between shaping moulds
- C03B 23/031 · · · · the glass sheets being in a vertical position (~~C03B 23/033~~ takes precedence-)
- C03B 23/035 · · · using a gas cushion or by changing gas pressure, e.g. by applying vacuum {or blowing for supporting the glass while bending}
- U C03B 23/04 · Re-forming tubes or rods
- C03B 23/045 · · Tools or apparatus specially adapted for re-forming tubes or rods in general, e.g. glass lathes, chucks (~~C03B 23/043~~ takes precedence-)
- C03B 23/047 · · by drawing ({ ~~C03B 23/091~~ } , ~~C03B 37/025~~ takes precedence-)
- C03B 23/049 · · by pressing (~~C03B 21/04~~ , { ~~C03B 23/092~~ } , ~~C03B 23/26~~ take precedence-)
- C03B 23/051 · · by gravity, e.g. sagging ({~~C03B 23/093~~ takes precedence-})
- C03B 23/053 · · by centrifuging ({ ~~C03B 23/094~~ } , ~~C03B 37/04~~ takes precedence-)
- C03B 23/055 · · by rolling ({~~C03B 23/095~~ takes precedence-})
- C03B 23/057 · · by fusing, e.g. for flame sealing (~~C03B 9/42~~ , ~~C03B 21/06~~ { ~~C03B 23/099~~ } , ~~C03B 33/08~~ take precedence-)
- C03B 23/06 · · by bending ({~~C03B 23/096~~ takes precedence-})
- C03B 23/07 · · by blowing, e.g. for making electric bulbs ({~~C03B 23/097~~ takes precedence-})
- U C03B 23/20 · Uniting glass pieces by fusing without substantial reshaping
- C03B 23/203 · · Uniting glass sheets (~~C03B 23/24~~ takes precedence-)
- C03B 23/207 · · Uniting glass rods, glass tubes, or hollow glassware (~~C03B 23/24~~ takes precedence-)
- C03B 25/00 - C03B 40/00** **After-treatment of glass products (~~of fibres C03B 37/10~~)**
- C03B 27/00** **Tempering {or quenching}glass products**
- C03B 27/012 · by heat treatment, e.g. for crystallisation; Heat treatment of glass products before tempering by cooling (~~C03B 27/008~~ , ~~C03B 27/016~~ take precedence-)
- U C03B 27/04 · using gas
- U C03B 27/0422 · · {for flat or bent glass sheets starting in an horizontal position and ending in a non-horizontal position}
- U C03B 27/0426 · · · {for bent glass sheets}
- C03B 27/0431 · · · · {the quench unit being adapted to the bend of the sheet (~~C03B 27/0435~~ takes precedence-)}
- U C03B 27/044 · · for flat or bent glass sheets being in a horizontal position
- U C03B 27/0442 · · · {for bent glass sheets}
- C03B 27/0445 · · · · {the quench unit being adapted to the bend of the sheet (~~C03B 27/0447~~ takes precedence-)}

- U C03B 32/00 Thermal after-treatment of glass products not provided for in groups{ [C03B 19/00](#) } , [C03B 25/00](#) to [C03B 31/00](#) { or [C03B 37/00](#) } , e.g. crystallisation, eliminating gas inclusions or other impurities;{Hot-pressing vitrified, non-porous, shaped glass products}**
- C03B 32/02 • Thermal crystallisation, e.g. for crystallising glass bodies into glass-ceramic articles{(-[C03B 27/012](#) takes precedence-)}
- C03B 33/00 Severing cooled glass (- severing glass fibres [C03B 37/16](#))**
- C03B 33/02 • Cutting or splitting sheet glass {or ribbons}; Apparatus or machines therefor {(-[C03B 33/09](#) takes precedence; glass-cutting tools [C03B 33/10](#)-)}
- C03B 33/023 • • the sheet {or ribbon}being in a horizontal position
- C03B 33/06 • Cutting or splitting glass tubes, rods, or hollow products (-[C03B 33/09](#) takes precedence-)
- U C03B 33/08 • by fusing,{i.e. by melting through the glass}
- C03B 33/082 • • {using a focussed radiation beam, e.g. laser {(-[C03B 33/0855](#) takes precedence-)}
- U C03B 33/09 • by thermal shock
- C03B 33/091 • • {using at least one focussed radiation beam, e.g. laser beam {(-[C03B 33/0955](#) takes precedence-)}
- U C03B 33/10 • Glass-cutting tools, e.g. scoring tools
- C03B 33/12 • • Hand tools (-wheel design [C03B 33/107](#)-)
- C03B 33/14 • • • specially adapted for cutting tubes, rods, or hollow products{(-for cutting ampoules [B67B 7/92](#)-)}
- C03B 35/00 Transporting of glass products during their manufacture,{e.g. hot glass lenses, prisms} (-conveying systems for fragile sheets, e.g. glass [B65G 49/06](#)-)**
- C03B 35/04 • Transporting of hot hollow {or semi-hollow}glass products {(-[C03B 35/26](#) takes precedence-)}
- C03B 35/14 • Transporting hot glass sheets {or ribbons, e.g. by heat-resistant conveyor belts or bands}
- U C03B 35/16 • • by roller conveyors
- C03B 35/161 • • • {specially adapted for bent sheets or ribbons {(-[C03B 35/166](#) takes precedence-)}
- C03B 35/162 • • • {combined with means for thermal adjustment of the rollers, e.g. cooling {(-[C03B 35/183](#) takes precedence-)}
- C03B 35/18 • • • Construction of the conveyer rollers {Materials, coatings or coverings thereof}
- C03B 35/182 • • • • {specially adapted for bent sheets or ribbons {(-[C03B 35/187](#) takes precedence-)}
- U C03B 35/20 • • by gripping tongs or supporting frames
- C03B 35/202 • • • {by supporting frames {(-[C03B 35/145](#) takes precedence-)}
- U C03B 37/00 Manufacture or treatment of flakes, fibres, or filaments from softened glass, minerals, or slags**
- U C03B 37/01 • Manufacture of glass fibres or filaments
- U C03B 37/012 • • Manufacture of preforms for drawing fibres or filaments
- C03B 37/01205 • • • {starting from tubes, rods, fibres or filaments {(-[C03B 37/014](#) takes precedence-)}
- U C03B 37/01211 • • • • {by inserting one or more rods or tubes into a tube}

- C03B 37/01217 {for making preforms of polarisation-maintaining optical fibres (-polarisation-maintaining optical fibres per se [G02B 6/105](#)-)}
- C03B 37/01222 {for making preforms of multiple core optical fibres (-preforms of multifibres [C03B 37/01214](#)-)}
- U C03B 37/01225 {Means for changing or stabilising the shape, e.g. diameter, of tubes or rods in general, e.g. collapsing}
- C03B 37/01228 {Removal of preform material (-[C03B 37/01251](#) takes precedence)}
- U C03B 37/0128 . . . {starting from pulverulent glass}
- C03B 37/01288 {by extrusion, e.g. of glass powder and binder (-moulding plastics around a core using a cross-head annular extrusion nozzle [B29C 47/28](#) ; extrusion presses in general [B30B 11/22](#)-)}
- C03B 37/014 made entirely or partially by chemical means,{e.g. vapour phase deposition of bulk porous glass either by outside vapour deposition (OVD), or by outside vapour phase oxidation (OVPO) or by vapour axial deposition (VAD)}(-[C03C 17/02](#) takes precedence)}
- C03B 37/01413 {Reactant delivery systems (-[C03B 37/01807](#) takes precedence; devices therefor in general [B01D 1/00](#) , [B01J 4/00](#)-)}
- C03B 37/0144 {Means for after-treatment or catching of worked reactant gases (-[C03B 37/01846](#) takes precedence)}
- C03B 37/01446 {Thermal after-treatment of preforms, e.g. dehydrating, consolidating, sintering (-[C03B 37/01853](#) takes precedence)}
- C03B 37/01466 {Means for changing or stabilising the diameter or form of tubes or rods (-[C03B 37/01861](#) takes precedence)}
- C03B 37/0148 {Means for heating preforms during or immediately prior to deposition (-[C03B 37/0142](#) , [C03B 37/01876](#) take precedence)}
- C03B 37/01486 {Means for supporting, rotating or translating the preforms being formed, e.g. lathes (-[C03B 37/01884](#) takes precedence)}
- C03B 37/018 by glass deposition on a glass substrate, e.g. by {inside-, modified-, plasma-, or plasma modified- chemical vapour deposition [[ICVD](#), [MCVD](#), [PCVD](#), [PMCVD](#)], i.e. by thin layer coating on the inside or outside of a glass tube or on a glass rod}{[ICVD](#), [MCVD](#), [PCVD](#), [PMCVD](#)}, i.e. by thin layer coating on the inside or outside of a glass tube or on a glass rod} (-[C03B 37/016](#) takes precedence; { bulk deposition of porous glass by OVD or VAD [C03B 37/014](#) } ; surface treatment of glass by coating [C03C 17/02](#)-)}
- C03B 37/01876 {Means for heating tubes or rods during or immediately prior to deposition, e.g. electric resistance heaters (-[C03B 37/01815](#) takes precedence)}
- C03B 37/02 . . . by drawing or extruding,{e.g. direct drawing of molten glass from nozzles; Cooling fins therefor (-[C03B 37/04](#) takes precedence; sizing of the fibres [C03C 25/00](#)-)}
- C03B 37/022 from molten glass in which the resultant product consists of different sorts of glass or is characterised by shape, e.g. hollow fibres,{undulated fibres, fibres presenting a rough surface (-[C03B 37/025](#) takes precedence)}
- U C03B 37/023 Fibres composed of different sorts of glass,{e.g. glass optical fibres, made by the double crucible technique}
- C03B 37/0235 {Thermal treatment of the fibre during the drawing process, e.g. cooling (-[C03B 37/02718](#) takes precedence; coating [C03C 25/10](#)-)}
- C03B 37/025 from reheated softened tubes, rods, fibres or filaments,{e.g. drawing fibres from preforms (-draw-down of tubes, rods or preforms to reduced diameter preforms [C03B 37/0124](#)-)}

- C03B 37/0253 {Controlling or regulating (for glass fibre manufacture in general [C03B 37/07](#)-)}
- C03B 37/0256 {Drawing hollow fibres (~~C03B 37/02781~~ takes precedence)}
- C03B 37/026 Drawing fibres reinforced with a metal wire (or with other non-glass material)
- C03B 37/027 Fibres composed of different sorts of glass, (e.g. glass optical fibres) (~~C03B 37/0253~~ , ~~C03B 37/028~~ take precedence)
- C03B 37/02718 {Thermal treatment of the fibre during the drawing process, e.g. cooling (~~coating C03C 25/10~~-)}
- C03B 37/02736 {Means for supporting, rotating or feeding the tubes, rods, fibres or filaments to be drawn, e.g. fibre draw towers, preform alignment, butt-jointing preforms or dummy parts during feeding (uniting rods or tubes [C03B 23/207](#)-)}
- C03B 37/02763 {Fibres having axial variations, e.g. axially varying diameter, material or optical properties (~~rotational spin C03B 37/02745~~-)}
- C03B 37/028 Drawing fibre bundles, e.g. for making fibre bundles of multifibres, (image fibres; (~~Drawing multicore or photonic crystal fibres C03B 37/027~~ *Drawing multicore or photonic crystal fibres C03B 37/027*))
- U C03B 37/03 Drawing means, e.g. drawing drums; (Traction or tensioning devices)
- C03B 37/035 having means for deflecting or stripping-off fibres (or for removing defective parts)
- C03B 37/04 by using centrifugal force, (e.g. spinning through radial orifices; Construction of the spinner cups therefor (~~bonder application C03C 25/00~~-)}
- C03B 37/044 {for producing fibres of at least two distinct glass compositions, e.g. bi-component fibres (~~conjugated artificial filaments or the like, e.g. with glass fibres, D01F 8/00~~-)}
- C03B 37/05 by projecting {molten glass} on a rotating body having no radial orifices
- C03B 37/07 Controlling or regulating ({ [C03B 37/0253](#) takes precedence } ; controlling or regulating in general [G05](#)-)
- C03B 37/075 Manufacture of {non-optical} fibres or filaments consisting of different sorts of glass or characterised by shape, e.g. undulated fibres (~~C03B 37/022~~ , ~~C03B 37/027~~ , ~~C03B 37/028~~ take precedence; light guides [G02B 6/00](#)-)
- U C03B 37/08 Bushings, (e.g. construction, bushing reinforcement means); Spinnerettes; Nozzles; Nozzle plates
- C03B 37/083 Nozzles; Bushing nozzle plates (~~C03B 37/095~~ takes precedence)
- C03B 37/10 Non-chemical treatment (~~C03C 25/00~~ takes precedence; yarns or threads [D02](#) ; woven fabrics [D03](#) ; non-woven fabrics [D04](#)-)
- C03B 37/14 Re-forming fibres or filaments, (i.e. changing their shape) (~~C03B 37/025~~ takes precedence)
- C03B 37/15 with heat application, e.g. for making optical fibres (fusion-splicing of light guides [G02B 6/255](#) ; treatment of light guides to shape optical elements [G02B 6/28](#)-)
- C03B 37/16 Cutting or severing (light guides [G02B 6/25](#)-)
- U C03B 2201/00 Type of glass produced**
- U C03B 2201/06 Doped silica-based glasses
- U C03B 2201/08 doped with boron or fluorine or other refractive index decreasing dopant
- C03B 2201/10 doped with boron (~~C03B 2201/14~~ takes precedence)
- C03B 2201/12 doped with fluorine (~~C03B 2201/14~~ takes precedence)
- U C03B 2201/30 doped with metals, e.g. Ga, Sn, Sb, Pb or Bi

- C03B 2201/32 · · · doped with aluminium ([C03B 2201/36](#) takes precedence)
- U C03B 2203/00 Fibre product details, e.g. structure, shape**
- U C03B 2203/10 · Internal structure or shape details
- U C03B 2203/22 · · Radial profile of refractive index, composition or softening point
- C03B 2203/24 · · · Single mode [*SM or monomode*](~~SM or monomode~~)
- C03B 2203/36 · Dispersion modified fibres, e.g. wavelength or polarisation shifted, flattened or compensating fibres (*DSF, DFF, DCF*)(~~DSF, DFF, DCF~~)
- U C03B 2215/00 Press-moulding glass**
- U C03B 2215/02 · Press-mould materials
- U C03B 2215/08 · · Coated press-mould dies
- U C03B 2215/14 · · · Die top coat materials, e.g. materials for the glass-contacting layers
- C03B 2215/22 · · · · Non-oxide ceramics (-carbon [C03B 2215/24](#))
- C03B 2215/26 · · · · Mixtures of materials covered by more than one of the groups [C03B 2215/16](#) to [C03B 2215/24](#), e.g. C-SiC, Cr-Cr₂O₃, SIALON
- U C03B 2215/40 · Product characteristics
- U C03B 2215/46 · · Lenses, e.g. bi-convex
- C03B 2215/49 · · · Complex forms not covered by groups [C03B 2215/47](#) or [C03B 2215/48](#)

Project: N/A (C03C)

- U C03C 4/00 Compositions for glass with special properties**
- NOTE
When classifying in group [C03C 4/00](#), classification is also made in the appropriate groups of group [C03C 3/00](#) according to the glass composition.
- U C03C 4/0007 · {for biologically-compatible glass}
- C03C 4/0014 · · {-Biodegradable glass}
- C03C 4/0021 · · {-for dental use}
- C03C 4/0042 · {-for glass comprising or including particular isotopes}
- C03C 4/0064 · {-for self-destructing glass ([C03C 4/0014](#) takes precedence)}
- C03C 4/0092 · {-for glass with improved high visible transmittance, e.g. extra-clear glass}
- U C03C 17/00 Surface treatment of glass, not in the form of fibres or filaments, by coating (optical coatings of optical elements [G02B 1/10](#))**
- U C03C 17/001 · {General methods for coating; Devices therefor}
- U C03C 17/003 · · {-for hollow ware, e.g. containers}
- C03C 17/004 · · · {-Coating the inside}
- C03C 17/005 · · · {-Coating the outside}
- U C03C 17/34 · with at least two coatings having different compositions ([C03C 17/44](#) takes precedence)
- U C03C 17/36 · · at least one coating being a metal
- C03C 17/3602 · · · {-the metal being present as a layer}
- C03C 17/3605 · · · · {-Coatings of the type glass/metal/inorganic compound }
- C03C 17/3607 · · · · {-Coatings of the type glass/inorganic compound/metal }
- C03C 17/361 · · · · {-Coatings of the type glass/metal/inorganic compound/metal/inorganic compound/other}
- C03C 17/3613 · · · · {-Coatings of type glass/inorganic compound/metal/inorganic compound/metal/other }

- C03C 17/3615 {Coatings of the type glass/metal/other inorganic layers, at least one layer being non-metallic}
- C03C 17/3618 {Coatings of type glass/inorganic compound/other inorganic layers, at least one layer being metallic }
- C03C 17/3621 {one layer at least containing a fluoride }
- C03C 17/3623 {one layer at least containing a chloride, bromide or iodide }
- C03C 17/3626 {one layer at least containing a nitride, oxynitride, boronitride or carbonitride }
- C03C 17/3628 {one layer at least containing a sulfide }
- C03C 17/3631 {one layer at least containing a selenide or telluride }
- C03C 17/3634 {one layer at least containing carbon, a carbide or oxycarbide }
- C03C 17/3636 {one layer at least containing silicon, hydrogenated silicon or a silicide }
- C03C 17/3639 {Multilayers containing at least two functional metal layers }
- C03C 17/3642 {the multilayer coating containing a metal layer }
- C03C 17/3644 {the metal being silver }
- C03C 17/3647 {in combination with other metals, silver being more than 50% }
- C03C 17/3649 {made of metals other than silver }
- C03C 17/3652 {the coating stack containing at least one sacrificial layer to protect the metal from oxidation }
- C03C 17/3655 {the multilayer coating containing at least one conducting layer }
- C03C 17/3657 {the multilayer coating having optical properties }
- C03C 17/366 {Low-emissivity or solar control coatings }
- C03C 17/3663 {specially adapted for use as mirrors }
- C03C 17/3665 {specially adapted for use as photomask }
- C03C 17/3668 {the multilayer coating having electrical properties }
- C03C 17/3671 {specially adapted for use as electrodes }
- C03C 17/3673 {specially adapted for use in heating devices for rear window of vehicles}
- C03C 17/3676 {specially adapted for use as electromagnetic shield}
- C03C 17/3678 {specially adapted for use in solar cells }
- C03C 17/3681 {the multilayer coating being used in glazing, e.g. windows or windscreens }
- C03C 17/3684 {the multilayer coating being used for decoration purposes }
- C03C 17/3686 {the multilayer coating being used for ovens }
- C03C 17/3689 {one oxide layer being obtained by oxidation of a metallic layer }
- C03C 17/3692 {one metallic layer being obtained by reduction of an oxide layer }
- C03C 17/3694 {one layer having a composition gradient through its thickness }
- C03C 17/3697 {one metallic layer at least being obtained by electroless plating}
- U C03C 23/00 Other surface treatment of glass not in the form of fibres or filaments**
- C03C 23/009 . {Poling glass}
- U C03C 25/00 Surface treatment of fibres or filaments from glass, minerals, or slags {(woven fabrics [D03](#); non-woven fabrics [D04](#); treatment of fabrics in general or non-chemical aspects of treatment of glass fabrics [D06M](#))}**
- C03C 25/007 . {by solution impregnating; solution doping or molecular stuffing of porous glass}
- U C03C 25/10 . by coating**

- U C03C 25/104 · · {to obtain optical fibres}
- U C03C 25/107 · · · {with inorganic coatings}
- C03C 25/1085 · · · · {-Multiple inorganic coatings}
- C03C 25/109 · · · {-with at least one organic coating and at least one inorganic coating}
- C03C 25/1095 · · {-to obtain coated fabrics}
- C03C 25/70 · Cleaning, e.g. for reuse ([C03C 25/002](#),) [C03C 25/62](#) and [C03C 25/66](#) take precedence)

- U C03C 2214/00 Nature of the non-vitreous component**
- C03C 2214/17 · in molecular form (*for molecular composites*)(~~for molecular composites~~)

Project: N/A (C04B)**C04B**

LIME, MAGNESIA; SLAG; CEMENTS; COMPOSITIONS THEREOF, e.g. MORTARS, CONCRETE OR LIKE BUILDING MATERIALS; ARTIFICIAL STONE(~~-roofing granules [E04D 7/005](#)~~); **CERAMICS** (-devitrified glass-ceramics [C03C 10/00](#)); **REFRACTORIES; TREATMENT OF NATURAL STONE**

NOTE

In this subclass, the following terms or expressions are used with the meanings indicated:

- "fillers" includes pigments, aggregates and fibrous reinforcing materials;
- "active ingredients" includes processing aids or property improvers, e.g. grinding aids used after the burning process or used in the absence of a burning process;
- "mortars", "concrete" and "artificial stone" are to be considered as a single group of materials, and therefore, in the absence of an indication to the contrary, they include mortar, concrete and other cementitious compositions.

In groups [C04B 7/00](#) to [C04B 32/00](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.

A composition classified in groups [C04B 26/00](#) or [C04B 28/00](#) is also classified in groups [C04B 14/00](#) to [C04B 24/00](#) if a filler or active ingredient is of interest.

In groups [C04B 2/00](#) to [C04B 32/00](#) and [C04B 38/00](#) to [C04B 41/00](#) it is desirable to classify the individual constituents of the mixtures, or other aspects relating to the mixtures or constituents, using Combination Sets with symbols chosen from groups [C04B 2/00](#) to [C04B 41/00](#) .

In groups [C04B 2/00](#) to [C04B 32/00](#) and [C04B 38/00](#) to [C04B 41/00](#) it is desirable to classify the function of the individual constituents of the mixtures, or other aspects relating to the properties or uses of the mixtures or products obtained, using Combination Sets with symbols chosen from groups [C04B 2103/00](#) to [C04B 2111/00](#) .

Groups [C04B 20/123](#) and [C04B 20/126](#) are used for indexing purposes only of documents classified in [C04B 20/12](#)

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C04B 5/02](#) covered by [B01J 2/00](#) ,
[C21B 3/06](#)
[C04B 33/132](#) to [C04B 33/138](#) covered by
[C04B 33/13](#)
[C04B 35/035](#) covered by [C04B 35/26](#)
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[C04B 35/567](#) , [C04B 35/569](#) , [C04B 35/576](#)
 , [C04B 35/577](#) covered by [C04B 35/565](#)
 , [C04B 35/571](#) to [C04B 35/575](#) ,
[C04B 35/806](#)
[C04B 35/582](#) covered by [C04B 35/581](#) ,
[C04B 35/806](#)
[C04B 35/5833](#) , [C04B 35/5835](#) covered by
[C04B 35/583](#) , [C04B 35/806](#)
[C04B 35/586](#) , [C04B 35/587](#) , [C04B 35/594](#)
 , [C04B 35/596](#) covered by [C04B 35/584](#)
 , [C04B 35/589](#) to [C04B 35/5935](#) ,
[C04B 35/806](#)
[C04B 35/599](#) covered by [C04B 35/597](#)
[C04B 35/81](#) covered by [C04B 35/78](#)
[C04B 35/84](#) covered by [C04B 35/628](#) ,
[C04B 35/78](#)

C04B 2/00

Lime, magnesia or dolomite (-hydraulic lime cements [C04B 7/34-](#))

C04B 2/02

• Lime{(-obtaining Ca(OH)_2 otherwise than by simple slaking of quick lime [C01F 11/02-](#))}

C04B 2/04

• • Slaking{(-simultaneous dehydrating of gypsum and slaking of lime [C04B 11/022-](#))}

C04B 2/10

• Preheating, burning calcining or cooling (-decarbonation during burning of cement raw materials [C04B 7/43](#) ; { obtaining CaO or MgO otherwise than by thermal decomposition of the corresponding carbonates [C01F 11/02](#) , [C01F 5/02](#) })

C04B 2/12

• • in shaft or vertical furnaces (-shaft or vertical furnaces in general [F27B 1/00-](#))

C04B 5/00

Treatment of {metallurgical}slag (-manufacture of slag wool [C03B](#) ; in, or for, the production of metals [C21B](#) , [C22B-](#)); Artificial stone from molten {metallurgical}slag (-mechanical aspects [B28B 1/54-](#)){ other cast stone [C04B 32/005-](#)}

C04B 5/06

• Ingredients, other than water, added to the molten slag {or to the granulating medium or before remelting}; Treatment with gases or gas generating compounds, e.g. to obtain porous slag

C04B 7/00

Hydraulic cements (-calcium sulfate cements [C04B 11/00-](#))

U C04B 7/02

• Portland cement

C04B 7/06

• • using alkaline raw materials (-[C04B 7/60](#) takes precedence-)

C04B 7/12

• Natural pozzuolanes; Natural pozzuolana cements; {Artificial pozzuolanes or artificial pozzuolana cements other than those obtained from waste or combustion residues, e.g. burned clay; Treating inorganic materials to improve their pozzuolanic characteristics} (-cements containing slag [C04B 7/14-](#))

C04B 7/14

• Cements containing slag (-slags from waste incineration [C04B 7/28-](#))

U C04B 7/147

• • Metallurgical slag

U C04B 7/153

• • • Mixtures thereof with other inorganic cementitious materials or other activators

- C04B 7/17
 - • • with calcium oxide containing activators{{(-C04B 7/1535 takes precedence-)}}
- C04B 7/21
 - • • with calcium sulfate containing activators{{(-C04B 7/1535 takes precedence-)}}
- U C04B 7/24
 - Cements from oil shales, residues or waste other than slag
- C04B 7/26
 - • from raw materials containing flue dust,{i.e. fly ash(-C04B 7/243 takes precedence-)}}
- C04B 7/28
 - • from combustion residues,{e.g. ashes or slags from waste incineration} {{C04B 7/243 } , C04B 7/26 take precedence-}}
- C04B 7/345
 - Hydraulic cements not provided for in one of the groups C04B 7/02 to C04B 7/34
- U C04B 7/36
 - Manufacture of hydraulic cements in general
- C04B 7/361
 - • {Condition or time responsive control in hydraulic cement manufacturing processes (-controlling or regulating in general G05 ; F27B 7/42 takes precedence-)}}
- C04B 7/38
 - • Preparing or treating the raw materials individually or as batches,{e.g. mixing with fuel; (-C04B 7/362 takes precedence-)}}
- C04B 7/40
 - • • Dehydrating; Forming, e.g. granulating (-apparatus for granulating B01J 2/00-)
- C04B 7/42
 - • • Active ingredients added before, or during, the burning process (-after the burning process C04B 22/00 , C04B 24/00-)
- C04B 7/43
 - • Heat treatment, e.g. precalcining, burning, melting; Cooling{{(-aspects only relating to the installation F27B-)}}
- U C04B 7/44
 - • • Burning; Melting
- C04B 7/4407
 - • • • {Treatment or selection of the fuel therefor, e.g. use of hazardous waste as secondary fuel (-fuels in general C10L-); Use of particular energy sources, e.g. waste hot gases from other processes}
- C04B 7/4492
 - • • • {Inhibiting the formation of or eliminating incrustations in the cement kiln (-removing incrustations from rotary-drum furnaces F27B 7/2075-)}}
- C04B 7/48
 - • Clinker treatment (-C04B 7/47 takes precedence-)
- U C04B 7/52
 - • • Grinding;{After-treatment of ground cement}
- C04B 7/522
 - • • • {After-treatment of ground cement (-C04B 7/368 takes precedence-)}}
- C04B 7/60
 - • Methods for eliminating alkali metals or compounds thereof,{e.g. from the raw materials or during the burning process; methods for eliminating other harmful components(-avoiding environmental pollution C04B 7/364-)}}
- U **C04B 9/00**
 - Magnesium cements or similar cements**
- C04B 9/20
 - Manufacture, e.g. preparing the batches (-preheating, burning, calcining or cooling lime stone, magnesite or dolomite C04B 2/10-)
- U **C04B 11/00**
 - Calcium sulfate cements**
- C04B 11/02
 - {Methods and apparatus for}dehydrating gypsum{{(-for other purposes than cement manufacture C01F 11/466-)}}
- C04B 11/028
 - • Devices therefor {characterised by the type of calcining devices used therefor or by the type of hemihydrate obtained}
- C04B 11/032
 - • • for the wet process, e.g. dehydrating in solution or under saturated vapour conditions,{i.e. to obtain alpha-hemihydrate(-C04B 11/0281 to C04B 11/0288 take precedence-)}}
- C04B 11/036
 - • • for the dry process, e.g. dehydrating in a fluidised bed or in a rotary kiln, {i.e. to obtain beta-hemihydrate(-C04B 11/0281 to C04B 11/0288 take precedence-)}}

- C04B 11/05 · obtaining anhydrite, {e.g. Keene`s cement} (-[C04B 11/028](#) takes precedence-)
- C04B 11/26 · {strating from chemical gypsum}; starting from phosphogypsum or from waste, e.g. purification products of smoke (-[C04B 11/02](#) takes precedence; chemical purification of smoke, fumes or exhaust gases [B01D 53/00](#) { purification of gypsum [C01F 11/46](#) })
- C04B 11/28 · Mixtures thereof with other inorganic cementitious materials (-[C04B 7/04](#) , [C04B 7/153](#) take precedence-)
- C04B 12/00** **Cements not provided for in groups [C04B 7/00](#) to [C04B 11/00](#)**
- C04B 12/02 · Phosphate cements (-in, or for, the manufacture of ceramics [C04B 33/00](#) , [C04B 35/00](#)-)
- C04B 12/04 · Alkali metal or ammonium silicate cements {Alkyl silicate cements; Silica sol cements; Soluble silicate cements} (-alkali metal silicates per se, their preparation [C01B 33/32](#) ; ammonium silicates per se, their preparation [C01C 1/00](#)-)
- C04B 14/00 - C04B 20/00** **Use of materials as fillers (-ceramics [C04B 33/00](#) , [C04B 35/00](#) ; reinforcing elements for building materials [E04C 5/00](#)-)**
- C04B 14/00** **Use of inorganic materials as fillers, e.g. pigments, for mortars, concrete or artificial stone; Treatment of inorganic materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone (-expanding or defibrillating materials [C04B 20/00](#)-)**
- NOTE
- Fillers with a well-defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#) . However, if they are only characterised by their composition, classification is made in [C04B](#) only
- C04B 14/005 · {Inorganic fillers with a shape other than granular or fibrous (-carbon nanotubes [C04B 14/026](#)-)}
- U C04B 14/02 · Granular materials, {e.g. micro-balloons}
- U C04B 14/04 · · Silica-rich materials; Silicates
- C04B 14/045 · · · {Alkali-metal containing silicates, e.g. petalite (-waterglass [C04B 12/04](#)-)}
- U C04B 14/06 · · · Quartz; Sand
- C04B 14/062 · · · · {Micro-silica, e.g. colloidal silica (-preparing micro-silica slurries or suspensions [C04B 18/148](#)-)}
- C04B 14/10 · · · Clay{-sepiolite [C04B 14/042](#) ; grog [C04B 18/025](#)-)}
- C04B 14/108 · · · · {Shale, slate (-colliery shale [C04B 18/125](#)-)}
- C04B 14/14 · · · Minerals of vulcanic origin{-granite [C04B 14/048](#)-)}
- C04B 14/20 · · · Mica; Vermiculite{-Mechanical splitting [B28D](#)-)}
- C04B 14/30 · · Oxides other than silica{ ferrites [C04B 14/363](#)-}
- C04B 14/306 · · · {Zirconium oxide (-zircon [C04B 14/046](#)-)}
- U C04B 14/36 · · Inorganic materials not provided for in groups{ [C04B 14/022](#) and } [C04B 14/04](#) to [C04B 14/34](#)
- C04B 14/365 · · · {Gypsum (-synthetic gypsum [C04B 18/0445](#) , [C04B 18/064](#)-)}
- U C04B 14/38 · Fibrous materials; Whiskers
- C04B 14/386 · · {Carbon (-carbon nanotubes [C04B 14/026](#)-)}
- U C04B 14/42 · · Glass
- C04B 14/44 · · · Treatment for enhancing alkali resistance{ composition of alkali resistant glass fibres [C03C 13/00](#) ; coating of glass fibres [C03C 25/10](#)-}
- C04B 14/46 · · Rock wool; {Ceramic or silicate fibres(-[C04B 14/40](#) , [C04B 14/42](#) take precedence-)}

- C04B 14/4687 · · · {Non-oxide ceramics (-carbon or graphite fibres [C04B 14/386-](#))}
- U C04B 16/00 Use of organic materials as fillers, e.g. pigments, for mortars, concrete or artificial stone; Treatment of organic materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone**
- NOTE**
Fillers with a well-defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#) . However, if they are only characterised by their composition, classification is made in [C04B](#) only
- C04B 16/02 · Cellulosic materials (-cellulosic waste materials, e.g. sawdust, rice husks, [C04B 18/24-](#))
- C04B 16/04 · Macromolecular compounds (-[C04B 16/02](#) takes precedence-)
- C04B 16/08 · · porous, e.g. expanded polystyrene beads {or micro-balloons}
- C04B 16/10 · · Treatment for enhancing the mixability with the mortar{(-coating [C04B 20/10-](#))}
- C04B 16/12 · characterised by the shape (-fibrous macromolecular compounds [C04B 16/06](#) ; porous macromolecular compounds [C04B 16/08-](#)),{e.g. perforated strips}
- C04B 18/00 Use of agglomerated or waste materials or refuse as fillers for mortars, concrete or artificial stone (-use of waste materials for the manufacture of cement [C04B 7/24-](#)); Treatment of agglomerated or waste materials or refuse, specially adapted to enhance their filling properties in mortars, concrete or artificial stone**
- NOTE**
Fillers with a well defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#) . However, if they are only characterised by their composition, classification is made in [C04B](#) only
- U C04B 18/02 · Agglomerated materials,{e.g. artificial aggregates}**
- C04B 18/023 · · {Fired or melted materials (-[C04B 20/06](#) takes precedence-)}
- C04B 18/026 · · · {Melted materials (-[C04B 14/22](#) takes precedence-)}
- C04B 18/027 · · {Lightweight material (-[C04B 14/12](#) takes precedence-)}
- C04B 18/04 · Waste materials; Refuse{(-[C04B 14/405](#) takes precedence-)}
- C04B 18/0436 · · {Dredged harbour or river sludge (-other slurries or sludges [C04B 18/0418-](#))}
- C04B 18/0445 · · {Synthetic gypsum, e.g. phosphogypsum (-gypsum from smoke purification [C04B 18/064-](#))}
- C04B 18/0481 · · {Other specific industrial waste materials not provided for elsewhere in [C04B 18/00-](#)}
- U C04B 18/06 · · Combustion residues, e.g. purification products of smoke, fumes or exhaust gases**
- C04B 18/10 · · · Burned {or pyrolised}refuse
- C04B 18/14 · · from metallurgical processes (-treatment of slag [C04B 5/00](#) ; for manufacture of cement [C04B 7/14-](#))
- C04B 18/16 · · from building or ceramic industry{(-separating plants for waste concrete slurry [B03B 9/063-](#))}
- C04B 18/18 · · organic (-[C04B 18/10](#) takes precedence-)
- C04B 18/20 · · · from macromolecular compounds{(-recycled expanded polystyrene [C04B 16/08-](#))}
- C04B 18/22 · · · · Rubber {e.g. ground waste tires}
- U C04B 18/24 · · · Vegetable refuse, e.g. rice husks, maize-ear refuse; Cellulosic materials, e.g. paper,{cork}**

- U C04B 18/241 · · · · {Paper, e.g. waste paper; Paper pulp}
- C04B 18/243 · · · · · {Waste from paper processing or recycling paper, e.g. de-inking sludge (-burned paper processing waste [C04B 18/10](#)-)}
- C04B 18/30 · · Mixed waste; Waste of undefined composition,(-[C04B 18/10](#) takes precedence-)
- C04B 20/00** **Use of materials as fillers for mortars, concrete or artificial stone according to more than one of groups [C04B 14/00](#) to [C04B 18/00](#) and characterised by shape or grain distribution**; -Treatment of materials according to more than one of the groups [C04B 14/00](#) to [C04B 18/00](#) specially adapted to enhance their filling properties in mortars, concrete or artificial stone; Expanding or defibrillating materials
- NOTE
- Fillers with a well-defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#) . However, if they are only characterised by their composition, classification is made in [C04B](#) only
- C04B 20/0008 · {-Materials specified by a shape not covered by [C04B 20/0016](#) to [C04B 20/0056](#) , e.g. nanotubes-}
- U C04B 20/0016 · {Granular materials, e.g. micro-balloons}
- U C04B 20/002 · · {Hollow or porous granular materials}
- C04B 20/0024 · · · {expanded in situ, i.e. the material is expanded or made hollow after primary shaping of the mortar, concrete or artificial stone mixture (-[C04B 16/085](#) takes precedence-)}
- U C04B 20/0076 · {characterised by the grain distribution}
- C04B 20/008 · · {Micro- or nanosized fillers, e.g. micronised fillers with particle size smaller than that of the hydraulic binder (-colloidal silica [C04B 14/062](#) ; silica fume [C04B 18/146](#)-)}
- C04B 20/0084 · · · {Conditioning, e.g. preparing suspensions thereof (-[C04B 18/148](#) takes precedence-)}
- U C04B 20/02 · Treatment
- C04B 20/08 · · Defibrillating asbestos{(-defibrillating other fibres [C04B 20/026](#)-)}
- C04B 20/10 · Coating or impregnating{(-roofing granules [E04D 7/005](#)-)}
- C04B 20/1018 · · {with organic materials (-pigments or dyes [C04B 20/1096](#)-)}
- C04B 20/1092 · · {with pigments or dyes (-[C04B 20/1059](#) takes precedence-)}
- U C04B 22/00** **Use of inorganic materials as active ingredients for mortars, concrete or artificial stone, e.g. accelerators,{shrink compensating agents}**
- U C04B 22/002 · {Water}
- C04B 22/004 · · {containing dissolved additives or active agents, i.e. aqueous solutions used as gauging water (-[C04B 22/0026](#) takes precedence-)}
- C04B 22/008 · {Cement and like inorganic materials added as expanding or shrinkage compensating ingredients in mortar or concrete compositions, the expansion being the result of a recrystallisation (-mixtures of cements [C04B 7/00](#) , [C04B 28/00](#)-)}
- C04B 22/06 · Oxides, Hydroxides (-[C04B 22/0013](#) takes precedence-)
- C04B 22/08 · Acids or salts thereof{ [C04B 22/0013](#) takes precedence-}

- U C04B 24/00 Use of organic materials as active ingredients for mortars, concrete or artificial stone, e.g. plasticisers**
- NOTE
Groups [C04B 24/003](#) to [C04B 24/006](#) take precedence over groups [C04B 24/008](#) to [C04B 24/226](#)
- C04B 24/12 • Nitrogen containing compounds {organic derivatives of hydrazine(-hydrazine [C04B 22/00](#)-)}
- U C04B 24/16 • Sulfur-containing compounds
- U C04B 24/20 • • Sulfonated aromatic compounds
- C04B 24/22 • • • Condensation {or polymerisation}products thereof
- NOTE
In this group the following term is used with the meaning indicated:
- "aldehydes" also covers other organic compounds reacting as aldehydes, e.g. glyoxylic acid
- C04B 24/24 • Macromolecular compounds (-[C04B 24/14](#) takes precedence; macromolecular compounds comprising sulfonate or sulfate groups [C04B 24/16](#)-)
- C04B 24/26 • • obtained by reactions only involving carbon-to-carbon unsaturated bonds{(-[C04B 24/243](#) takes precedence-)}
- C04B 24/28 • • obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds{(-[C04B 24/243](#) takes precedence-)}
- C04B 24/34 • • Natural resins, e.g. rosin{(-[C04B 24/243](#) takes precedence-)}
- C04B 24/36 • • Bituminous materials, e.g. tar, pitch{(-[C04B 24/243](#) takes precedence-)}
- C04B 24/38 • • Polysaccharides or derivatives thereof{(-[C04B 24/243](#) takes precedence-)}
- C04B 24/40 • Compounds containing silicon, titanium or zirconium {or other organo-metallic compounds; Organo-clays; Organo-inorganic complexes}
- C04B 26/00 - C04B 32/00**
- C04B 26/00 Compositions of mortars, concrete or artificial stone (artificial stone from molten slag [C04B 5/00](#))**
- C04B 26/00 Compositions of mortars, concrete or artificial stone, containing only organic binders,{e.g. polymer or resin concrete(-mechanical aspects moulding polymer or resin concrete [B29C 67/242](#)-)}**
- U C04B 26/02 • Macromolecular compounds
- C04B 26/26 • • Bituminous materials, e.g. tar, pitch{ [C08L 95/00](#) takes precedence-}
- U C04B 26/28 • • Polysaccharides or derivatives thereof
- C04B 26/285 • • • {Cellulose or derivatives thereof, e.g. starch {(-[C04B 26/24](#) takes precedence-)}
- U C04B 28/00 Compositions of mortars, concrete or artificial stone, containing inorganic binders or the reaction product of an inorganic and an organic binder, e.g. polycarboxylate cements**
- NOTE
While using Combination Sets in this main group, the presence of an organic binder is indicated with symbols chosen from group [C04B 24/00](#) , and the presence of a supplementary inorganic binder with symbols chosen from groups [C04B 7/00](#) to [C04B 12/00](#)
- C04B 28/001 • {containing unburned clay (-polymer binder - clay mixtures used in well cementing [C09K 8/44](#)-)}
- U C04B 28/02 • containing hydraulic cements other than calcium sulfates

- C04B 28/021
- {Ash cements, e.g. fly ash cements (-fly ash as filler [C04B 18/08](#)); Cements based on incineration residues, e.g. alkali-activated slags from waste incineration (-alkali-activated combustion residues as such [C04B 7/243](#); mixtures of the lime-pozzuolane type [C04B 28/18](#)); Kiln dust cements}
- C04B 28/06
- • Aluminous cements (-monolithic refractories or refractory mortars [C04B 35/66](#)-)
- C04B 28/14
- containing calcium sulfate cements{ gypsum-paper plates [E04C](#)}
- C04B 28/24
- containing alkyl, ammonium or metal silicates; containing silica sols{(-reaction mixtures resulting in mineral polymers [C04B 28/006](#); polymeric reaction products of alkali metal silicates with isocyanates [C08G 18/3895](#)-)}
- C04B 28/30
- containing magnesium cements {or similar cements}(-magnesium oxide cements [C04B 28/10](#)-)
- U C04B 32/00 Artificial stone not provided for in other groups of this subclass**
- C04B 32/005
- {Artificial stone obtained by melting at least part of the composition, e.g. metal (-[C04B 28/36](#) and [C03C](#) take precedence-)(-cast stone from molten slag [C04B 5/00](#); artificial stone obtained by melting the polymeric ingredient of the composition [C04B 26/00](#)-)}
- C04B 32/02
- with reinforcements{(-contains no documents; reinforcing elements [E04C 5/00](#)-)}
- NOTE**
This group is only used for indexing purposes
- C04B 33/00 Clay-wares (-monolithic refractories or refractory mortars [C04B 35/66](#); porous products [C04B 38/00](#)-)**
- NOTE**
In groups [C04B 33/00](#) to [C04B 33/36](#), from 01-10-2008 onwards, the indexing codes of groups [C04B 2235/00](#) to [C04B 2235/9646](#) are used (with the exception of [C04B2235/34H](#), [C04B2235/602N](#), [C04B 2235/604](#) and [C04B 2235/9661](#)) to identify aspects relating to ceramic starting mixtures and sintered ceramic products
- U C04B 33/02**
- Preparing or treating the raw materials individually or as batches
- C04B 33/13
- • Compounding ingredients (-[C04B 33/36](#), [C04B 35/71](#) take precedence; { pigments for ceramics [C09C 1/0009](#) })
- C04B 33/132
- • • Waste materials; Refuse; {Residues} (-[C04B 33/16 takes precedence](#); [C04B 33/16 takes precedence](#); { waste glass [C04B 33/13](#) })
- C04B 33/1321
- • • • {Waste slurries, e.g. harbour sludge, industrial muds (-slurries of specific well-defined waste streams, e.g. phosphate muds, other than red mud, [C04B 33/132](#)-)}
- C04B 33/1325
- • • • {Hazardous waste other than combustion residues (-dredging sludge [C04B 33/1321](#)-)}
- C04B 33/135
- • • • Combustion residues, e.g. fly ash, incineration waste{(-silica fume [C04B 33/132](#)-)}
- C04B 33/20
- • for dry-pressing (-[C04B 33/13](#) takes precedence-)
- C04B 33/28
- Slip casting (-mechanical features [B28B 1/26](#)-)

- U C04B 35/00** Shaped ceramic products characterised by their composition {(porous ceramic products [C04B 38/00](#); ceramic articles characterised by particular shape, see the relevant classes, e.g. linings for casting ladles, tundishes, cups or the like [B22D 41/02](#); ceramic substrates for microelectronic semi-conductors [H01L 23/15](#)); Ceramics compositions (containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides other than as macroscopic reinforcing agents [C22C](#); {shaping of ceramics [B28B](#)}); Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products {(Chemical preparation of powders of inorganic compounds [C01](#); infiltration of sintered ceramic preforms with molten metal [C04B 41/51](#))}

NOTES

In this group, in the absence of an indication to the contrary, compositions are classified according to the constituent present in the highest proportion by weight.

In this group, magnesium is considered as an alkaline earth metal.

In this group, a composite is considered as a sintered material containing more than one phase, where the secondary phases are not resulting from sintering aids

In this group, fine ceramics are considered as products having a polycrystalline, fine-grained microstructure, e.g. of dimensions below 100 micrometers.

The production of ceramic powder is classified in this group in so far as it relates to the preparation of powder with specific characteristics.

In groups [C04B 35/00](#) to [C04B 35/83](#) , from 01-01-2005 onwards, the indexing codes of groups [C04B 2235/00](#) to [C04B 2235/9692](#) are used to identify aspects relating to ceramic starting mixtures and sintered ceramic products

WARNING

Attention is drawn to WARNINGS 3 and 4 after subclass title

- U C04B 35/01 • based on oxide ceramics
- C04B 35/013 • • {containing carbon (~~-C04B 35/103~~ takes precedence-)}
- U C04B 35/03 • • based on magnesium oxide, calcium oxide or oxide mixtures derived from dolomite
- U C04B 35/04 • • • based on magnesium oxide
- U C04B 35/043 • • • • Refractories from grain sized mixtures
- U C04B 35/047 • • • • • containing chromium oxide or chrome ore
- C04B 35/0476 • • • • • {obtained from prereacted sintered grains ("*simultaneous sinter*")(~~"simultaneous-sinter"~~)}
- U C04B 35/10 • • based on aluminium oxide
- U C04B 35/101 • • • Refractories from grain sized mixtures
- C04B 35/1015 • • • • {containing refractory metal compounds other than those covered by [C04B 35/103](#) to [C04B 35/106](#)-}
- C04B 35/103 • • • • containing non-oxide refractory materials, e.g. carbon (~~-C04B 35/106~~ takes precedence-)
- U C04B 35/111 • • • Fine ceramics
- C04B 35/1115 • • • • {Minute sintered entities, e.g. sintered abrasive grains or shaped particles such as platelets (~~-abrasives [C09K 3/14](#)-~~)}
- C04B 35/12 • • based on chromium oxide (~~-C04B 35/047~~ and [C04B 35/105](#) take precedence-)
- C04B 35/16 • • based on silicates other than clay(~~-zircon [C04B 35/48](#)-~~)}
- U C04B 35/18 • • • rich in aluminium oxide

- C04B 35/185 Mullite { $3\text{Al}_2\text{O}_3\text{-}2\text{SiO}_2$ }
- C04B 35/195 Alkaline earth aluminosilicates, e.g. cordierite {or anorthite}
- C04B 35/20 rich in magnesium oxide, {e.g. forsterite (~~C04B 35/195~~ takes precedence)}
- C04B 35/22 rich in calcium oxide, {e.g. wollastonite (~~C04B 35/195~~ takes precedence)}
- C04B 35/42 based on chromites (~~C04B 35/047~~ and ~~C04B 35/105~~ take precedence)
- C04B 35/46 based on titanium oxide or titanates {(-containing also zirconium or hafnium oxides, zirconates or hafnates ~~C04B 35/49~~)}
- U C04B 35/462 based on titanates
- U C04B 35/465 based on alkaline earth metal titanates
- U C04B 35/468 based on barium titanates
- U C04B 35/4682 {based on BaTiO_3 perovskite phase}
- C04B 35/4684 {containing lead compounds (~~C04B 35/472~~ takes precedence)}
- U C04B 35/4686 {based on phases other than BaTiO_3 perovskite phase}
- C04B 35/4688 {containing lead compounds (~~C04B 35/472~~ takes precedence)}
- C04B 35/50 based on rare-earth compounds {(-non-oxide rare earth compounds ~~C04B 35/5156~~)}
- C04B 35/51 based on compounds of actinides {({ non-oxide actinide compounds ~~C04B 35/5158~~ } ; nuclear fuel materials ~~G21C 3/62~~)}
- U C04B 35/515 based on non-oxide ceramics
- U C04B 35/52 based on carbon, e.g. graphite
- C04B 35/522 {Graphite (~~C04B 35/536~~ takes precedence)}
- C04B 35/536 based on expanded graphite {or complexed graphite}
- C04B 35/547 based on sulfides or selenides {or tellurides}
- C04B 35/56 based on carbides {or oxycarbides (-containing free metal binder ~~C22C 29/00~~)}
- U C04B 35/565 based on silicon carbide
- C04B 35/571 obtained from {Si-containing} polymer precursors {or organosilicon monomers}
- C04B 35/573 obtained by reaction sintering {or recrystallisation}
- C04B 35/58 based on borides, nitrides, [i.e. nitrides, oxynitrides, carbonitrides or oxycarbonitrides] or silicides {(-containing free binder metal ~~C22C 29/00~~)}
- U C04B 35/583 based on boron nitride
- C04B 35/5831 based on cubic boron nitrides {or Wurtzitic boron nitrides, including crystal structure transformation of powder}
- U C04B 35/584 based on silicon nitride
- C04B 35/589 obtained from {Si-containing} polymer precursors {or organosilicon monomers}
- U C04B 35/622 Forming processes; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products
- NOTE**
In groups ~~C04B 35/622~~ and subgroups indexing codes are given for aspects relating to the preparation, properties or mechanical treatment or to heat treatments of green bodies. The codes are chosen from ~~C04B 2235/60~~ to **C04B2235/66P**
- C04B 35/62204 {using waste materials or refuse {(-clay-wares containing waste materials ~~C04B 33/132~~)}}

- C04B 35/62209
 - • • {using woody material, remaining in the ceramic products (-to obtain porous material by burning out [C04B 38/06](#)-)}
- C04B 35/62222
 - • {obtaining ceramic coatings (-coating of mortars, concrete, artificial or natural stone or ceramics [C04B 41/45](#) ; laminated ceramic products [B32B 18/00](#) ; coating metallic materials [C23](#); coating of glass [C03C 17/00](#) , applying ceramic coatings on silicon for semi-conductor purposes [H01L](#)-)}
- U C04B 35/62227
 - • {obtaining fibres}
- U C04B 35/62231
 - • • {based on oxide ceramics}
- C04B 35/6225
 - • • • {Fibres based on zirconium oxide, e.g. zirconates such as PZT}{~~0807~~}
- C04B 35/62272
 - • • {based on non-oxide ceramics (-carbon nanotubes [C01B 31/0206](#) ; carbon fibers [D01F 9/12](#)-)}
- U C04B 35/62277
 - • • • {Fibres based on carbides}
- C04B 35/62281
 - • • • • {based on silicon carbide (-[C04B 35/571](#) takes precedence-)}
- U C04B 35/62286
 - • • • {Fibres based on nitrides}
- C04B 35/62295
 - • • • • {based on silicon nitride (-[C04B 35/589](#) takes precedence-)}
- C04B 35/626
 - • Preparing or treating the powders individually or as batches{(-pigments for ceramics [C09C 1/0009](#)); preparing or treating macroscopic reinforcing agents for ceramic products, e.g. fibres; mechanical aspects section B}

WARNING
Groups [C04B 35/62605](#) to [C04B 35/62695](#) are not complete, see also other subgroups of [C04B 35/00](#) , e.g. [C04B 35/626](#)
- U C04B 35/62605
 - • • {Treating the starting powders individually or as mixtures}
- C04B 35/62695
 - • • • {Granulation or pelletising (-devices for shaping artificial aggregates from ceramic mixtures [B28B 1/004](#)-)}
- C04B 35/628
 - • • Coating the powders {or the macroscopic reinforcing agents}
- U C04B 35/63
 - • • using additives specially adapted for forming the products,{e.g.. binder binders}
- U C04B 35/632
 - • • • Organic additives
- C04B 35/634
 - • • • • Polymers (-[C04B 35/636](#) takes precedence-)
- C04B 35/64
 - • Burning or sintering processes (-[C04B 33/32](#) takes precedence; { powder metallurgy [B22F](#) })
- C04B 35/65
 - • • Reaction sintering of free metal- or free silicon-containing compositions{(-[C04B 35/573](#) , [C04B 35/591](#) take precedence-)}
- U C04B 35/653
 - • Processes involving a melting step
- C04B 35/657
 - • • for manufacturing refractories (-[C04B 35/05](#) , [C04B 35/107](#) , [C04B 35/484](#) take precedence-)
- C04B 35/66
 - • Monolithic refractories or refractory mortars, including those whether or not containing clay{(-making or repairing of linings [F27D 1/16](#)-)}
- C04B 35/71
 - • Ceramic products containing macroscopic reinforcing agents (-[C04B 35/66](#) takes precedence; { infiltration of a porous ceramic matrix with a material forming a non-ceramic phase [C04B 41/00](#) , reaction infiltration with Si in order to form SiC [C04B 35/573](#) , in order to form Si₃N₄ [C04B 35/591](#) })

NOTE
In groups [C04B 35/71](#) to [C04B 35/83](#) the composition of the ceramic products is also classified in groups [C04B 35/01](#) to [C04B 35/597](#)
- U C04B 35/78
 - • containing non-metallic materials
- C04B 35/80
 - • • Fibres, filaments, whiskers, platelets, or the like{(-carbon reinforced with carbon fibres see [C04B 35/83](#)-)}

C04B 37/00

Joining burned ceramic articles with other burned ceramic articles or other articles by heating (laminated products [B32B](#), [E04C](#); { soldering and welding materials [B23K 35/24](#) })

NOTE

In groups [C04B 37/00](#) to [C04B 37/04](#) , from 01-10-2008 onwards, features relating to interlayers, additional compositional information or further processing are indexed with codes chosen from [C04B 2237/00](#) to **C04B2237/70R**

WARNING

Groups [C04B 37/005](#) , [C04B 37/006](#) , [C04B 37/025](#) and [C04B 37/026](#) are no longer used for classification as from September 1, 2008. Aspects relating to interlayers are from that date indexed by codes chosen from [C04B 2237/02](#) to [C04B 2237/16](#)

- U C04B 37/02 · with metallic articles
- C04B 37/023 · · {characterised by the interlayer used (~~-[C04B 37/028](#) takes precedence-~~)}
- U C04B 37/04 · with articles made from glass

WARNING

Groups [C04B 37/042](#), [C04B 37/045](#) and [C04B 37/047](#) are not complete, see also [C04B 37/04](#)

- C04B 37/045 · · {characterised by the interlayer used (~~-[C04B 37/047](#) takes precedence-~~)}

C04B 38/00

Porous mortars, concrete, artificial stone or ceramic ware; Preparation thereof (-treating slag with gases or gas generating material [C04B 5/06](#) ; { expanded graphite [C04B 35/536](#) })

NOTE

Porous materials based on fibres, i.e. materials where the porosity is due to the spaces between the fibres, are not classified in this maingroup, but in one or more of the other relevant maingroups of this subclass, e.g. in [C04B 30/02](#)

- C04B 38/0003 · {containing continuous channels, e.g. of the "dead-end" type or obtained by pushing bars in the green ceramic product (~~-[B28B](#) takes precedence-~~)}
- C04B 38/0006 · {Honeycomb structures (~~-from one or more corrugated sheets by winding or stocking [C04B 38/0083-](#)~~)}
- C04B 38/009 · {Porous or hollow ceramic granular materials, e.g. micro-balloons (~~-[C04B 18/027](#) , [C04B 20/002](#) take precedence-~~)}
- U C04B 38/04 · by dissolving-out added substances
- C04B 38/045 · · {the dissolved-out substance being a monolithic element having approximately the same dimensions as the final article, e.g. a prepreg obtained by bonding together dissolvable particles (~~-[C04B 38/0022](#) takes precedence-~~)}
- C04B 38/06 · by burning-out added substances {by burning natural expanding materials or by sublimating or melting out added substances}

NOTE

Documents in which the characteristic feature is the choice of meltable or sublimable material or the physical aspects of the porous body obtained are classified accordingly, and symbols [C04B 38/0605](#) or [C04B 38/061](#) are allocated in Combination Sets.

- C04B 38/0615 · · {the burned-out substance being a monolithic element having approximately the same dimensions as the final article, e.g. a porous polyurethane sheet or a prepreg obtained by bonding together resin particles (~~-[C04B 38/0022](#) takes precedence-~~)}
- U C04B 38/063 · · {Preparing or treating the raw materials individually or as batches}

- C04B 38/0635 . . . {Compounding ingredients (~~C04B 38/0615~~ takes precedence)}
- U C04B 38/0645 {Burnable, meltable, sublimable materials}
- U C04B 38/065 {characterised by physical aspects, e.g. shape, size or porosity}

NOTE

Documents having this group as classification symbol or as part of a Combination Set can also get symbol [C04B 38/0051](#) in the Combination Set, if the importance of the size of the pores obtained is emphasized.

- C04B 38/0655 {Porous materials (~~C04B 38/0625~~ takes precedence)}
- C04B 38/067 {Macromolecular compounds (~~C04B 38/062~~ takes precedence; polysaccharides [C04B 38/0645](#))}
- C04B 38/069 {Other materials, e.g. catalysts (~~C04B 33/13~~ , [C04B 35/00](#) take precedence)}
- C04B 38/10 . by using foaming agents (~~C04B 38/02~~ takes precedence){or by using mechanical means, e.g. adding preformed foam}

C04B 40/00

Processes, in general, for influencing or modifying the properties of mortars, concrete or artificial stone compositions, e.g. their setting or hardening ability (-active ingredients [C04B 22/00](#) to [C04B 24/00](#) ; hardening of a well-defined composition [C04B 26/00](#) to [C04B 28/00](#) ; making porous, cellular or lightening [C04B 38/00](#) ; mechanical aspects [B28](#) , e.g. conditioning the materials prior to shaping [B28B 17/02](#)-)

- U C04B 40/0028 . {Aspects relating to the mixing step of the mortar preparation}
- C04B 40/0032 . . {Controlling the process of mixing, e.g. adding ingredients in a quantity depending on a measured or desired value (~~B28C 7/00~~ takes precedence)}
- C04B 40/0057 . . {Energetic mixing (~~C04B 40/005~~ takes precedence)}
- U C04B 40/02 . Selection of the hardening environment

NOTE

In this group the following term is used with the meaning indicated:
- "hardening" covers also setting, pre-curing and curing

- C04B 40/0259 . . {Hardening promoted by a rise in pressure (~~C04B 40/024~~ takes precedence)}
- C04B 40/0263 . . {Hardening promoted by a rise in temperature (~~C04B 40/024~~ takes precedence)}
- C04B 40/0268 . . . {Heating up to sintering temperatures (~~C04B 41/0072~~ takes precedence)}
- C04B 40/0277 . . {Hardening promoted by using additional water, e.g. by spraying water on the green concrete element (~~steam hardening [C04B 40/024](#)~~)}
- C04B 40/04 . Preventing evaporation of the mixing water (~~permanent coverings [C04B 41/00](#)~~)

C04B 41/00

After-treatment of mortars, concrete, artificial stone or ceramics; Treatment of natural stone (-conditioning of the materials prior to shaping [C04B 40/00](#) ; applying liquids or other fluent materials to surfaces, in general [B05](#); grinding or polishing [B24](#); apparatus or processes for treating or working shaped articles of clay or other ceramic compositions, slag or mixtures containing cementitious material [B28B 11/00](#) ; working stone or stone-like materials [B28D](#); glazes, other than cold glazes, [C03C 8/00](#) ; etching, surface-brightening or pickling compositions [C09K 13/00](#)-)

NOTE

In this group, multiple classification is made according to the following rules:

when the substrate to be treated is of the artificial stone type, e.g. concrete, classification is made in the range [C04B 41/00](#) to [C04B 41/5392](#) as well as in the range [C04B 41/60](#) to [C04B 41/72](#) when the substrate to be treated is of the ceramic type, classification is made in the range [C04B 41/00](#) to [C04B 41/5392](#) as well as in the range [C04B 41/80](#) to [C04B 41/91](#)

when the substrate to be treated is a-specific, classification is made only in the range [C04B 41/00](#) to [C04B 41/5392](#)

In groups [C04B 41/0018](#) to [C04B 41/53](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.

Treating, e.g. coating or impregnating, a material with the same material or with a substance which ultimately is transformed into the same material is not considered after-treatment for this group but is classified as preparation of the material, e.g. a carbon body impregnated with a carbonisable substance is classified in [C04B 35/52](#).

In groups [C04B 41/00](#) to [C04B 41/53](#), it is desirable to add the indexing codes relating to the nature of the substrate being treated. The indexing codes, which are chosen from groups [C04B 26/00](#) to [C04B 38/00](#) should be unlinked.

In groups [C04B 41/00](#) to [C04B 41/53](#), it is desirable to add the indexing codes relating to aspects of the coating composition or to the method of application. The indexing codes, which are chosen from groups [C04B 41/00](#) to [C04B 41/5392](#) should be unlinked.

Attention is drawn to internal Note (2) following the title of subclass [C04B](#).

- C04B 41/0036 · {Laser treatment (working by laser beam [B23K 26/00](#))}
- C04B 41/0045 · {Irradiation; Radiation, e.g. with UV or IR (~~C04B 41/0036~~ takes precedence)}
- C04B 41/45 · Coating or impregnating (~~paints C09D~~), {e.g. injection in masonry, partial coating of green or fired ceramics, organic coating compositions for adhering together two concrete elements (~~ion-implantation C04B 41/0027~~)}

NOTES

In group [C04B 41/45](#) and sub-groups, as a general rule, classification is made according to the end products, rather than according to the starting materials, in the coating or impregnating compositions.

In groups [C04B 41/45](#) to [C04B 41/528](#) the following term is used with the meaning indicated:

- "coating" covers material applied to the substrates as powdery material or applied from the gas or liquid phase, e.g. as a slurry; it only covers the use of preformed sheet-like elements in so far as the thickness of these sheets is small compared with the thickness of the substrate and so far as the resulting product is not exclusively one of the type classifiable in [B32B](#)

- U C04B 41/4505 · {characterised by the method of application}
- C04B 41/4523 · · {applied from the molten state (~~vitreous materials C04B 41/5022~~); Thermal spraying, e.g. plasma spraying}

NOTE

Coating or impregnating with a specific material in the molten state is classified according to the specific material and get symbol [C04B 41/4523](#) in Combination Sets

- C04B 41/4527 · · · {Plasma spraying (~~deposition from the gas phase using plasma C04B 41/4533~~)}
- C04B 41/4564 · · {Electrolytic or electrophoretic processes, e.g. electrochemical re-alkalisation of reinforced concrete (~~desalination C04B 41/53~~)}
- C04B 41/4566 · · · {Electrochemical re-alkalisation (~~electrochemical desalination C04B 41/5369~~; cathodic protection [C23F 13/02](#))}

- C04B 41/4584 . . {Coating or impregnating of particulate or fibrous ceramic material (~~C04B 20/10~~ , ~~C04B 35/628~~ take precedence-)}
- C04B 41/459 . . {Temporary coatings or impregnations (~~C04B 40/04~~ takes precedence-)}
- U C04B 41/46 . . with organic materials
- C04B 41/47 . . . Oils, fats or waxes {natural resins}
- C04B 41/49 . . . Compounds having one or more carbon-to-metal or carbon-to-silicon linkages {Organo-clay compounds; Organo-silicates, i.e. ortho- or polysilicic acid esters (~~to obtain SiO₂ C04B 41/5089~~ , ~~C04B 41/5035~~); Organo-phosphorus compounds; Organo-inorganic complexes}
- NOTE**
As distinct from the general practice in [C04B 41/00](#) , classification in [C04B 41/49](#) and sub-groups is done according to the nature of the starting products, not according to the nature of the end products
- U C04B 41/4905 {containing silicon}
- U C04B 41/4922 {applied to the substrate as monomers, i.e. as organosilanes RnSiX4-n, e.g. alkyltrialkoxysilane, dialkyldialkoxysilane}
- C04B 41/4944 {containing atoms other than carbon, hydrogen, oxygen, silicon, alkali metals or halogens, e.g. N-silyldisilazane: Image-}
- U C04B 41/50 . . with inorganic materials
- C04B 41/5007 . . . {with salts or salty compositions, e.g. for salt glazing (~~C04B 41/5006~~ takes precedence-)}
- C04B 41/5022 . . . {with vitreous materials (~~composition of vitreous glazes and enamels C03C~~ ; ceramic pigments ~~C09C 1/0009~~)-}
- NOTE**
Glazing of concrete, natural or artificial stone or ceramics is only classified in [C04B 41/5022](#) when non-compositional aspects are important, e.g. aspects relating to the method of application or the choice of the substrate
- C04B 41/5023 {Glass-ceramics (~~compositions of glass-ceramics C03C 10/00~~)-}
- C04B 41/5024 . . . {Silicates (~~C04B 41/5022~~ takes precedence; silico-fluorides ~~C04B 41/5018~~)-}
- C04B 41/5025 . . . {with ceramic materials (~~copper oxide or solid solutions thereof C04B 41/5074~~)-}
- NOTE**
In this subgroup, the materials considered as ceramic materials are those covered by groups [C04B 33/00](#) to [C04B 35/83](#)
- C04B 41/5027 {Oxide ceramics in general; Specific oxide ceramics not covered by [C04B 41/5029](#) to [C04B 41/5051](#)-}
- U C04B 41/5031 {Alumina}
- C04B 41/5032 {Aluminates (~~aluminate spinels C04B 41/5046~~)-}
- C04B 41/5053 . . . {non-oxide ceramics (~~carbon or carbonisable materials C04B 41/5001~~)-}
- C04B 41/5072 . . . {with oxides or hydroxides not covered by [C04B 41/5025](#) (~~C04B 40/0236~~ takes precedence; boron oxide ~~C04B 41/5006~~)-}
- C04B 41/5074 {Copper oxide or solid solutions thereof (~~CuO-Cu eutectic C04B 41/5127~~)-}
- C04B 41/5076 . . . {with masses bonded by inorganic cements (~~sulfur compositions C04B 41/5097~~)-}
- C04B 41/5093 . . . {with elements other than metals or carbon (~~treatment with fluorine gas C04B 41/5019~~)-}

- C04B 41/5096 . . . {Silicon (~~C04B 35/573~~ takes precedence)}
- C04B 41/51 . . . Metallising, {e.g. infiltration of sintered ceramic preforms with molten metal (~~covering materials with metals in general C23C~~; ceramic compositions containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides, other than as macroscopic reinforcing agents C22C; infiltration of preforms containing free metal, e.g. cermets C22C)}
- C04B 41/52 . . . Multiple coating or impregnating {multiple coating or impregnating with the same composition or with compositions only differing in the concentration of the constituents, is classified as single coating or impregnation}
- NOTES**
Multiple coating or impregnation with the same composition or with compositions only differing in the concentration of the constituents, is classified as single coating or impregnation and symbol [C04B 41/52](#) is allocated in Combination Sets
- Groups [C04B 41/522](#) and [C04B 41/524](#) are used for Combination Sets only of documents classified in [C04B 41/52](#)
- C04B 41/53 . . . involving the removal of at least part of the materials of the treated article, {e.g. etching, drying of hardened concrete (~~C04B 41/0036~~ to [C04B 41/0054](#) take precedence)}
- C04B 41/5307 . . . {Removal of physically bonded water, e.g. drying of hardened concrete (~~E04B 1/7007~~ takes precedence)}
- C04B 41/5338 . . . {Etching (~~for obtaining decorative effects B44C 1/22~~; etching of specific electronic compounds, see the relevant places, e.g. etching of semiconductor bodies [H01L 21/306](#))}
- U C04B 41/5369 . . . {Desalination, e.g. of reinforced concrete}
- C04B 41/5376 . . . {Electrochemical desalination (~~electrochemical re-alkalisation [C04B 41/4566](#)~~; drying by electro-osmosis [E04B 1/7007](#))}
- C04B 41/5384 . . . {by electrochemical methods (~~electrochemical desalination [C04B 41/5376](#)~~)}
- C04B 41/5392 . . . {by burning (~~C04B 38/06~~ takes precedence)}
- U C04B 2103/00 Function or property of ingredients for mortars, concrete or artificial stone**
- U C04B 2103/0045 . . . Polymers chosen for their physico-chemical characteristics
- C04B 2103/0063 . . . obtained by an unusual polymerisation process, e.g. by changing the molar ratio of the different monomers during the polymerisation process (~~C04B 2103/0058~~ to [C04B 2103/0061](#) take precedence)
- C04B 2103/0068 . . . Ingredients with a function or property not provided for elsewhere in [C04B 2103/00](#)
- U C04B 2111/00 Mortars, concrete or artificial stone or mixtures to prepare them, characterised by specific function, property or use**
- C04B 2111/00025 . . . Aspects relating to the protection of the health, e.g. materials containing special additives to afford skin protection (~~avoiding chromium eczema by using chromium VI-free or very low chromium VI-content materials [C04B 2111/1081](#)~~)
- C04B 2111/00241 . . . Physical properties of the materials not provided for elsewhere in [C04B 2111/00](#)
- C04B 2111/00439 . . . Physico-chemical properties of the materials not provided for elsewhere in [C04B 2111/00](#)
- C04B 2111/00474 . . . Uses not provided for elsewhere in [C04B 2111/00](#)
- U C04B 2111/00482 . . . Coating or impregnation materials
- C04B 2111/00577 . . . applied by spraying (~~mixtures shapable by spraying [C04B 2111/00155](#)~~)

- U C04B 2111/0081 • • as catalysts or catalyst carriers
- C04B 2111/00827 • • • Photocatalysts; (-Materials containing photocatalysts to avoid staining by air pollutants [C04B 2111/2061](#)-)
- U C04B 2111/10 • Compositions or ingredients thereof characterised by the absence or the very low content of a specific material
- U C04B 2111/1075 • • Chromium-free or very low chromium-content materials
- C04B 2111/1081 • • • Chromium VI, e.g. for avoiding chromium eczema (-materials containing special additives for affording skin protection [C04B 2111/00025](#)-)
- U C04B 2111/20 • Resistance against chemical, physical or biological attack
- U C04B 2111/2038 • • Resistance against physical degradation
- C04B 2111/2069 • • • Self cleaning materials, e.g. using lotus effect (-using photocatalysts [C04B 2111/2061](#)-)
- C04B 2111/2076 • • • Discolouring resistant materials (-self cleaning materials [C04B 2111/2069](#)-)
- U C04B 2235/00 Aspects relating to ceramic starting mixtures or sintered ceramic products**
- NOTE**
- In this group, magnesium is considered as an alkaline earth metal.
- U C04B 2235/02 • Composition of constituents of the starting material or of secondary phases of the final product
- NOTE**
- Indexing codes [C04B 2235/02](#) to [C04B 2235/5481](#) are to be used only if the aspect is not trivial or not standard, e.g. if water is used as a mixing medium for a powder, whereas normally an organic mixing medium is used or if not the standard alpha-alumina is used to make an alumina ceramic but gamma-alumina in stead.
- U C04B 2235/30 • • Constituents and secondary phases not being of a fibrous nature
- NOTE**
1. Indexing codes [C04B 2235/30](#) to [C04B 2235/549](#) are to be given to constituents or additives only if:
- a. it is not obvious from the end product as such that the constituent or additive has been used for making the end product.
- Examples:
- in case spinel is made from a certain clay in stead of from alumina and silica, the clay is coded, - when calcium zirconate and titania are used to make calcium zirconium titanate, a code should be given for the calcium zirconate constituent while normally calcium oxide or calcium carbonate and zirconia are used. The titania constituent of the starting mixture is not coded since it is to be expected that a single metal oxide is used to make a mixed metal oxide. b. it is not obvious from the "invention information" symbols that this constituent has been used to make the end product, e.g. if the "invention information" symbol given indicates that a zirconia-alumina composite is prepared it is common practice that zirconia and alumina constituents have been used and thus no codes for zirconia or alumina are given. In the same way, if an allocation indicates that an oxide ceramic contains carbon, no code for the addition of carbon is given. However for an alumina composite product comprising titania, the main symbol for composites based on alumina is given together with an indexing code for titania.
2. In groups [C04B 2235/32](#) to [C04B 2235/349](#) oxides are considered to comprise also metal salts from which they are formed by heating.
- U C04B 2235/34 • • • Non-metal oxides, non-metal mixed oxides, or salts thereof that form the non-metal oxides upon heating, e.g. carbonates, nitrates, (oxy)hydroxides, chlorides

- C04B 2235/3418
 - • • Silicon oxide, silicic acids, or oxide forming salts thereof, e.g. silica sol, fused silica, silica fume, cristobalite, quartz or flint (-glass constituents [C04B 2235/36](#)-)
- U C04B 2235/44
 - • • Metal salt constituents or additives chosen for the nature of the anions, e.g. hydrides or acetylacetonate
- C04B 2235/447
 - • • Phosphates or phosphites (-calcium phosphates [C04B 2235/3212](#)-), e.g. orthophosphate, hypophosphite
- U C04B 2235/50
 - • Constituents or additives of the starting mixture chosen for their shape or used because of their shape or their physical appearance
- U C04B 2235/52
 - • • Constituents or additives characterised by their shapes
- C04B 2235/5296
 - • • with a defined aspect ratio, e.g. indicating sphericity (-spherical constituents [C04B 2235/528](#)-)
- U C04B 2235/65
 - Aspects relating to heat treatments of ceramic bodies such as green ceramics or pre-sintered ceramics, e.g. burning, sintering or melting processes
- C04B 2235/652
 - • Reduction treatment (-[C04B 2235/664](#) takes precedence-)

Project: N/A (C05F)

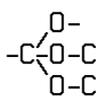
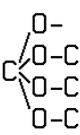
- U **C05F 11/00** **Other organic fertilisers**
- U C05F 11/02
 - from peat, brown coal, and similar vegetable deposits
- C05F 11/04
 - • Horticultural earth ("*Gärtnerische Erden*") from peat ("*Gärtnerische Erden*") from peat
- U **C05F 17/00** **Preparation of fertilisers characterised by the composting step**
- C05F 17/0009
 - {in concurrence with invertebrata, (*e.g. worms, flies, maggots*)}(~~e.g. worms, flies, maggots~~)
- C05F 17/0081
 - {using irradiation, (~~e.g. solar, nuclear~~)}(*using irradiation, (e.g. solar, nuclear)* or electric or magnetic fields)

Project: N/A (C06B)

- U **C06B 21/00** **Apparatus or methods for working-up explosives, e.g. forming, cutting, drying**
- NOTE
In the absence of an indication to the contrary a process is classified in the last appropriate place, e.g. granulation by extrusion and chopping ([C06B 21/0075](#))
- C06B 21/0083
 - {-Treatment of solid structures, e.g. for coating or impregnating with a modifier (compositions therefor [C06B 23/00](#))}
- U **C06B 23/00** **Compositions characterised by non-explosive or non-thermic constituents {(in combination with specific explosives [C06B 25/20](#), [C06B 25/26](#), [C06B 29/04](#), [C06B 29/08](#), [C06B 31/06](#), [C06B 31/40](#), [C06B 33/02](#))}**
- U C06B 23/002
 - {Sensitisers or density reducing agents, foam stabilisers, crystal habit modifiers}
- C06B 23/004
 - • {-Chemical sensitisers}
- C06B 23/006
 - {Stabilisers (*e.g. thermal stabilisers*)}(~~e.g. thermal stabilisers~~)(processes [C06B 21/0091](#); foam stabilisers [C06B 23/002](#))}
- C06B 23/007
 - {-Ballistic modifiers, burning rate catalysts, burning rate depressing agents, e.g. for gas generating}

Project: N/A (C07C)

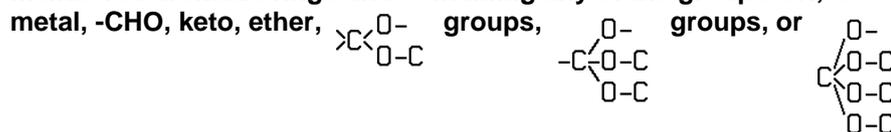
- U **C07C 1/00** **Preparation of hydrocarbons from one or more compounds, none of them being a hydrocarbon**

- U C07C 1/20 · starting from organic compounds containing only oxygen atoms as heteroatoms
- U C07C 1/207 · · from carbonyl compounds
- C07C 1/2076 · · · {-by a transformation in which at least one -C(=O)- moiety is eliminated}
- C07C 1/2078 · · · {-by a transformation in which at least one -C(=O)-O- moiety is eliminated}
- U C07C 2/00 Preparation of hydrocarbons from hydrocarbons containing a smaller number of carbon atoms (redistribution reactions involving splitting [C07C 6/00](#))**
- U C07C 2/86 · by condensation between a hydrocarbon and a non-hydrocarbon
- C07C 2/88 · · {-Growth and elimination reactions (preparation of metallo-organic compounds [C07F](#))}
- U C07C 7/00 Purification; Separation; Use of additives (working-up undefined gaseous mixtures obtained by cracking hydrocarbon oils [C10G 70/00](#))**
- U C07C 7/148 · by treatment giving rise to a chemical modification of at least one compound
- NOTE**
In the following sub-groups contact masses and catalysts are disregarded for classification purposes
- C07C 7/14858 · · {-with inorganic compounds not provided for before (acids, sulfur oxides [C07C 7/17](#))}
- U C07C 17/00 Preparation of halogenated hydrocarbons**
- U C07C 17/26 · by reactions involving an increase in the number of carbon atoms in the skeleton
- U C07C 17/263 · · by condensation reactions
- C07C 17/2632 · · · {-involving an organo-magnesium compound, e.g. Grignard synthesis}
- C07C 17/2635 · · · {-involving a phosphorus compound, e.g. Wittig synthesis}
- C07C 17/2637 · · · {-between a compound containing only oxygen and possibly halogen as hetero-atoms and a halogenated hydrocarbon}
- U C07C 29/00 Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom not belonging to a six-membered aromatic ring**
- C07C 29/03 · by addition of hydroxy groups to unsaturated carbon-to-carbon bonds, e.g. with the aid of H₂O₂ (by simultaneous introduction of -OH groups and halogens [C07C 29/64](#))
- U C07C 31/00 Saturated compounds having hydroxy or O-metal groups bound to acyclic carbon atoms**
- U C07C 31/18 · Polyhydroxylic acyclic alcohols
- U C07C 31/20 · · Dihydroxylic alcohols
- C07C 31/202 · · · {-Ethylene glycol}
- C07C 31/205 · · · {-1,3-Propanediol; 1,2-Propanediol}
- C07C 31/207 · · · {-1,4-Butanediol; 1,3-Butanediol; 1,2-Butanediol; 2,3-Butanediol}
- U C07C 43/00 Ethers; Compounds having**  **groups,**  **groups or** 
- groups**
- U C07C 43/02 · Ethers
- U C07C 43/03 · · having all ether-oxygen atoms bound to acyclic carbon atoms
- U C07C 43/04 · · · Saturated ethers

- C07C 43/043 {Dimethyl ether}
- C07C 43/046 {-Alkyl tert-alkyl ether, e.g. CH₃OC(CH₃)₃}
- U C07C 43/12 containing halogen
- C07C 43/126 {-having more than one ether bond}
- U C07C 43/13 containing hydroxy or O-metal groups ([C07C 43/11](#) takes precedence)
- C07C 43/135 {-having more than one ether bond}
- U C07C 43/14 Unsaturated ethers
- U C07C 43/178 containing hydroxy or O-metal groups
- C07C 43/1787 {-containing six-membered aromatic rings and having unsaturation outside the aromatic rings}
- U C07C 43/20 having an ether-oxygen atom bound to a carbon atom of a six-membered aromatic ring
- U C07C 43/205 the aromatic ring being a non-condensed ring
- C07C 43/2055 {-containing more than one ether bond}

C07C 65/00

Compounds having carboxyl groups bound to carbon atoms of six-membered aromatic rings and containing any of the groups OH, O-metal, -CHO, keto, ether,



groups (cyclic anhydrides [C07D](#))

U C07C 407/00**Preparation of peroxy compounds**

- U C07C 407/003 . {Separation; Purification; Stabilisation; Use of additives}
- C07C 407/006 . . {-Stabilisation; Use of additives}

Project: N/A (C07D)**U C07D 201/00****Preparation, separation, purification or stabilisation of unsubstituted lactams**

- C07D 201/16 . Separation or purification (separation of inorganic salts [C01](#))

U C07D 211/00**Heterocyclic compounds containing hydrogenated pyridine rings, not condensed with other rings**NOTES

For the purpose of this group, the term "hydrogenated" means having less than three double bonds between ring members or between ring members and non-ring members;

Piperidines having only hydrogen atoms attached to the ring carbon atoms are classified in [C07D 295/00](#)

- U C07D 211/04 . with only hydrogen or carbon atoms directly attached to the ring nitrogen atom
- U C07D 211/06 . . having no double bonds between ring members or between ring members and non-ring members
- U C07D 211/08 . . . with hydrocarbon or substituted hydrocarbon radicals directly attached to ring carbon atoms
- U C07D 211/18 with substituted hydrocarbon radicals attached to ring carbon atoms
- C07D 211/20 with hydrocarbon radicals, substituted by singly bound oxygen or sulfur atoms (-bound to the same carbon atom [C07D 211/30-](#))

- U C07D 211/36
- • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 211/56
- • • • Nitrogen atoms (-nitro radicals [C07D 211/38-](#))
- U C07D 213/00** **Heterocyclic compounds containing six-membered rings, not condensed with other rings, with one nitrogen atom as the only ring hetero atom and three or more double bonds between ring members or between ring members and non-ring members**
- U C07D 213/02
- having three double bonds between ring members or between ring members and non-ring members
- U C07D 213/04
- • having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen or carbon atoms directly attached to the ring nitrogen atom
- U C07D 213/24
- • • with substituted hydrocarbon radicals attached to ring carbon atoms
- C07D 213/28
- • • • Radicals substituted by singly-bound oxygen or sulfur atoms (-bound to the same carbon atom [C07D 213/44-](#))
- C07D 213/36
- • • • Radicals substituted by singly-bound nitrogen atoms (-nitro radicals [C07D 213/26-](#))
- C07D 213/42
- • • • • having hetero atoms attached to the substituent nitrogen atom (-nitro radicals [C07D 213/26-](#))
- U C07D 213/60
- • • with heteroatoms or with carbon atoms having three bonds to hetero atoms, with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 213/72
- • • • Nitrogen atoms (-nitro radicals [C07D 213/61-](#))
- C07D 213/76
- • • • • to which a second hetero atom is attached (-nitro radicals [C07D 213/61-](#))
- U C07D 215/00** **Heterocyclic compounds containing quinoline or hydrogenated quinoline ring systems**
- U C07D 215/02
- having no bond between the ring nitrogen atom and a non-ring member or having only hydrogen atoms or carbon atoms directly attached to the ring nitrogen atom
- U C07D 215/16
- • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 215/20
- • • Oxygen atoms (-quinophthalones [C09B 25/00-](#))
- C07D 215/36
- • • Sulfur atoms (-[C07D 215/24](#) takes precedence-)
- C07D 215/38
- • • Nitrogen atoms (-nitro radicals [C07D 215/18-](#))
- U C07D 219/00** **Heterocyclic compounds containing acridine or hydrogenated acridine ring systems**
- U C07D 219/04
- with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to carbon atoms of the ring system
- C07D 219/08
- • Nitrogen atoms (-acridine dyes [C09B 15/00-](#))
- C07D 221/00** **Heterocyclic compounds containing six-membered rings having one nitrogen atom as the only ring hetero atom, not provided for by groups [C07D 211/00](#) to [C07D 219/00](#)**
- U C07D 221/02
- condensed with carbocyclic rings or ring systems
- U C07D 221/04
- • ortho- or peri-condensed ring systems
- U C07D 221/06
- • • Ring systems of three rings

- C07D 221/08 Aza-anthracenes (-acridine [C07D 219/00-](#))
- U C07D 223/00 Heterocyclic compounds containing seven-membered rings having one nitrogen atom as the only ring hetero atom**
- NOTE
Hexamethylene imines or 3-aza-bicyclo [3.2.2] nonanes, having only hydrogen atoms attached to the ring carbon atoms, are classified in [C07D 295/00](#)
- U C07D 223/02 . not condensed with other rings
- C07D 223/06 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms (-halogen atoms [C07D 223/04-](#))
- C07D 227/00 Heterocyclic compounds containing rings having one nitrogen atom as the only ring hetero atom, according to more than one of groups [C07D 203/00](#) to [C07D 225/00](#)**
- NOTE
Polymethyleneimines with at least five ring members and having only hydrogen atoms attached to the ring carbon atoms are classified in group [C07D 295/00](#)
- U C07D 231/00 Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings**
- U C07D 231/02 . not condensed with other rings
- U C07D 231/10 . . having two or three double bonds between ring members or between ring members and non-ring members
- U C07D 231/14 . . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 231/38 . . . Nitrogen atoms (-nitro radicals [C07D 231/16-](#))
- U C07D 233/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, not condensed with other rings**
- U C07D 233/54 . having two double bonds between ring members or between ring members and non-ring members
- U C07D 233/56 . . with only hydrogen atoms or radicals containing only hydrogen and carbon atoms, attached to ring carbon atoms
- C07D 233/62 . . . with triarylmethyl radicals attached to ring nitrogen atoms (-triarylmethane dyes [C09B 11/26-](#))
- U C07D 233/66 . . with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 233/88 . . . Nitrogen atoms, e.g. allantoin (-nitro radicals [C07D 233/91-](#))
- U C07D 235/00 Heterocyclic compounds containing 1,3-diazole or hydrogenated 1,3-diazole rings, condensed with other rings**
- U C07D 235/02 . condensed with carbocyclic rings or ring systems
- U C07D 235/04 . . Benzimidazoles; Hydrogenated benzimidazoles
- U C07D 235/06 . . . with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached in position 2
- C07D 235/14 . . . Radicals substituted by nitrogen atoms (-by nitro radicals [C07D 235/10-](#))
- C07D 235/22 . . . with hetero atoms directly attached to ring nitrogen atoms (-[C07D 235/10](#) takes precedence-)

- U C07D 237/00 Heterocyclic compounds containing 1,2-diazine or hydrogenated 1,2-diazine rings**
- U C07D 237/02 · not condensed with other rings
 - U C07D 237/06 · · having three double bonds between ring members or between ring members and non-ring members
 - U C07D 237/10 · · · with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
 - C07D 237/20 · · · · Nitrogen atoms (-nitro radicals [C07D 237/12-](#))
- U C07D 239/00 Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings**
- U C07D 239/02 · not condensed with other rings
 - U C07D 239/24 · · having three or more double bonds between ring members or between ring members and non-ring members
 - U C07D 239/28 · · · with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms
 - U C07D 239/32 · · · · One oxygen, sulfur or nitrogen atom
 - C07D 239/42 · · · · · One nitrogen atom (-nitro radicals [C07D 239/30](#) ; benzenesulfonamido-pyrimidines [C07D 239/69-](#))
 - C07D 239/46 · · · · · Two or more oxygen, sulfur or nitrogen atoms (-benzenesulfonamido-pyrimidines [C07D 239/69-](#))
- U C07D 241/00 Heterocyclic compounds containing 1,4-diazine or hydrogenated 1,4-diazine rings**
- NOTE
Piperazines with only hydrogen atoms directly attached to ring carbon atoms are classified in group [C07D 295/00](#)
- U C07D 241/02 · not condensed with other rings
 - U C07D 241/10 · · having three double bonds between ring members or between ring members and non-ring members
 - U C07D 241/14 · · · with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
 - C07D 241/20 · · · · Nitrogen atoms (-nitro radicals [C07D 241/16-](#))
- C07D 247/00 Heterocyclic compounds containing rings having two nitrogen atoms as the only ring hetero atoms, according to more than one of groups [C07D 229/00](#) to [C07D 245/00](#)**
- U C07D 251/00 Heterocyclic compounds containing 1,3,5-triazine rings**
- U C07D 251/02 · not condensed with other rings
 - U C07D 251/12 · · having three double bonds between ring members or between ring members and non-ring members
 - U C07D 251/26 · · · with only hetero atoms directly attached to ring carbon atoms
 - U C07D 251/40 · · · · Nitrogen atoms
 - U C07D 251/54 · · · · · Three nitrogen atoms
 - C07D 251/64 · · · · · Condensation products of melamine with aldehydes; Derivatives thereof (-polycondensation products [C08G-](#))

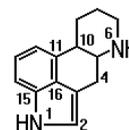
- C07D 253/00** Heterocyclic compounds containing six-membered rings having three nitrogen atoms as the only ring hetero atoms, not provided for by group [C07D 251/00](#)
- C07D 255/00** Heterocyclic compounds containing rings having three nitrogen atoms as the only ring hetero atoms, not provided for by groups [C07D 249/00](#) to [C07D 253/00](#)
- C07D 269/00** Heterocyclic compounds containing rings having one nitrogen atom and one oxygen atom as the only ring hetero atoms according to more than one of groups [C07D 261/00](#) to [C07D 267/00](#)
- C07D 273/00** Heterocyclic compounds containing rings having nitrogen and oxygen atoms as the only ring hetero atoms, not provided for by groups [C07D 261/00](#) to [C07D 271/00](#)
- U C07D 277/00** Heterocyclic compounds containing 1,3-thiazole or hydrogenated 1,3-thiazole rings
- U C07D 277/02 · not condensed with other rings
- U C07D 277/20 · · having two or three double bonds between ring members or between ring members and non-ring members
- U C07D 277/32 · · · with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- U C07D 277/38 · · · · Nitrogen atoms
- C07D 277/50 · · · · Nitrogen atoms bound to hetero atoms (-nitro radicals [C07D 277/58-](#))
- C07D 283/00** Heterocyclic compounds containing rings having one nitrogen atom and one sulfur atom as the only ring hetero atoms, according to more than one of groups [C07D 275/00](#) to [C07D 281/00](#)
- C07D 285/00** Heterocyclic compounds containing rings having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by groups [C07D 275/00](#) to [C07D 283/00](#)
- U C07D 295/00** Heterocyclic compounds containing polymethylene-imine rings with at least five ring members, 3-azabicyclo [3.2.2.] nonane, piperazine, morpholine or thiomorpholine rings, having only hydrogen atoms directly attached to the ring carbon atoms
- U C07D 295/04 · with substituted hydrocarbon radicals attached to ring nitrogen atoms
- C07D 295/10 · · substituted by doubly bound oxygen or sulfur atoms (-acylated ring nitrogen atoms [C07D 295/16-](#))
- C07D 295/12 · · substituted by singly or doubly bound nitrogen atoms (-nitro radicals [C07D 295/06-](#))
- U C07D 301/00** **Preparation of oxiranes**
- U C07D 301/02 · Synthesis of the oxirane ring
- C07D 301/22 · · by oxidation of the saturated compounds with air or molecular oxygen (-of mixtures of unsaturated compounds [C07D 301/04-](#))
- C07D 301/27 · Condensation of epihalohydrins or halohydrins with compounds containing active hydrogen atoms (macromolecular compounds [C08](#))
- U C07D 303/00** **Compounds containing three-membered rings having one oxygen atom as the only ring heteroatom**
- U C07D 303/02 · Compounds containing oxirane rings

- U C07D 303/08
- with hydrocarbon radicals, substituted by halogen atoms, nitro radicals or nitroso radicals
- C07D 303/10
- in which the oxirane rings are condensed with a carbocyclic ring system having three or more relevant rings (-steroids [C07J-](#))
- C07D 303/36
- with hydrocarbon radicals substituted by nitrogen atoms (-nitro, nitroso radicals [C07D 303/08-](#))
- U C07D 307/00** **Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom**
- U C07D 307/02
- not condensed with other rings
- U C07D 307/34
- having two or three double bonds between ring members or between ring members and non-ring members
- U C07D 307/38
- with substituted hydrocarbon radicals attached to ring carbon atoms
- U C07D 307/40
- Radicals substituted by oxygen atoms
- C07D 307/42
- Singly bound oxygen atoms (-two oxygen atoms bound to the same carbon atom [C07D 307/46-](#))
- U C07D 307/56
- with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 307/66
- Nitrogen atoms (-nitro radicals [C07D 307/70-](#))
- U C07D 309/00** **Heterocyclic compounds containing six-membered rings having one oxygen atom as the only ring hetero atom, not condensed with other rings**
- U C07D 309/02
- having no double bonds between ring members or between ring members and non-ring members
- U C07D 309/08
- with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- C07D 309/14
- Nitrogen atoms not forming part of a nitro radical { nitro radical [C07D 309/08-](#) }
- U C07D 311/00** **Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings**
- U C07D 311/02
- ortho- or peri-condensed with carbocyclic rings or ring systems
- U C07D 311/04
- Benzo[b]pyrans, not hydrogenated in the carbocyclic ring
- U C07D 311/06
- with oxygen or sulfur atoms directly attached in position 2
- U C07D 311/08
- not hydrogenated in the hetero ring
- C07D 311/18
- substituted otherwise than in position 3 or 7 (-substituted in position 4 by oxygen or sulfur [C07D 311/42-](#))
- C07D 315/00** **Heterocyclic compounds containing rings having one oxygen atom as the only ring hetero atom according to more than one of groups [C07D 303/00](#) to [C07D 313/00](#)**
- U C07D 317/00** **Heterocyclic compounds containing five-membered rings having two oxygen atoms as the only ring hetero atoms**
- U C07D 317/08
- having the hetero atoms in positions 1 and 3
- U C07D 317/10
- not condensed with other rings
- U C07D 317/14
- with substituted hydrocarbon radicals attached to ring carbon atoms
- C07D 317/28
- Radicals substituted by nitrogen atoms (-by nitro radicals [C07D 317/16-](#))
- U C07D 317/44
- ortho- or peri-condensed with carbocyclic rings or ring systems
- U C07D 317/46
- condensed with one six-membered ring

- U C07D 317/48 · · · · Methyleneedioxybenzenes or hydrogenated methyleneedioxybenzenes unsubstituted on the hetero ring
- U C07D 317/50 · · · · · with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to atoms of the carbocyclic ring
- C07D 317/58 · · · · · Radicals substituted by nitrogen atoms (-by nitro radicals [C07D 317/52-](#))
- C07D 321/00** **Heterocyclic compounds containing rings having two oxygen atoms as the only ring hetero atoms, not provided for by groups [C07D 317/00](#) to [C07D 319/00](#)**
- C07D 325/00** **Heterocyclic compounds containing rings having oxygen as the only ring hetero atoms according to more than one of the main groups [C07D 303/00](#) to [C07D 323/00](#)**
- U C07D 333/00** **Heterocyclic compounds containing five-membered rings having one sulfur atom as the only ring hetero atom**
- U C07D 333/02 · not condensed with other rings
- U C07D 333/04 · · not substituted on the ring sulfur
- U C07D 333/06 · · · with only hydrogen atoms, hydrocarbon or substituted hydrocarbon radicals, directly attached to the ring carbon atoms
- U C07D 333/14 · · · · Radicals substituted by singly bound hetero atoms other than halogen
- C07D 333/20 · · · · · by nitrogen atoms (-nitro, nitroso radicals [C07D 333/12-](#))
- U C07D 333/26 · · · with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- U C07D 333/30 · · · · Hetero atoms other than halogen
- C07D 333/36 · · · · · Nitrogen atoms (-nitro, nitroso radicals [C07D 333/42-](#))
- C07D 403/00** **Heterocyclic compounds containing two or more hetero rings, having nitrogen atoms as the only ring hetero atoms, not provided for by group [C07D 401/00](#)**
- C07D 407/00** **Heterocyclic compounds containing two or more hetero rings, at least one ring having oxygen atoms as the only ring hetero atoms, not provided for by group [C07D 405/00](#)**
- C07D 417/00** **Heterocyclic compounds containing two or more hetero rings, at least one ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for by group [C07D 415/00](#)**

C07D 451/00 - C07D 521/00 **Heterocyclic compounds containing condensed hetero ring systems** [C07D 451/00 - C07D 517/00](#) cover compounds containing one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system, with or without other non-condensed hetero rings. For the purpose of classification in groups [C07D 451/00 - C07D 519/00](#), the degree of hydrogenation of the ring system is not taken into consideration. For the purpose of classification in groups [C07D 451/00 - C07D 463/00](#), [C07D 473/00 - C07D 477/00](#), [C07D 489/00](#), [C07D 499/00 - C07D 507/00](#), the wording of the groups has to be understood, in the absence of an indication to the contrary, as including ring systems further condensed with carbocyclic rings or ring systems, but excluding ring systems further condensed with other hetero rings, either directly or through a common carbocyclic ring system, e.g. sparteine is classified in group [C07D 471/22](#), not in group [C07D 455/02](#). In groups [C07D 471/00](#), [C07D 487/00](#), [C07D 491/00 - C07D 498/00](#) or [C07D 513/00 - C07D 517/00](#), the subdivision is based on the number of relevant hetero rings.

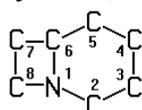
C07D 457/00 Heterocyclic compounds containing indolo [4, 3-f, g] quinoline ring systems, e.g. derivatives of ergoline, of the formula:



lysergic acid (-compounds of the cyclic peptide type derived from ergotamine [C07D 519/02](#)-)

C07D 461/00 Heterocyclic compounds containing indolo [3,2,1-d,e] pyrido [3,2,1,j] [1,5]-naphthyridine ring systems, e.g. vincamine (-dimeric indolo alkaloids [C07D 519/04](#)-)

C07D 463/00 Heterocyclic compounds containing 1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:



, e.g. carbacephalosporins; Such ring systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

WARNING

The IPC subgroups of [C07D 463/00](#), introduced in the CPC scheme in October 2007, might be temporarily incomplete as a number of documents presently classified in CPC subgroups of [C07D 463/00](#) still needs reclassification to these IPC subgroups

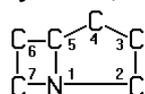
C07D 463/02 - Preparation (-by microbiological processes [C12P 17/18](#)-)

C07D 471/00 Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, at least one ring being a six-membered ring with one nitrogen atom, not provided for by groups [C07D 451/00](#) to [C07D 463/00](#)

U **C07D 471/02** - in which the condensed system contains two hetero rings

C07D 471/04 - Ortho-condensed systems (-carbacephalosporins [C07D 463/00](#)-)

C07D 477/00 Heterocyclic compounds containing 1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:



, carbapenicillins, thienamycins-; Such ring systems being

further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

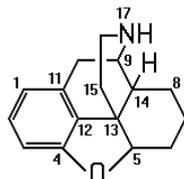
C07D 477/02 • Preparation (-by microbiological processes [C12P 17/18](#)-)

C07D 487/00 Heterocyclic compounds containing nitrogen atoms as the only ring hetero atoms in the condensed system, not provided for by [C07D 451/00](#) to [C07D 477/00](#)

U C07D 487/02 • in which the condensed system contains two hetero rings

C07D 487/04 • • Ortho-condensed systems (-carbapenam, e.g. thienamycins, [C07D 477/00](#)-)

C07D 489/00 Heterocyclic compounds containing 4aH-8, 9 c- lminoethano-phenanthro [4, 5-b, c, d] furan ring systems, e.g. derivatives of [4, 5-epoxy]-morphinan of the formula:



C07D 491/00 Heterocyclic compounds containing in the condensed ring system both one or more rings having oxygen atoms as the only ring hetero atoms and one or more rings having nitrogen atoms as the only ring hetero atoms, not provided for by groups [C07D 451/00](#) to [C07D 459/00](#) , [C07D 463/00](#) , [C07D 477/00](#) or [C07D 489/00](#)

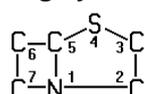
U C07D 491/12 • in which the condensed system contains three hetero rings

C07D 491/14 • • Ortho-condensed systems (-alkylenedioxy derivatives of dibenzo [a, g] quinolizines, e.g. berberine, [C07D 455/03](#)-)

C07D 491/18 • • Bridged systems (-3-oxa-9-azatricyclo [3.3.1.0<2,4>] nonane ring systems, e.g. scopolamine, [C07D 451/00](#)-)

C07D 498/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and oxygen atoms as the only ring hetero atoms (-4-oxa-1-azabicyclo [3.2.0] heptanes, e.g. oxapenicillins [C07D 503/00](#) ; 5-oxa-1-azabicyclo [4.2.0] octanes, e.g. oxacephalosporins [C07D 505/00](#) ; analogues thereof having ring oxygen atoms in other position [C07D 507/00](#)-)

C07D 499/00 Heterocyclic compounds containing 4-thia-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:



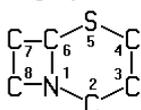
, e.g. penicillins, penems-; Such ring systems being further

condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

U C07D 499/04 • Preparation

C07D 499/06 • • by forming the ring or condensed ring systems (-by microbiological processes [C12P 37/00](#)-)

C07D 501/00 Heterocyclic compounds containing 5-thia-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:

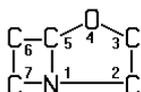


, e.g. cephalosporins-; Such ring systems being further

condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

- U C07D 501/02 · Preparation
- C07D 501/08 · · by forming the ring or condensed ring systems (-by microbiological processes [C12P 35/00-](#))
- U C07D 501/14 · Compounds having a nitrogen atom directly attached in position 7
- U C07D 501/16 · · with a double bond between positions 2 and 3
- U C07D 501/20 · · · 7-Acylaminocephalosporanic or substituted 7-acylaminocephalosporanic acids in which the acyl radicals are derived from carboxylic acids
- U C07D 501/24 · · · · with hydrocarbon radicals, substituted by hetero atoms or hetero rings, attached in position 3
- C07D 501/48 · · · · · Methylene radicals, substituted by hetero rings (-[C07D 501/38](#) to [C07D 501/46](#) take precedence-)

C07D 503/00 Heterocyclic compounds containing 4-oxa-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula:

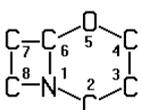


, e.g. oxapenicillins, clavulanic acid derivatives-; Such ring

systems being further condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

- C07D 503/02 · Preparation (-by microbiological processes [C12P 17/18-](#))

C07D 505/00 Heterocyclic compounds containing 5-oxa-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:



, e.g. oxacephalosporins-; Such ring systems being further

condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring

- C07D 505/02 · Preparation (-by microbiological processes [C12P 17/18-](#))

C07D 507/00 Heterocyclic compounds containing a condensed beta-lactam ring system, not provided for by groups [C07D 463/00](#) , [C07D 477/00](#) or [C07D 499/00](#) to [C07D 505/00](#)-; Such ring systems being further condensed

C07D 513/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for in groups [C07D 463/00](#) , [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#)

C07D 515/00 Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms, not provided for in groups [C07D 463/00](#) , [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#)

C07D 519/00 Heterocyclic compounds containing more than one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system not provided for in groups [C07D 453/00](#) or [C07D 455/00](#)

- C07D 519/06
- containing at least one condensed beta-lactam ring system, provided for by groups [C07D 463/00](#), [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#), e.g. a penem or a cepham system

Project: N/A (C07F)**U C07F 7/00****Compounds containing elements of the 4th Group of the Periodic System**

- U C07F 7/02
 - Silicon compounds
- U C07F 7/08
 - • Compounds having one or more C-Si linkages
- U C07F 7/0834
 - • • {Compounds having one or more O-Si linkage (for compounds with C-O-Si linkages see [C07F 7/18](#))}
- U C07F 7/0838
 - • • • {Compounds with one or more Si-O-Si sequences}
- U C07F 7/0872
 - • • • • {Preparation and treatment thereof}
- U C07F 7/0876
 - • • • • {Reactions involving the formation of bonds to a Si atom of a Si-O-Si sequence other than a bond of the Si-O-Si linkage}
- C07F 7/0885
 - • • • • • {Si-OX bond (X = C or H)}

U C07F 9/00**Compounds containing elements of the 5th Group of the Periodic System**

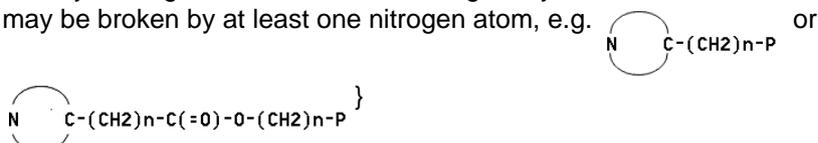
- U C07F 9/02
 - Phosphorus compounds (sugar phosphates [C07H 11/04](#); nucleotides [C07H 19/00](#), [C07H 21/00](#); nucleic acids [C07H 21/00](#))
- U C07F 9/06
 - • without P-C bonds
- U C07F 9/062
 - • • {Organo-phosphoranes without P-C bonds}
- C07F 9/065
 - • • • {-Phosphoranes containing the structure P=N-}
- C07F 9/067
 - • • • • {-Polyphosphazenes containing the structure [P=N-]n (cyclic compounds [C07F 9/65812](#))}
- U C07F 9/08
 - • • Esters of oxyacids of phosphorus {([C07F 9/062](#) takes precedence)}
- U C07F 9/09
 - • • • Esters of phosphoric acids
- C07F 9/091
 - • • • • {-with hydroxyalkyl compounds with further substituents on alkyl}
- C07F 9/095
 - • • • • {-Compounds containing the structure P(=O)-O-acyl, P(=O)-O-heteroatom, P(=O)-O-CN}
- C07F 9/096
 - • • • • • {-Compounds containing the structure P(=O)-O-C(=X)- (X = O, S, Se)}
- C07F 9/097
 - • • • • • {-Compounds containing the structure P(=O)-O-N}
- U C07F 9/14
 - • • • • containing P(=O)-halide groups
- C07F 9/1403
 - • • • • • {-containing the structure Hal-P(=O)-O-unsaturated acyclic rest}
- C07F 9/1406
 - • • • • • {-containing the structure Hal-P(=O)-O-aryl}
- U C07F 9/141
 - • • • Esters of phosphorous acids
- C07F 9/1411
 - • • • • {-with hydroxyalkyl compounds with further substituents on alkyl}
- C07F 9/1415
 - • • • • • {-Compounds containing the structure P-O-acyl, P-O-heteroatom, P-O-CN}
- C07F 9/1417
 - • • • • • • {-Compounds containing the structure P-O-C(=X)- (X = O, S, Se)}
- C07F 9/1418
 - • • • • • • {-Compounds containing the structure P-O-N}
- U C07F 9/16
 - • • Esters of thiophosphoric acids or thiophosphorous acids
- U C07F 9/165
 - • • • Esters of thiophosphoric acids
- C07F 9/1651
 - • • • • {-with hydroxyalkyl compounds with further substituents on alkyl}
- C07F 9/1654
 - • • • • • {-Compounds containing the structure P(=X)n-X-acyl, P(=X)n-X-heteroatom, P(=X)n-X-CN (X = O, S, Se; n = 0, 1)}
- C07F 9/1655
 - • • • • • • {-Compounds containing the structure P(=X)n-S(S)x- (X = O, S, Se; n=0,1; x>=1)}

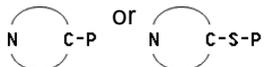
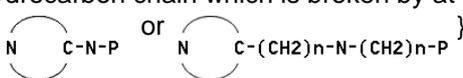
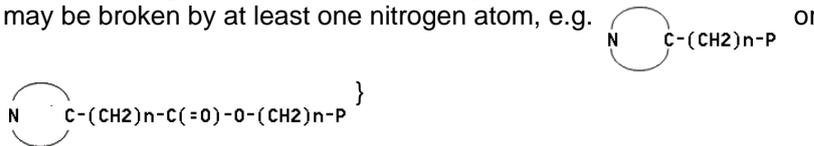
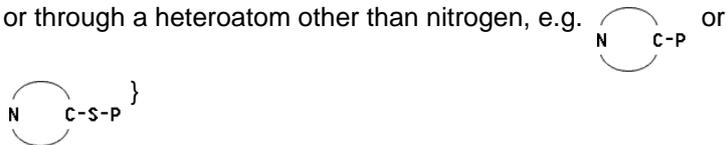
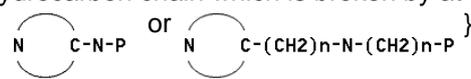
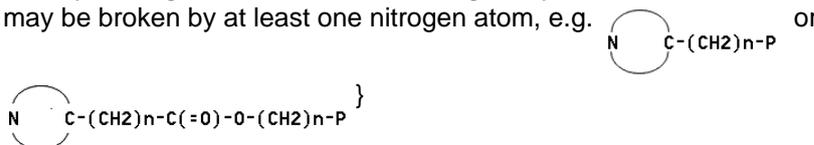
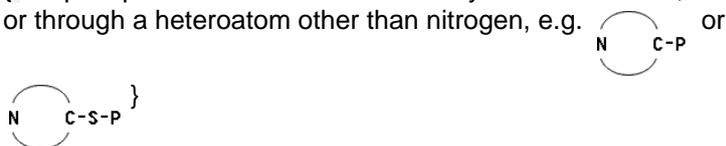
- C07F 9/1656 {-Compounds containing the structure P(=X)n-X-C(=X)- (X = O, S, Se; n = 0, 1)}
- C07F 9/1657 {-Compounds containing the structure P(=X)n-X-N (X = O, S, Se; n = 0, 1)}
- U C07F 9/201 Esters of thiophosphorus acids
- C07F 9/2015 {-with hydroxyalkyl compounds with further substituents on alkyl}
- U C07F 9/22 . . . Amides of acids of phosphorus
- C07F 9/228 {-containing the structure P-N-N, e.g. azides, hydrazides}
- U C07F 9/24 Esteramides
- U C07F 9/2404 {the ester moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/2408 {-of hydroxyalkyl compounds}
- C07F 9/242 {-of hydroxyaryl compounds}
- C07F 9/2425 {-containing the structure (RX)(RR'N)P(=Y)-Z-(C)n-Z'-P(=Y)(XR)2 (X = O, S, NR; Y = O, S, electron pair; Z = O, S; Z' = O, S)}
- C07F 9/2433 {-Compounds containing the structure N-P(=X)n-X-acyl, N-P(=X)n-X-heteroatom, N-P(=X)n-X-CN (X = O, S, Se; n = 0, 1)}
- C07F 9/2437 {-Compounds containing the structure N-P(=X)n-S-(S)x-(X = O, S, Se; n=0,1; x>=1)}
- C07F 9/2441 {-containing the structure N-P(=X)n-X-C(=X) (X = O, S, Se; n = 0, 1)}
- C07F 9/2445 {-containing the structure N-P(=X)n-X-N (X = O, S, Se; n = 0, 1)}
- C07F 9/245 {-containing the structure N-P(=X)n-X-P (X = O, S, Se; n = 0, 1)}
- U C07F 9/2454 {the amide moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/2458 {-of aliphatic amines}
- C07F 9/247 {-of aromatic amines (N-C aromatic linkage)}
- C07F 9/2479 {-Compounds containing the structure P(=X)n-N-acyl, P(=X)n-N-heteroatom, P(=X)n-N-CN (X = O, S, Se; n = 0, 1)}
- C07F 9/2483 {-containing the structure P(=X)n-N-S (X = O, S, Se; n = 0, 1)}
- C07F 9/2487 {-containing the structure P(=X)n-N-C(=X) (X = O, S, Se; n = 0, 1)}
- C07F 9/2491 {-containing the structure P(=X)n-N-N (X = O, S, Se; n = 0, 1)}
- C07F 9/2495 {-containing the structure P(=X)n-N-P (X = O, S, Se; n = 0, 1)}
- U C07F 9/28 . . . with one or more P-C bonds
- U C07F 9/30 . . . Phosphinic acids R2P(=O)(OH); Thiophosphinic acids { i.e. R2P(=X)(XH) (X = S, Se)}
- C07F 9/301 {-Acyclic saturated acids which can have further substituents on alkyl}
- C07F 9/302 {-Acyclic unsaturated acids}
- C07F 9/303 {-Cycloaliphatic acids}
- C07F 9/304 {-Aromatic acids (P-C aromatic linkage)}
- C07F 9/305 {-Poly(thio)phosphinic acids}
- C07F 9/306 {-Arylalkanephosphinic acids, e.g. Ar-(CH2)n-P(=X)(R)(XH), (X = O, S, Se; n>=1)}
- C07F 9/307 {-Acids containing the structure -C(=X)-P(=X)(R)(XH) or NC-P(=X)(R)(XH), (X = O, S, Se)}
- U C07F 9/32 Esters thereof

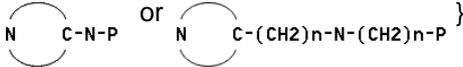
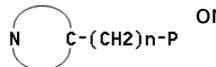
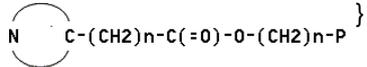
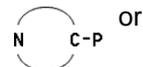
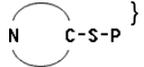
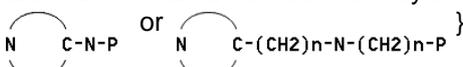
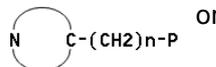
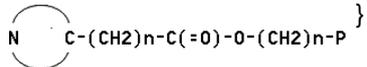
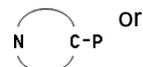
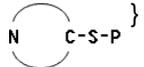
- U C07F 9/3205 {the acid moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/3211 {-Esters of acyclic saturated acids which can have further substituents on alkyl}
- C07F 9/3217 {-Esters of acyclic unsaturated acids}
- C07F 9/3229 {-Esters of aromatic acids (P-C aromatic linkage)}
- C07F 9/3241 {-Esters of arylalkanephosphonic acids}
- C07F 9/3247 {-Esters of acids containing the structure $-C(=X)-P(=X)(R)(XH)$ or $NC-P(=X)(R)(XH)$, (X = O, S, Se)}
- C07F 9/3252 {-containing the structure $-C(=X)-P(=X)(R)(XR)$, (X = O, S, Se)}
- U C07F 9/3258 {the ester moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/3264 {-Esters with hydroxyalkyl compounds}
- C07F 9/3282 {-Esters with hydroxyaryl compounds}
- C07F 9/3294 {-Compounds containing the structure $R_2P(=X)-X$ -acyl, $R_2P(=X)-X$ -heteroatom, $R_2P(=X)-X-CN$ (X = O, S, Se)}
- U C07F 9/38 Phosphonic acids $RP(=O)(OH)_2$; Thiophosphonic acids { i.e. $RP(=X)(XH)_2$ (X = S, Se)}
- U C07F 9/3804 {not used, see subgroups}
- C07F 9/3808 {-Acyclic saturated acids which can have further substituents on alkyl}
- C07F 9/3813 {-N-Phosphonomethylglycine; Salts or complexes thereof}
- C07F 9/3817 {-Acids containing the structure $(RX)_2P(=X)$ -alk-N...P (X = O, S, Se)}
- C07F 9/3826 {-Acyclic unsaturated acids}
- C07F 9/3834 {-Aromatic acids (P-C aromatic linkage)}
- C07F 9/3839 {-Polyphosphonic acids}
- C07F 9/3856 {-containing halogen or nitro(so) substituents}
- C07F 9/3873 {-containing nitrogen substituents e.g. N.....H or N-hydrocarbon rest which can be substituted by halogen or nitro(so), N.....O, N.....S, N.....C(=X)- (X = O, S) , N.....N, N...C(=X)...N (X = O, S)}
- C07F 9/3886 {-Acids containing the structure $-C(=X)-P(=X)(XH)_2$ or $NC-P(=X)(XH)_2$, (X = O, S, Se)}
- C07F 9/3891 {-Acids containing the structure $-C(=X)-P(=X)(XH)_2$, (X = O, S, Se)}
- U C07F 9/40 Esters thereof
- U C07F 9/4003 {the acid moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/4006 {-Esters of acyclic acids which can have further substituents on alkyl}
- C07F 9/4009 {-Esters containing the structure $(RX)_2P(=X)$ -alk-N...P (X = O, S, Se)}
- C07F 9/4015 {-Esters of acyclic unsaturated acids}
- C07F 9/4018 {-Esters of cycloaliphatic acids}
- U C07F 9/4025 {Esters of poly(thio)phosphonic acids}
- C07F 9/4037 {-containing halogen or nitro(so) substituents}
- C07F 9/405 {-containing nitrogen substituents e.g. N.....H or N-hydrocarbon rest which can be substituted by halogen or nitro(so), N.....O, N.....S, N.....C(=X)- (X = O, S) , N.....N, N...C(=X)...N (X = O, S)}
- C07F 9/4056 {-Esters of arylalkanephosphonic acids ([C07F 9/4025](#) takes precedence)}

- C07F 9/4062 {-Esters of acids containing the structure $-C(=X)-P(=X)(XR)_2$ or $NC-P(=X)(XR)_2$, (X = O, S, Se)}
- C07F 9/4065 {-Esters of acids containing the structure $-C(=X)-P(=X)(XR)_2$, (X = O, S, Se)}
- C07F 9/4068 {-Esters of pyrophosphonic acids; Esters of phosphonic acid anhydrides}
- U C07F 9/4071 {the ester moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/4075 {-Esters with hydroxyalkyl compounds}
- C07F 9/4078 {-Esters with unsaturated acyclic alcohols}
- C07F 9/4084 {-Esters with hydroxyaryl compounds}
- C07F 9/409 {-Compounds containing the structure $P(=X)-X$ -acyl, $P(=X)-X$ -heteroatom, $P(=X)-X-CN$ (X = O, S, Se)}
- C07F 9/4093 {-Compounds containing the structure $P(=X)-X-C(=X)-$ (X = O, S, Se)}
- C07F 9/4096 {-Compounds containing the structure $P(=X)-X-N$ (X = O, S, Se)}
- U C07F 9/44 Amides thereof
- U C07F 9/4403 {the acid moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/4407 {-Amides of acyclic saturated acids which can have further substituents on alkyl}
- C07F 9/443 {-Amides of acids containing the structure $-C(=Y)-P(=X)(XR)-N$ or $NC-(P(=X)(XR)-N)$ }
- U C07F 9/4434 {the ester moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/4438 {-Ester with hydroxyalkyl compounds}
- C07F 9/4457 {-Compounds containing the structure $C-P(=X)(X$ -acyl)-N, $C-P(=X)(X$ -heteroatom)-N or $C-P(=X)(X-CN)-N$ (X, Y = O, S)}
- U C07F 9/4461 {the amide moiety containing a substituent or a structure which is considered as characteristic}
- C07F 9/4465 {-of aliphatic amines}
- C07F 9/4484 {-Compounds containing the structure $C-P(=X)(N$ -acyl)-X, $C-P(=X)(N$ -heteroatom)-X or $C-P(=X)(N-CN)-X$ (X = O, S, Se)}
- C07F 9/4488 {-Compounds containing the structure $P(=X)(N-S-)$ (X = O, S, Se)}
- C07F 9/4492 {-Compounds containing the structure $P(=X)(N-C(=X)-)$ (X = O, S, Se)}
- C07F 9/4496 {-Compounds containing the structure $P(=X)(N-N-)$ (X = O, S, Se)}
- U C07F 9/48 Phosphonous acids $RP(OH)_2$; Thiophosphonous acids { including $RHP(=O)(OH)$; Derivatives thereof}
- U C07F 9/4808 {the acid moiety containing a substituent or structure which is considered as characteristic}
- C07F 9/4816 {-Acyclic saturated acids or derivatives which can have further substituents on alkyl}
- C07F 9/4841 {-Aromatic acids or derivatives (P-C aromatic linkage)}
- C07F 9/4858 {-Acids or derivatives containing the structure $-C(=X)-P(XR)_2$ or $NC-P(XR)_2$ (X = O, S, Se)}
- C07F 9/4891 {-Monohalide derivatives $RP(XR')$ (Hal) (X = O, S, N) (dihalide derivatives [C07F 9/52](#))}
- U C07F 9/50 Organo-phosphines

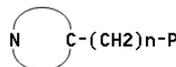
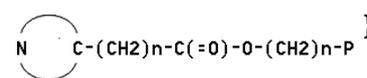
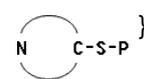
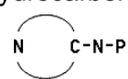
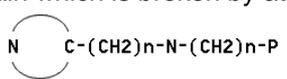
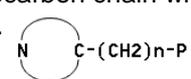
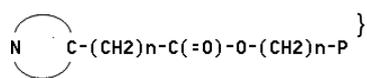
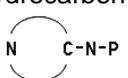
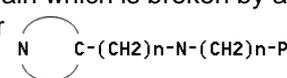
- C07F 9/5004 {-Acyclic saturated phosphines}
- C07F 9/5022 {-Aromatic phosphines (P-C aromatic linkage)}
- C07F 9/5027 {-Polyphosphines}
- C07F 9/5036 {-Phosphines containing the structure -C(=X)-P or NC-P}
- U C07F 9/505 {Preparation; Separation; Purification; Stabilisation}
- C07F 9/5063 {-from compounds having the structure P-H or P-Heteroatom, in which one or more of such bonds are converted into P-C bonds}(C07F 9/5059 takes precedence)
- C07F 9/5072 {-from starting materials having the structure P-H}(C07F 9/5059 takes precedence)
- C07F 9/5077 {-from starting materials having the structure P-Metal, including R₂P-M+}
- U C07F 9/53 Organo-phosphine oxides; Organo-phosphine thioxides
- C07F 9/5304 {-Acyclic saturated phosphine oxides or thioxides}
- C07F 9/5325 {-Aromatic phosphine oxides or thioxides (P-C aromatic linkage)}
- C07F 9/5329 {-Polyphosphine oxides or thioxides}
- C07F 9/5337 {-Phosphine oxides or thioxides containing the structure -C(=X)-P(=X) or NC-P(=X) (X = O, S, Se)}
- U C07F 9/535 Organo-phosphoranes
- C07F 9/5352 {-Phosphoranes containing the structure P=C-}
- C07F 9/5355 {-Phosphoranes containing the structure P=N-}
- C07F 9/5357 {-Polyphosphazenes containing the structure [P=N-]n (cyclic compounds C07F 9/65812)}
- U C07F 9/54 Quarternary phosphonium compounds
- C07F 9/5407 {-Acyclic saturated phosphonium compounds}
- C07F 9/5442 {-Aromatic phosphonium compounds (P-C aromatic linkage)}
- C07F 9/5449 {-Polyphosphonium compounds}
- C07F 9/5463 {-Compounds of the type "quasi-phosphonium" e.g. (C)_a-P-(Y)_b wherein a +b=4, b>=1 and Y=heteroatom, generally N or O}
- U C07F 9/547 Heterocyclic compounds, e.g. containing phosphorus as a ring hetero atom
- U C07F 9/553 having one nitrogen atom as the only ring hetero atom
- C07F 9/5537 {-the heteroring containing the structure -C(=O)-N-C(=O)- (both carbon atoms belong to the heteroring)}
- U C07F 9/568 Four-membered rings
- C07F 9/5683 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- U C07F 9/572 Five-membered rings
- C07F 9/5721 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/5722 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g.

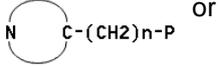
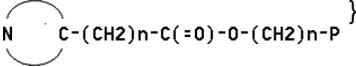
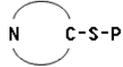
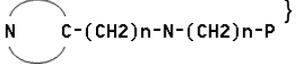


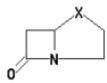
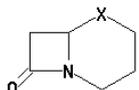
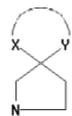
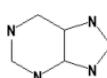
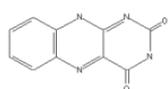
- C07F 9/5723 {the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g.  }
- C07F 9/5725 {-bonded through a heteroatom}
- C07F 9/5726 {-directly bonded}
- C07F 9/5727 {the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g.  }
- C07F 9/5728 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/576 Six-membered rings
- C07F 9/5765 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/58 Pyridine rings
- C07F 9/581 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/582 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g.  }
- C07F 9/584 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g.  }
- C07F 9/585 {-bonded through a heteroatom}
- C07F 9/587 {-directly bonded}
- C07F 9/588 {-the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g.  }
- U C07F 9/59 Hydrogenated pyridine rings
- C07F 9/591 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/592 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g.  }
- C07F 9/594 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g.  }
- C07F 9/595 {-bonded through a heteroatom}

- C07F 9/597 {-directly bonded}
- C07F 9/598 {-the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g. 
- U C07F 9/645 . . . having two nitrogen atoms as the only ring hetero atoms
- U C07F 9/6503 Five-membered rings
- U C07F 9/65031 {-having the nitrogen atoms in the positions 1 and 2}
- C07F 9/65032 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/65033 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g. 
- 
- C07F 9/65034 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g. 
- 
- C07F 9/65035 {-bonded through a heteroatom}
- C07F 9/65036 {-directly bonded}
- C07F 9/65037 {-the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g. 
- C07F 9/65038 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6506 having the nitrogen atoms in positions 1 and 3
- C07F 9/65061 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/65062 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g. 
- 
- C07F 9/65063 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g. 
- 
- C07F 9/65065 {-bonded through a heteroatom}
- C07F 9/65066 {-directly bonded}

- C07F 9/65067 {the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g. or }
- C07F 9/65068 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6509 Six-membered rings
- U C07F 9/650905 {having the nitrogen atoms in the positions 1 and 2}
- C07F 9/650911 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/650917 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g. or }
- C07F 9/650923 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g. or }
- C07F 9/650929 {-bonded through a heteroatom}
- C07F 9/650935 {-directly bonded}
- C07F 9/650941 {-the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g. or }
- C07F 9/650947 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/650952 {having the nitrogen atoms in the position 1 and 4}
- C07F 9/650958 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/650964 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g. or }
- C07F 9/65097 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g. or }
- C07F 9/650976 {-bonded through a heteroatom}
- C07F 9/650982 {-directly bonded}
- C07F 9/650988 {-the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g. or }

- C07F 9/650994 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6512 having the nitrogen atoms in positions 1 and 3
- C07F 9/65121 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/65122 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g.  or 
- C07F 9/65123 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g.  or 
- C07F 9/65125 {-bonded through a heteroatom}
- C07F 9/65126 {-directly bonded}
- C07F 9/65127 {-the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g.  or 
- C07F 9/65128 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6515 having three nitrogen atoms as the only ring hetero atoms
- U C07F 9/6518 Five-membered rings
- C07F 9/65181 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}
- C07F 9/65182 {-the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g.  or 
- C07F 9/65183 {-the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g.  or 
- C07F 9/65185 {-bonded through a heteroatom}
- C07F 9/65186 {-directly bonded}
- C07F 9/65187 {-the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g.  or 
- C07F 9/65188 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6521 Six-membered rings
- C07F 9/65211 {-the phosphorus atom is bonded to a cyclic nitrogen atom, directly, through one or more heteroatoms or through a hydrocarbon chain which may be broken by one or more heteroatoms}

- C07F 9/65212 {the phosphorus atom is bonded to a cyclic carbon atom, other than directly, through a heteroatom, or through a hydrocarbon chain which may be broken by at least one nitrogen atom, e.g.  or 
- C07F 9/65213 {the phosphorus atom is bonded to a cyclic carbon atom, directly or through a heteroatom other than nitrogen, e.g.  or 
- C07F 9/65215 {-bonded through a heteroatom}
- C07F 9/65216 {-directly bonded}
- C07F 9/65217 {the phosphorus atom is bonded to a cyclic carbon atom, through a nitrogen atom or through a hydrocarbon chain which is broken by at least one nitrogen atom, e.g.  or 
- C07F 9/65218 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6527 . . . having nitrogen and oxygen atoms as the only ring hetero atoms
- U C07F 9/653 Five-membered rings
- C07F 9/65306 {-containing two nitrogen atoms}
- C07F 9/65312 {-having the two nitrogen atoms in positions 1 and 2}
- C07F 9/65318 {-having the two nitrogen atoms in positions 1 and 3}
- C07F 9/65324 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6533 Six-membered rings
- C07F 9/65335 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6536 . . . having nitrogen and sulfur atoms with or without oxygen atoms, as the only ring hetero atoms
- U C07F 9/6539 Five-membered rings
- C07F 9/65392 {-containing two nitrogen atoms}
- C07F 9/65395 {-having the two nitrogen atoms in positions 1 and 2}
- C07F 9/65397 {-having the two nitrogen atoms in positions 1 and 3}
- C07F 9/6541 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6544 Six-membered rings
- C07F 9/6547 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/655 . . . having oxygen atoms, with or without sulfur, selenium, or tellurium atoms, as the only ring hetero atoms
- U C07F 9/65502 {the oxygen atom being part of a three-membered ring}
- C07F 9/65507 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6551 {the oxygen atom being part of a four-membered ring}
- C07F 9/65512 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/65515 {the oxygen atom being part of a five-membered ring}
- C07F 9/65517 {-condensed with carbocyclic rings or carbocyclic ring systems}
- C07F 9/6552 {-the oxygen atom being part of a six-membered ring}
- C07F 9/65522 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/65525 {the oxygen atom being part of a seven-(or more) membered ring}
- C07F 9/65527 {-condensed with carbocyclic rings or carbocyclic ring systems}

- U C07F 9/6553 . . . having sulfur atoms, with or without selenium or tellurium atoms, as the only ring hetero atoms
- U C07F 9/655309 {the sulfur atom being part of a three-membered ring}
- C07F 9/655318 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/655327 {the sulfur atom being part of a four-membered ring}
- C07F 9/655336 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/655345 {the sulfur atom being part of a five-membered ring}
- C07F 9/655354 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/655363 {the sulfur atom being part of a six-membered ring}
- C07F 9/655372 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/655381 {the sulfur atom being part of a seven-(or more) membered ring}
- C07F 9/65539 {-condensed with carbocyclic rings or carbocyclic ring systems}
- U C07F 9/6558 containing at least two different or differently substituted hetero rings neither condensed among themselves nor condensed with a common carbocyclic ring or ring system
- C07F 9/65586 {-at least one of the hetero rings does not contain nitrogen as ring hetero atom}
- U C07F 9/6561 containing systems of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring or ring system, with or without other non-condensed hetero rings
- C07F 9/65611 {-containing the ring system  (X = CH₂, O, S, NH) optionally with an additional double bond and/or substituents e.g. penicillins and analogs}
- C07F 9/65613 {-containing the ring system  (X = CH₂, O, S, NH) optionally with an additional double bond and/or substituents e.g. cephalosporins and analogs}
- C07F 9/65615 {-containing a spiro condensed ring system of the formula  where at least one of the atoms X or Y is a hetero atom, e.g. S}
- C07F 9/65616 {-containing the ring system  having three or more than three double bonds between ring members or between ring members and non-ring members, e.g. purine or analogs}
- C07F 9/65618 {-containing the ring system,  e.g. flavins or analogues}
- U C07F 9/6564 . . . having phosphorus atoms, with or without nitrogen, oxygen, sulfur, selenium or tellurium atoms, as ring hetero atoms
- U C07F 9/6571 having phosphorus and oxygen atoms as the only ring hetero atoms
- U C07F 9/657109 {esters of oxyacids of phosphorus in which one or more exocyclic oxygen atoms have been replaced by (a) sulfur atom(s)}
- C07F 9/657118 {-non-condensed with carbocyclic rings or heterocyclic rings or ring systems}
- C07F 9/657145 {-the cyclic phosphorus atom belonging to more than one ring system}

- C07F 9/657154 {-Cyclic esteramides of oxyacids of phosphorus}
- U C07F 9/657163 {the ring phosphorus atom being bound to at least one carbon atom}
- C07F 9/657172 {-the ring phosphorus atom and one oxygen atom being part of a (thio)phosphonic acid ester:  (X = O, S)}
- C07F 9/657181 {-the ring phosphorus atom and, at least, one ring oxygen atom being part of a (thio)phosphonic acid derivative}
- C07F 9/65719 {-the ring phosphorus atom and, at least, one ring oxygen atom being part of a (thio)phosphonous acid derivative}
- U C07F 9/6574 Esters of oxyacids of phosphorus {(C07F 9/657163 takes precedence)}
- C07F 9/65742 {-non-condensed with carbocyclic rings or heterocyclic rings or ring systems}
- C07F 9/65744 {-condensed with carbocyclic or heterocyclic rings or ring systems}
- C07F 9/65746 {-the molecule containing more than one cyclic phosphorus atom}
- C07F 9/65748 {-the cyclic phosphorus atom belonging to more than one ring system}
- U C07F 9/6578 having phosphorus and sulfur atoms with or without oxygen atoms, as ring hetero atoms
- C07F 9/65785 {-the ring phosphorus atom and , at least, one ring sulfur atom being part of a thiophosphonic acid derivative}
- U C07F 9/6581 having phosphorus and nitrogen atoms with or without oxygen or sulfur atoms, as ring hetero atoms
- C07F 9/65812 {-Cyclic phosphazenes [P=N-]n, n>=3]}
- U C07F 9/6584 having one phosphorus atom as ring hetero atom
- C07F 9/65842 {-Cyclic amide derivatives of acids of phosphorus, in which one nitrogen atom belongs to the ring}
- C07F 9/65844 {-the phosphorus atom being part of a five-membered ring which may be condensed with another ring system}
- C07F 9/65846 {-the phosphorus atom being part of a six-membered ring which may be condensed with another ring system}
- C07F 9/65848 {-Cyclic amide derivatives of acids of phosphorus, in which two nitrogen atoms belong to the ring}

Project: N/A (C07G)

- C07G 3/00 **Glycosides** (-polysaccharides [C08B](#)-)
- C07G 9/00 **Ammonium bituminosulfonate, e.g. Ichthyol** {also bituminasulfonic acid and its salts}
- C07G 13/00 **Vitamins** (-vitamin K1 [C07C 50/14](#) ; pantothenic acid [C07C 235/12](#) ; vitamins of the D group [C07C 401/00](#) ; vitamin A [C07C 403/08](#) ; pyridoxal, pyridoxamin [C07D 213/66](#) ; pyridoxin [C07D 213/67](#) ; vitamin C [C07D 307/62](#) ; tocopherols [C07D 311/72](#) ; lipoic acid [C07D 339/04](#) ; vitamin B1 [C07D 415/00](#) ; riboflavin [C07D 475/14](#) ; biotin [C07D 495/04](#) ; sideramines, corresponding deoferri compounds [C07F 15/03](#) ; vitamin B12 [C07H 23/00](#)-)

Project: N/A (C07H)

C07H

SUGARS; DERIVATIVES THEREOF (-derivatives of aldonic or saccharic acids [C07C](#) , [C07D](#) ; aldonic acids, saccharic acids [C07C 59/105](#) , [C07C 59/285](#) ; cyanohydrins [C07C 255/16](#) ; glycols [C07D](#) ; compounds of unknown constitution [C07G](#) ; polysaccharides, derivatives thereof [C08B](#) ; sugar and starch industry [C13](#)-)

NOTES

This subclass covers compounds containing saccharide radicals. (see the definitions in Note 3. below).

This subclass does not cover polysaccharides which for the purpose of this subclass are defined as having more than five saccharide radicals attached to each other by glycosidic linkages.

In this subclass, the following expressions are used with the meaning indicated:

- "saccharide radical" which is derived from acyclic polyhydroxy-aldehydes or acyclic polyhydroxy-ketones, or from their cyclic tautomers, by removing hydrogen atoms or by replacing hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium, in accordance with either of the following definitions:

It consists of an uninterrupted carbon skeleton and oxygen atoms directly attached thereto, and;

is considered to be terminated by every bond to a carbon atom of a cyclic structure and by every bond to a carbon atom having three bonds to hetero atoms, e.g. ester or nitrile radicals, and;

contains within the carbon skeleton an unbranched sequence of at the most six carbon atoms in which at least three carbon atoms at least two in the case of a skeleton having only four carbon atoms have one single bond to an oxygen atom as the only hetero bond {but at least three for compounds in which at least one carbon to oxygen bond involved in a) or b) has been replaced by a carbon bond to a hetero atom other than oxygen} , and

in a cyclic or acyclic sequence, at least one other carbon atom {that is not doubly bound to a carbon atom, e.g. glycols} has two single bonds to oxygen atoms as the only hetero bonds, or

in an acyclic sequence, at least one other carbon atom {that is not doubly bound to a carbon atom} has one double bond to an oxygen atom as the only hetero bond;

{has in the gamma or delta position in respect to the carbon atom bearing those two single bonds or this double bond to oxygen a carbon atom bearing one single bond to oxygen}

{It is also a radical derived from a radical as defined in a. above by replacing at the most four of the specified hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium;}

- "heterocyclic radical" or "hetero ring" is considered to exclude saccharide radicals as defined above

Attention is drawn to the notes following the title of class [C07](#) .

The conditions 3) a) or 4) have not to be fulfilled in respect to **C07H19/00E1**

Where a compound may exist --- to be written in Kekulé form

For the purpose of this subclass, the following definitions apply:

A "hetero ring" is a ring having at least one halogen, nitrogen, oxygen, sulfur selenium or tellurium atom as a ring member;

Two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed. The term "bridged" denotes the presence of at least one fusion other than ortho, peri and spiro;

A "condensed ring system" is a ring system in which all rings are condensed among themselves;
The "number of relevant rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
The "relevant rings" in a condensed system are chosen according to the following criteria consecutively:
Lowest number of ring members
Highest number of hetero atoms as ring members
Lowest number of members shared with other rings
Last place in the classification scheme

In the absence of specific places, hydrogenated or condensed hetero rings are classified with the parent ring

In the absence of an indication to the contrary, a compound is classified in the last appropriate place

Groups [C07H 3/04](#) and [C07H 3/06](#) take precedence over [C07H 3/08](#) to [C07H15/18D](#) -with the exception of [C07H 13/06](#) , [C07H13/12U](#) , [C07H15/00F](#) , [C07H 15/06](#) , [C07H 15/08](#) , [C07H15/10D2](#) , [C07H 15/16](#) - and over [C07H 15/20](#) as far as a phenyl radical is involved; the purpose of this inversion of the last place rule is to avoid multiple classification for documents describing compounds, having a complement inhibiting activity or belonging to the "blood-group substances" occurring in tissue fluids, in secretions and at cell and tissue surfaces (e.g. antigen determinants) or forming part of cell membranes. Documents in which both disaccharides and oligosaccharides of this kind are described are only classified in [C07H 3/06](#) .

Group [C07H 9/00](#) takes precedence over [C07H 11/00](#) to [C07H 15/00](#) when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides [C07H 19/00](#) .

Group [C07H 15/252](#) takes precedence over [C07H 17/00](#) when the naphthalene ring is further condensed to a heteroring, and over [C07H 15/26](#) when the carbocyclic ring is substituted by a hetero ring]

C07H 3/00 **Compounds containing only hydrogen atoms and saccharide radicals having only carbon, hydrogen and oxygen atoms (-preparation by hydrolysis of di- or polysaccharides [C13](#) and subgroups; separation and purification of sucrose, glucose, fructose, lactose or maltose [C13](#)-)**

C07H 3/08 • Deoxysugars; Unsaturated sugars (-1,2-dideoxy-1-enoses [C07D](#)-);
Osones{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}

C07H 3/10 • Anhydrosugars, e.g. epoxides{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}

C07H 5/00 **Compounds containing saccharide radicals in which hetero bonds to oxygen have been replaced by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium or tellurium{ when the hetero-atom is substituted [C07H 11/00](#) , [C07H 13/00](#) , [C07H 15/00](#) , [C07H 17/00](#) ; when the hetero-atom(s) form(s) part of a heteroring [C07H 9/00](#) , [C07H 19/00](#) , [C07H 21/00](#) ; (-[C07H 3/04](#) , [C07H 3/06](#) , take precedence-)}**

U C07H 5/04 • to nitrogen

C07H 5/06 • • Aminosugars{ NH-acyl [C07H 11/00](#) , [C07H 13/00](#) ; NHR or NR2
[C07H 15/00](#)-}

C07H 7/00 **Compounds containing non-saccharide radicals linked to saccharide radicals by a carbon-to-carbon bond{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}**

- C07H 7/02
- Acyclic radicals, e.g. glycuronic acids {gamma-lactones of 2- or 3-ketohexanoic or -pentanoic acids and derivatives thereof, (-e.g. enol forms [C07D 307/62-](#)), e.g. ascorbic acid (1); D-galacturono-gamma-lactone (2); D-glucono-gamma-lactone (3); saccharosonic acid (4); D-gulono-gammalactone (5) Images-}
- C07H 7/027
- • Keto-aldonic acids{ keto-aldonic acids, e.g. 2-keto-gluconic acid (1); D-arabino-2-hexulsonic acid (2); 2-keto-gluco-pyranosic acid (3); xylo-2-furanosic acid (4) Images-}
- C07H 7/033
- • Uronic acids{ uronic acids, e.g. galacturonic acid (1); galactofuranonic acid (2) Images-}

C07H 11/00 **Compounds containing saccharide radicals esterified by inorganic acids; Metal salts thereof (-halo-sugars [C07H 5/02](#) ; thio-, seleno- or telluro-sugars [C07H 5/08](#) ; { acetals [C07H9/04D](#) } ; esterified by carbonic acid or derivatives thereof [C07H 13/12](#) ; { [C07H 3/04](#) , [C07H 3/06](#) take precedence; [C07H 9/00](#) takes precedence when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides [C07H 19/00](#))}**

- C07H 11/04
- Phosphates; Phosphites; Polyphosphates (-phosphonates [C07H 13/00-](#))

C07H 13/00 **Compounds containing saccharide radicals esterified by carbonic acid or derivatives thereof, or by organic acids, e.g. phosphonic acids{ acetals [C07H9/04D](#) ; -([C07H 3/04](#) , [C07H 3/06](#) , [C07H13/12U](#) take precedence; [C07H 9/00](#) takes precedence when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides [C07H 19/00-](#))}**

- C07H 13/02
- by carboxylic acids{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}
- C07H 13/04
- • having the esterifying carboxyl radicals attached to acyclic carbon atoms{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}
- C07H 13/08
- • having the esterifying carboxyl radicals directly attached to carbocyclic rings{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}
- C07H 13/10
- • having the esterifying carboxyl radicals directly attached to heterocyclic rings{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}
- C07H 13/12
- by acids having the group -X-C(=X)-X-, or halides thereof, in which each X means nitrogen, oxygen, sulfur, selenium or tellurium, e.g. carbonic acid, carbamic acid{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}

C07H 15/00 **Compounds containing hydrocarbon or substituted hydrocarbon radicals directly attached to hetero atoms of saccharide radicals{ acylated on hetero atoms of the saccharide radical [C07H 13/00](#) ; derivatives of bis methylen dioxy carbohydrates [C07H9/04D](#) ; -([C07H 3/04](#) , [C07H 3/06](#) , take precedence; [C07H 9/00](#) takes precedence when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides [C07H 19/00-](#))}**

NOTE

In this group, acyl radicals directly attached to hetero atoms of the saccharide radicals are not considered as substituted hydrocarbon radicals.

- C07H 15/02
- Acyclic radicals, not substituted by cyclic structures{(-[C07H 3/04](#) , [C07H 3/06](#) , [C07H15/00F](#) take precedence-)}
- C07H 15/04
- • attached to an oxygen atom of the saccharide radical{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}
- C07H 15/06
- • • being a hydroxyalkyl group esterified by a fatty acid,{ i.e. Image-}
- C07H 15/08
- • • Polyoxyalkylene derivatives (-polyoxyalkylene derivatives of polyols in general [C07C 41/00](#) , [C07C 43/00-](#))

- C07H 15/10
- • • containing unsaturated carbon-to-carbon bonds{(-[C07H 3/04](#) , [C07H 3/06](#) take precedence-)}
- C07H 15/12
- • attached to a nitrogen atom of the saccharide radical{(-[C07H 3/04](#) , [C07H 3/06](#) , **C07H15/10D2** take precedence-)}
- C07H 15/14
- • attached to a sulfur, selenium or tellurium atom of a saccharide radical{(-[C07H 3/04](#) , [C07H 3/06](#) , **C07H15/10D2** take precedence-)}
- C07H 15/16
- • • Lincomycin; **Derivatives thereof**{**6-deoxy-6-(possibly substituted)Derivatives thereof {6-deoxy-6-(possibly substituted)}** amino derivatives, e.g. lincosamines, celestosamines, clindamycins}
- C07H 15/18
- Acyclic radicals, substituted by carbocyclic rings{ chalcones and hydrogenated chalcones derived from saccharides substituted by 1-benzopyran-4-one radicals are to be classified in [C07H 17/07](#) ; -([C07H 3/04](#) , [C07H 3/06](#) , **C07H15/00F** , **C07H15/10D2** take precedence-)}
- C07H 15/20
- Carbocyclic rings{(-**C07H15/00F** , **C07H15/10D2** take precedence-)}
- C07H 15/203
- • Monocyclic carbocyclic rings other than cyclohexane {or cyclohexene or cyclohexadiene}rings; cyclohexene, cyclohexadiene; Bicylic carbocyclic ring systems
- C07H 15/207
- • Cyclohexane rings {and cyclohexene and cyclohexadiene rings}not substituted by nitrogen atoms, e.g. kasugamycins
- U C07H 15/22
- • Cyclohexane rings, substituted by nitrogen atoms
- NOTE**
- for this two dot subdivision:
Image
 - for the three dot subdivisions: (**C07H15/22B** and [C07H 15/222](#))
- C07H 15/222
- • • Cyclohexane rings substituted by at least two nitrogen atoms{ at least two guanidine radicals [C07H 15/238](#)-}
- U C07H 15/226
- • • • {with at least two saccharide radicals directly attached to the cyclohexane rings}
- U C07H 15/228
- • • • • {attached to adjacent ring-carbon atoms of the cyclohexane rings}
- C07H 15/232
- • • • • with at least three saccharide radicals in the molecule, e.g. lividomycin; neomycin; paromomycin {zygomycin; hybrimycin; quintomycin, fradiomycin; framycetin}
- C07H 15/24
- • Condensed ring systems having three or more rings {(-steroid glucosides [C07J](#)-)}
- C07H 15/26
- Acyclic or carbocyclic radicals, substituted by hetero rings,{e.g. bleomycins, phleomycins, victomycins, zarbamycins (-and **C07H15/10D2** take precedence; [C07H 15/252](#) takes precedence when the naphtacene ring is further condensed to a heteroring-)}
- C07H 17/00**
- Compounds containing heterocyclic radicals directly attached to hetero atoms of saccharide radicals{(-**C07H15/10D2** , [C07H 15/22](#) , [C07H 15/238](#) take precedence; [C07H 15/252](#) takes precedence when the naphtacene ring is further condensed to a heteroring-)}**
- C07H 19/00**
- Compounds containing a hetero ring sharing {only}one ring hetero atom with the saccharide radical {the ring-heteroatom of the saccharide radical is not to be taken into consideration}; Nucleosides; Mononucleotides {or mononucleosides}; Anhydro-derivatives thereof{(**C07H15/10D2** takes precedence; intermediate for methods of chemical engineering **C07H21/00C4**-)}**
- C07H 19/01
- Sharing oxygen{ sharing no nitrogen atom with the saccharide radical, e.g. glucuronic acid lactone, rubrolone, levoglucosan Images-}

- U C07H 19/02 • sharing nitrogen
- C07H 19/04 • • Heterocyclic radicals containing only nitrogen atoms as ring hetero atoms{(-C07H19/02B , C07H19/02D take precedence-)}
- C07H 19/044 • • • Pyrrole radicals{ Pyrrolo-pyrimidines [C07H 19/14](#)-}
- C07H 19/048 • • • Pyridine radicals{ Pyridino-pyrimidine [C07H19/06F](#) , [C07H19/10F](#)-}
- C07H 19/052 • • • Imidazole radicals{ Purines [C07H 19/16](#)-}
- C07H 19/06 • • • Pyrimidine radicals{ purine [C07H 19/16](#) ; pyrimidino-triazines [C07H 19/12](#) ; pteridines [C07H 19/22](#) ; pyrrolo-pyrimidines [C07H 19/24](#)-}
- C07H 19/067 • • • • with ribosyl as the saccharide radical {not used}
- C07H 19/073 • • • • with 2-deoxyribosyl as the saccharide radical {not used}
- C07H 19/09 • • • • with arabinosyl as the saccharide radical {not used}
- C07H 19/10 • • • • with the saccharide radical esterified by phosphoric or polyphosphoric acids {or other phosphorus containing acids}
- C07H 19/11 • • • • • containing cyclic phosphate {not to be used}
- U C07H 19/16 • • • Purine radicals
- C07H 19/167 • • • • with ribosyl as the saccharide radical {not used}
- C07H 19/173 • • • • with 2-deoxyribosyl as the saccharide radical {not used}
- C07H 19/19 • • • • with arabinosyl as the saccharide radical {not used}
- C07H 19/20 • • • • with the saccharide radical esterified by phosphoric or polyphosphoric acids {or other phosphorus containing acids}
- C07H 19/207 • • • • • the phosphoric or polyphosphoric acids being esterified by a further hydroxylic compound, e.g. flavine adenine dinucleotide or micotinamide-adenine dinucleotide (-nicotinamide-adenine dinucleotide phosphate [C07H 21/02](#)-)
- C07H 19/213 • • • • • containing cyclic phosphate {not to be used}
- C07H 19/23 • • • Heterocyclic radicals containing two or more heterocyclic rings condensed among themselves or condensed with a common carbocyclic ring system, not provided for in groups [C07H 19/14](#) to [C07H 19/22](#) {not to be used}
- C07H 21/00 Compounds containing two or more mononucleotide units,{having separate phosphate or polyphosphate groups linked by saccharide radicals of nucleoside groups (-C07H15/10D2 takes precedence-)}e.g. nucleic acids**
- C07H 23/00 Compounds containing boron, silicon or a metal, e.g. chelates, vitamin B12 (-esters with inorganic acids, [C07H 11/00](#) ; metal salts: see parent compounds-)**

Project: N/A (C07J)**C07J****STEROIDS (seco-steroids [C07C](#))**NOTE

This subclass covers compounds containing a cyclopenta[a]hydrophenanthrene skeleton or a ring structure derived therefrom:

- by contraction or expansion of one ring by one or two atoms;
- by contraction or expansion of two rings each by one atom;
- by contraction of one ring by one atom and expansion of one ring by one atom;
- by substitution of one or two carbon atoms of the cyclopenta[a]hydrophenanthrene skeleton, which are not shared by rings, by hetero atoms, in combination with the above defined contraction or expansion or not, or;

- by condensation with carbocyclic or heterocyclic rings in combination with one or more of the foregoing alterations or not.

C07J 7/00 Normal steroids containing carbon, hydrogen, halogen or oxygen substituted in position 17 beta by a chain of two carbon atoms ([C07J 5/00](#) takes precedence)

C07J 13/00 Normal steroids containing carbon, hydrogen, halogen or oxygen having a carbon-to-carbon double bond from or to position 17{(for carbonyl groups [C07J 1/00](#)-)}

C07J 17/00 Normal steroids containing carbon, hydrogen, halogen or oxygen, having an oxygen-containing hetero ring not condensed with the cyclopenta(a)hydrophenanthrene skeleton (-cardanolide, bufanolide [C07J 19/00](#)-)

U C07J 31/00 Normal steroids containing one or more sulfur atoms not belonging to a hetero ring

C07J 31/006 · {-not covered by [C07J 31/003](#)}

U C07J 41/00 Normal steroids containing one or more nitrogen atoms not belonging to a hetero ring

C07J 41/0033 · {-not covered by [C07J 41/0005](#)}

NOTE

In groups [C07J 41/0038](#) to [C07J 41/0094](#) all references to substituents in position 17-beta of the steroid skeleton include substituents at the 17-position when there is a double bond to or from position 17, and all references to an amide group include all nitrogen substituted carbonyl groups

C07J 51/00 Normal steroids with unmodified cyclopenta(a)hydrophenanthrene skeleton not provided for in groups [C07J 1/00](#) to [C07J 43/00](#)

C07J 71/00 Steroids in which the cyclopenta(a)hydrophenanthrene skeleton is condensed with a heterocyclic ring (-spiro-condensed heterocyclic rings [C07J 21/00](#) , [C07J 33/00](#) , [C07J 43/00](#)-)

Project: N/A (C07K)

C07K

PEPTIDES (-peptides in foodstuffs [A23](#); obtaining protein compositions for foodstuffs, working-up proteins for foodstuffs [A23J](#); preparations for medicinal purposes [A61K](#); peptides containing beta-lactam rings [C07D](#); cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, [C07D](#); ergot alkaloids of the cyclic peptide type [C07D 519/02](#) ; macromolecular compounds having statistically distributed amino acid units in their molecules, i.e. when the preparation does not provide for a specific; but for a random sequence of the amino acid units, homopolyamides and block copolyamides derived from amino acids [C08G 69/00](#) ; macromolecular products derived from proteins [C08H 1/00](#) ; preparation of glue or gelatine [C09H](#); single cell proteins, enzymes [C12N](#); genetic engineering processes for obtaining peptides [C12N 15/00](#) ; compositions for measuring or testing processes involving enzymes [C12Q](#); investigation or analysis of biological material [G01N 33/00](#)-)

NOTE

In this subclass, the following terms or expressions are used with the meanings indicated:

- "amino acids" are compounds in which at least one amino group and at least one carboxyl

group are bound to the same carbon skeleton and the nitrogen atom of the amino group may form part of a ring;

- "normal peptide link" is one between an alpha-amino group of an amino acid and the carboxyl group - in position 1 - of another alpha-amino acid;
- "abnormal peptide link" is a link where at least one of the linked amino acids is not an alpha-amino acid or a link formed by at least one carboxyl or amino group being part of the side chain of a alpha-amino acid;
- "peptides" are compounds containing at least two amino acid units, which are bound through at least one normal peptide link, including oligopeptides, polypeptides and proteins, where:
 - a. "linear peptides" may comprise rings formed through S-S bridges, or through a hydroxy or a mercapto group of an hydroxy- or mercapto-amino acid and the carboxyl group of another amino acid, (e.g. peptide lactones) but do not comprise rings which are formed only through peptide links;
 - b. "cyclic peptides" are peptides comprising at least one ring formed only through peptide links; the cyclisation may occur only through normal peptide links or through abnormal peptide links, e.g. through the 4-amino group of 2,4-diamino-butanoic acid. Thus, cyclic compounds in which at least one link in the ring is a non-peptide link are considered as "linear peptides";
- "depsipeptides" are compounds containing a sequence of at least two alpha-amino acids and at least one alpha-hydroxy carboxylic acid, which are bound through at least one normal peptide link and ester links, derived from the hydroxy carboxylic acids, where:
 - a. "linear depsipeptides" may comprise rings formed through S-S bridges, or through an hydroxy or a mercapto group of an hydroxy- or mercapto-amino acid and the carboxyl group of another amino- of hydroxy-acid but do not comprise rings formed only through peptide or ester links derived from hydroxy carboxylic acids, e.g. Gly-Ala-Gly-OCH₂CO₂H and Gly-OCH₂CO-Ala-Gly are considered as "linear depsipeptides", but HOCH₂CO-Gly-Ala-Gly does not contain an ester link, and is thus a derivative of Gly-Ala-Gly which is covered by [C07K 5/08](#) ;
 - b. "cyclic depsipeptides" are peptides containing at least one ring formed only through peptide or ester links - derived from hydroxy carboxylic acids -, e.g. Gly-Ala-Gly-OCH₂CO.

Fragments of peptides or peptides modified by removal or addition of amino acids, by substitution of amino acids by others, or by combination of these modifications, are classified as the parent peptides. However, fragments of peptides having only four or less amino acids are also classified in group [C07K 5/00](#) .

Peptides prepared by chemical processes and having an amino acid sequence derived from naturally occurring peptides are classified with the natural one.

Peptides prepared by recombinant DNA technology are not classified according to the host, but according to the original peptide expressed, e.g. HIV peptide expressed in E. coli is classified with HIV peptides.

When classifying in this subclass, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

C07K 5/023	covered by	C07K 5/0202
C07K 5/027	covered by	C07K 5/0205
C07K 5/03	covered by	C07K 5/0207
C07K 5/033	covered by	C07K 5/021
C07K 5/037	covered by	C07K 5/0215
C07K 5/062	covered by	C07K 5/06017
C07K 5/065	covered by	C07K 5/06078
C07K 5/068	covered by	C07K 5/06086
C07K 5/072	covered by	C07K 5/06104
C07K 5/075	covered by	C07K 5/0613
C07K 5/078	covered by	C07K 5/06139
C07K 5/083	covered by	C07K 5/0804
C07K 5/087	covered by	C07K 5/0812
C07K 5/09	covered by	C07K 5/0815
C07K 5/093	covered by	C07K 5/0819
C07K 5/097	covered by	C07K 5/0821
C07K 5/103	covered by	C07K 5/1005
C07K 5/107	covered by	C07K 5/1016
C07K 5/11	covered by	C07K 5/1019
C07K 5/113	covered by	C07K 5/1021
C07K 5/117	covered by	C07K 5/1024
C07K 14/185	covered by	C07K 14/1816
C07K 14/725	covered by	C07K 14/705
C07K 14/73	covered by	C07K 14/70514
C07K 14/735	covered by	C07K 14/70535
C07K 14/74	covered by	C07K 14/70539

C07K 1/00

General methods for the preparation of peptides {i.e. processes for the organic chemical preparation of peptides or proteins of any length}

- C07K 1/02 · in solution{(-[C07K 1/003](#) , [C07K 1/006](#) take precedence-)}
- C07K 1/04 · on carriers{(-[C07K 1/003](#) , [C07K 1/006](#) take precedence-)}
- C07K 1/06 · using protecting groups or activating agents{(-[C07K 1/003](#) , [C07K 1/006](#) take precedence-)}
- C07K 1/08 · · using activating agents{(-[C07K 1/003](#) , [C07K 1/006](#) take precedence-)}
- C07K 1/10 · using coupling agents{(-[C07K 1/006](#) takes precedence-)}
- C07K 1/12 · by hydrolysis {i.e. solvolysis in general}

U C07K 5/00

Peptides containing up to four amino acids in a fully defined sequence; Derivatives thereof

- U C07K 5/02 · containing at least one abnormal peptide link

- C07K 5/021
- {-containing the structure -NH-(X)n-C(=O)-, n being 5 or 6; for n > 6, classification in [C07K 5/06](#) to [C07K 5/10](#) , according to the moiety having normal peptide bonds-}
- C07K 5/0227
- {-containing the (partial) peptide sequence -Phe-His-NH-(X)2-C(=O)-, e.g. Renin-inhibitors with n = 2 - 6; for n > 6 see [C07K 5/06](#) to [C07K 5/10](#)-}
- U C07K 5/04
- containing only normal peptide links

NOTE

In groups [C07K 5/06](#) to [C07K 5/10](#) the following terms or expressions are used with the meaning indicated:

neutral: amino acids having in the sidechain the same number of amino groups and carboxylic acid groups or derivatives thereof, e.g. Gly;

basic: amino acids having in the sidechain more amino groups than carboxylic acid groups or derivatives thereof, e.g. Arg;

acidic: amino acids having in the sidechain more carboxylic acid groups or derivatives thereof than amino groups, e.g. Asp;

aliphatic: amino acids having only acyclic carbon atoms in the sidechain, e.g. Ala aromatic;

cycloaliphatic: amino acids having a carbocyclic ring in the sidechain, e.g. Phe

heterocyclic: amino acids wherein the sidechain contains or is part of a heteroring, e.g. Pro;

side chain: the R radical in the optionally functionalised amino acid R-CH(NH₂)CO₂H)

- U C07K 5/06
- • Dipeptides
- U C07K 5/06008
- • • {with the first amino acid being neutral}
- U C07K 5/06017
- • • • {and aliphatic}
- C07K 5/0606
- • • • • {-the side chain containing heteroatoms not provided for by [C07K 5/06086](#) to [C07K 5/06139](#) , e.g. Ser, Met, Cys, Thr-}
- C07K 5/12
- • Cyclic peptides {with only normal peptide bonds in the ring}

NOTE

Cyclic peptides containing at least one abnormal peptide link are classified as linear peptides

- U C07K 7/00 Peptides having 5 to 20 amino acids in a fully defined sequence; Derivatives thereof**

NOTE

In this subgroup cyclic compounds related to specific compounds which are classified in a specific group, e.g. [C07K 7/062](#) , are classified in this specific group only

- U C07K 7/04
- Linear peptides containing only normal peptide links
- C07K 7/08
- • having 12 to 20 amino acids (-gastrins [C07K 14/595](#) ; somatostatins [C07K 14/655](#) ; melanotropins [C07K 14/68-](#))
- C07K 7/086
- • • {Bombesin; Related peptides (-having more than 20 amino acids [C07K 14/57572-](#))}
- U C07K 9/00 Peptides having up to 20 amino acids, containing saccharide radicals and having a fully defined sequence; Derivatives thereof**
- U C07K 9/001
- {the peptide sequence having less than 12 amino acids and not being part of a ring structure}

- C07K 9/005
- {-containing within the molecule the substructure with $m, n > 0$ and $m+n > 0$, A,B,D,E being
- heteroatoms; X being a bond or a chain, e.g. muramylpeptides-}
- U C07K 11/00 **Depsipeptides having up to 20 amino acids in a fully defined sequence; Derivatives thereof**
- C07K 11/02
- cyclic, e.g. valinomycins {Derivatives thereof}
- U C07K 14/00 **Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof**
- U C07K 14/005
- from viruses
- NOTE
- When classifying in this group, subject-matter related to viral proteins shall be classified by the symbol [C07K 14/005](#) together with (a number of) appropriate indexing codes out of [C12N 2710/00-C12N 2795/00](#)
- WARNING
1. From March 15, 2012 groups [C07K 14/01](#) - [C07K 14/19](#) and subgroups thereof are no longer used for the classification of new documents. 2. Reclassification of the back-file follows the principle outlined in the Note here above
- U C07K 14/08
- • RNA viruses
- U C07K 14/18
- • • Togaviridae;{Flaviviridae}
- C07K 14/1808
- • • • {Alphaviruses or Group A arboviruses, e.g. sindbis, VEE, EEE, WEE, semliki forest virus (-rubella virus [C07K 14/19](#)-)}
- C07K 14/1816
- • • • {Flaviviridae, e.g. pestivirus, mucosal disease virus, bovine viral diarrhoea virus, classical swine fever virus (*hog cholera virus*), *border disease virus*}{*hog cholera virus*, *border disease virus*}
- U C07K 14/195
- from bacteria
- NOTE
- In groups [C07K 14/20](#) to [C07K 14/365](#) , where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets.
- U C07K 14/315
- • from Streptococcus (G), e.g. Enterococci
- C07K 14/3156
- • • {from Streptococcus pneumoniae (Pneumococcus){-Streptokinase [C07K 14/3153](#)-}}
- U C07K 14/435
- from animals; from humans
- U C07K 14/46
- • from vertebrates
- U C07K 14/47
- • • from mammals
- U C07K 14/4701
- • • • {not used}
- C07K 14/4732
- • • • • {Casein (-in foodstuffs [A23J](#)-)}
- C07K 14/4738
- • • • • {Cell cycle regulated proteins, e.g. cyclin, CDC, INK-CCR (-cell cycle dependent kinases [C12N 9/12](#)-)}
- C07K 14/575
- • Hormones (-derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [C07K 14/665](#) , e.g. corticotropin [C07K 14/695](#)-)
- C07K 14/57572
- • • {Gastrin releasing peptide (-bombesin [C07K 7/086](#)-)}
- C07K 14/705
- • Receptors; Cell surface antigens; Cell surface determinants{(-tumour specific antigens [C07K 14/4748](#)-)}

- C07K 14/70575 . . . {NGF/TNF-superfamily, e.g. CD70, CD95L, CD153, CD154 (-NGF [C07K 14/48](#) , TNF [C07K 14/525](#)-)}
- C07K 14/70578 . . . {NGF-receptor/TNF-receptor superfamily, e.g. CD27, CD30, CD40, CD95 (-NGF-receptor [C07K 14/71](#) , TNF-receptor [C07K 14/7151](#)-)}
- C07K 14/72 . . . for hormones{(-for neuromediators [C07K 14/70571](#)-)}
- U C07K 14/81 . Protease inhibitors
- U C07K 14/8107 . . {Endopeptidase (E.C. 3.4.21-99) inhibitors}
- U C07K 14/811 . . . {Serine protease (E.C. 3.4.21) inhibitors}
- U C07K 14/8114 {Kunitz type inhibitors}
- C07K 14/8117 {Bovine/basic pancreatic trypsin inhibitor (*BPTI, aprotinin*)}(~~BPTI, aprotinin~~)
- C07K 16/00 Immunoglobulins [IGs], e.g. monoclonal or polyclonal antibodies{(-antibodies with enzymatic activity, e.g. abzymes [C12N 9/0002](#)-)}**
- NOTES**
- Documents characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified in [C07K 16/00](#) to [C07K 16/065](#) or [C07K 16/46](#) to [C07K 16/468](#)
- Documents not characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified only according to their specificity, where necessary accompanied by one or more appropriate indexing codes
- U C07K 16/18 . against material from animals or humans
- U C07K 16/28 . . against receptors, cell surface antigens or cell surface determinants
- U C07K 16/2803 . . . {against the immunoglobulin superfamily}
- C07K 16/283 {against Fc-receptors, e.g. CD16, CD32, CD64 (-~~CD23~~-~~C07K 16/2851~~ [CD23](#) [C07K 16/2851](#))}
- C07K 16/2869 . . . {against hormone receptors (-for antibodies against neuromediator receptors [C07K 16/286](#)-)}
- C07K 16/2875 . . . {against the NGF/TNF superfamily, e.g. CD70, CD95L, CD153, CD154 (-against NGF [C07K 16/22](#) , against TNF [C07K 16/241](#)-)}
- C07K 16/46 . Hybrid immunoglobulins (-hybrids of an immunoglobulin with a peptide not being an immunoglobulin [C07K 19/00](#)-)
- C07K 17/00 Carrier-bound or immobilised peptides (-carrier-bound or immobilised enzymes [C12N 11/00](#)); Preparation thereof**
- U C07K 2319/00 Fusion polypeptide**
- U C07K 2319/01 . containing a localisation/targetting motif
- C07K 2319/055 . . containing a signal for localisation to secretory granules (*for exocytosis*)(~~for exocytosis~~)
- U C07K 2319/20 . containing a tag with affinity for a non-protein ligand
- C07K 2319/24 . . containing a MBP (*maltose binding protein*)-tag(~~maltose binding protein~~)-tag
- C07K 2319/61 . containing an enzyme fusion for detection (*lacZ, luciferase*)(~~lacZ, luciferase~~)
- U C07K 2319/70 . containing domain for protein-protein interaction
- C07K 2319/73 . . containing coiled-coiled motif (*leucine zippers*)(~~leucine zippers~~)
- C07K 2319/735 . . containing a domain for self-assembly, e.g. a viral coat protein (*includes phage display*)(~~includes phage display~~)
- U C07K 2319/90 . containing a motif for post-translational modification
- C07K 2319/92 . . containing an intein ("*protein splicing*")domain(~~"protein splicing"~~)domain

C07K 2319/95

- containing a motif/fusion for degradation (*ubiquitin fusions, PEST sequence*) (~~ubiquitin fusions, PEST sequence~~)

Project: N/A (C08B)

C08B

POLYSACCHARIDES; DERIVATIVES THEREOF (-polysaccharides containing less than six saccharide radicals attached to each other by glycosidic linkages [C07H](#); fermentation or enzyme-using processes [C12P 19/00](#) ; sugar industry [C13](#); production of cellulose [D21](#)-)

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [C08B 37/06](#) covered by [C08B 37/0045](#)
- [C08B 37/10](#) covered by [C08B 37/0075](#) -
- [C08B 37/12](#) covered by [C08B 37/0039](#)

U C08B 1/00

{Preparatory treatment of cellulose for making derivatives thereof, e.g. pre-treatment, pre-soaking, activation}

C08B 1/003

- {Preparation of cellulose solutions, i.e. dopes, with different possible solvents, e.g. ionic liquids} (-solutions used in the manufacture of monocomponent artificial filaments or cellulose or derivatives thereof [D01F 2/02](#)-)}

C08B 1/02

- Rendering cellulose suitable for esterification ({-esterification per se, [C08B 3/00](#) , [C08B 5/00](#) , [C08B 7/00](#) or [C08B 9/00](#)-})

C08B 1/06

- Rendering cellulose suitable for etherification ({-etherification per se [C08B 11/00](#)-})

C08B 3/00

Preparation of cellulose esters of organic acids ({-rendering cellulose suitable for esterification [C08B 1/02](#)-})

C08B 3/20

- Esterification with maintenance of the fibrous structure of the cellulose (-surface esterification of textiles [D06M 13/00](#)-)

U C08B 3/22

- Post-esterification treatments, including purification

C08B 3/30

- • Stabilising (by addition of stabilisers [C08K](#)-)

C08B 5/00

Preparation of cellulose esters of inorganic acids, {e.g. phosphates (-rendering cellulose suitable for esterification [C08B 1/02](#)-)}

C08B 5/02

- Cellulose nitrate, {i.e. nitrocellulose (-rendering cellulose suitable for the preparation of cellulose nitrate [C08B 1/04](#)-)}

U C08B 5/04

- • Post-esterification treatments, {e.g. densification of powders}, including purification

C08B 5/08

- • • Stabilisation (by addition of stabilisers [C08K](#)); {Post-treatment, e.g. phlegmatisation}

C08B 7/00

Preparation of cellulose esters of both organic and inorganic acids ({-rendering cellulose suitable for esterification [C08B 1/02](#)-})

C08B 9/00

Cellulose xanthate; Viscose ({-formation of films [C08J 5/18](#) ; formation of fibres [D01F](#); rendering cellulose suitable for esterification [C08B 1/02](#)-})

C08B 11/00

Preparation of cellulose ethers ({-rendering cellulose suitable for etherification [C08B 1/06](#)-})

U C08B 15/00

Preparation of other cellulose derivatives or modified cellulose, {e.g. complexes}

- C08B 15/05
- Derivatives containing elements other than carbon, hydrogen, oxygen, halogens or sulfur (-esters or phosphorous acids [C08B 5/00-](#))
- U C08B 30/00** **Preparation of starch, degraded or non-chemically modified starch, amylose, or amylopectin**
- C08B 30/02
- Preparatory treatment, e.g. crushing of raw materials {or steeping process}(machines for preliminary washing [A23N](#))}}
- C08B 30/12
- Degraded,{destructured}or non-chemically modified starch {e.g. mechanically, enzymatically or by irradiation; Bleaching of starch(-preparation of chemical derivatives of starch [C08B 31/00-](#))}
- C08B 30/20
- Amylose or amylopectin (-chemical derivatives thereof [C08B 33/00](#) , [C08B 35/00-](#))
- C08B 31/00** **Preparation of derivatives of starch (-derivatives of amylose [C08B 33/00](#) ; derivatives of amylopectin [C08B 35/00-](#))**
- C08B 37/00** **Preparation of polysaccharides not provided for in groups [C08B 1/00](#) to [C08B 35/00-](#); Derivatives thereof (-cellulose [D21](#) ; { microbiological processes [C12P](#) })**
- C08B 37/12
- Agar-agar; Derivatives thereof (not used)
- C08B 37/14
- Hemicellulose; Derivatives thereof (not used)
- C08B 37/18
- Reserve carbohydrates, e.g. glycogen, inulin, laminarin; Derivatives thereof (not used)

Project: N/A (C08F)

- U C08F 2/00** **Processes of polymerisation**
- NOTE
- Group [C08F 2/00](#) and subgroups can be incomplete according to the following classification rules: - if a process of polymerisation is specifically used for only one type of polymer, it is not classified in [C08F 2/00](#) ; - in such a case, the classification symbol of [C08F 2/00](#) providing for the process of polymerisation may be used in the form of Combination Set in the groups providing for the polymer, e.g. ([C08F 36/04](#) , [C08F 2/14](#)) - this method of classification is applied only when a note after the group providing for the polymer explicitly indicates which symbols of [C08F 2/00](#) may be used for forming the Combination Set.
- C08F 2/001
- {Multistage polymerisation processes characterised by a change in reactor conditions without deactivating the intermediate polymer (-[C08F 295/00](#) , [C08F 297/00](#) take precedence-)}
- C08F 2/008
- {cleaning reaction vessels using chemicals (-mechanical methods [B08B 9/08-](#))}
- C08F 2/04
- Polymerisation in solution (-[C08F 2/32](#) takes precedence-)
- C08F 2/12
- Polymerisation in non-solvents (-[C08F 2/32](#) takes precedence-)
- C08F 2/58
- Polymerisation initiated by direct application of electric current (-electrolytic processes, e.g. electrophoresis [C25-](#))
- C08F 4/00** **Polymerisation catalysts (catalysts in general [B01J](#))**
- NOTE
1. Group [C08F 4/00](#) and subgroups can be incomplete according to the following classification rules: - if a catalyst is specifically used for only one type of polymer, it is not classified in [C08F 4/00](#) ; - in such a case, the classification symbol of

[C08F 4/00](#) providing for the catalyst may be used as a symbol for a C-Set in the groups providing for the polymer, e.g. ([C08F 12/04](#) , [C08F 4/62](#)) - this method of classification is applied only when a note after the group providing for the polymer explicitly indicates which symbols of [C08F 4/00](#) may be used for forming the C-set.

2. When classifying in group [C08F 4/00](#) , the type of catalyst can be further indexed by using indexing codes chosen from [C08F 2410/00](#) , [C08F 2420/00](#) or their subgroups

- C08F 4/28
 - Oxygen or compounds releasing free oxygen (redox systems [C08F 4/40](#))
- U C08F 4/42
 - Metals; Metal hydrides; Metallo-organic compounds; Use thereof as catalyst precursors
- U C08F 4/44
 - selected from light metals, zinc, cadmium, mercury, copper, silver, gold, boron, gallium, indium, thallium, rare earths or actinides
- U C08F 4/46
 - selected from alkali metals
- C08F 4/461
 - {Catalysts containing at least two different components covered by the same or by different subgroups of group [C08F 4/46](#) , e.g. butyllithium + propylrubidium}
- C08F 4/463
 - {selected from sodium or potassium ([C08F 4/461](#) takes precedence)}
- C08F 4/48
 - selected from lithium, rubidium, caesium or francium ([C08F 4/461](#) takes precedence)}
- C08F 4/52
 - selected from boron, aluminium, gallium, indium, thallium or rare earths ([C08F 4/14](#) takes precedence)
- C08F 4/60
 - together with refractory metals, iron group metals, platinum group metals, manganese, rhenium {technetium} or compounds thereof

NOTES

In groups [C08F 4/60](#) to [C08F 4/64](#) , the term "component" comprises the transition metal or a compound thereof, pretreated or not { (pretreating per se [C08F 4/61](#) , [C08F 4/63](#) and [C08F 4/65](#)) }

Group [C08F 4/60003](#) takes precedence over groups [C08F 4/602](#) to [C08F 4/619](#)

- U C08F 4/60003
 - {the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond}(not used)

NOTE

For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom

- C08F 4/60006
 - {Bidentate ligand (not used)}
- C08F 4/60082
 - {Tridentate ligand (not used)}
- C08F 4/60168
 - {Tetra- or multi-dentate ligand (not used)}
- C08F 4/602
 - Component covered by group [C08F 4/60](#) with an organo-aluminium compound [([C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)]
- C08F 4/6022
 - {Component of [C08F 4/60](#) containing at least two different metals}
- C08F 4/603
 - Component covered by group [C08F 4/60](#) with a metal or compound covered by group [C08F 4/44](#) other than an organo-aluminium compound [([C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)]
- C08F 4/6032
 - {Component of [C08F 4/60](#) containing at least two different metals}

- C08F 4/605 Component covered by group [C08F 4/60](#) with a metal or compound covered by group [C08F 4/44](#) , not provided for in a single group of groups [C08F 4/602](#) or [C08F 4/603](#) [(-[C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)]
- C08F 4/6052 {-Component of [C08F 4/60](#) containing at least two different metals-}
- C08F 4/606 Catalyst comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by groups [C08F 4/60](#) {(-[C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)}
- C08F 4/607 Catalyst containing a specific non-metal or metal-free compound [(-[C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)]
- C08F 4/61 Pretreating the metal or compound covered by group [C08F 4/60](#) before the final contacting with the metal or compound covered by group [C08F 4/44](#) [(-[C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)]
- U C08F 4/612 Pretreating with metals or metal-containing compounds
- C08F 4/613 with metals covered by group [C08F 4/60](#) or compounds thereof
- U C08F 4/614 with magnesium or compounds thereof
- C08F 4/6141 {-and metals of [C08F 4/60](#) or compounds thereof-}
- U C08F 4/6143 {halides of magnesium}
- C08F 4/6145 {-and metals of group [C08F 4/60](#) or compounds thereof-}
- C08F 4/6148 {-magnesium or compounds thereof not provided for in [C08F 4/6143](#) or [C08F 4/6146](#)-}
- U C08F 4/615 with aluminium or compounds thereof
- C08F 4/6152 {-and metals of [C08F 4/60](#) or compounds thereof-}
- U C08F 4/6155 {and magnesium or compounds thereof}
- C08F 4/6157 {-and metals of [C08F 4/60](#) or compounds thereof-}
- U C08F 4/616 with silicon or compounds thereof
- C08F 4/6162 {-and metals of [C08F 4/60](#) or compounds thereof-}
- C08F 4/617 with metals or metal-containing compounds, not provided for in groups [C08F 4/613](#) to [C08F 4/616](#)
- C08F 4/6172 {-and metals of [C08F 4/60](#) or compounds thereof-}
- C08F 4/618 with metals or metal-containing compounds, provided for in at least two of the groups [C08F 4/613](#) to [C08F 4/617](#)
- C08F 4/6181 {-and metals of [C08F 4/60](#) or compounds thereof-}
- C08F 4/6188 {-and metals or metal-containing compounds of [C08F 4/617](#)-}
- C08F 4/619 Component covered by group [C08F 4/60](#) containing a transition metal-carbon bond [(-[C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)]
- C08F 4/61904 {-in combination with another component of [C08F 4/60](#)-}
- U C08F 4/62 Refractory metals or compounds thereof

NOTE

Group [C08F 4/62003](#) takes precedence over groups [C08F 4/622](#) to [C08F 4/639](#)

- U C08F 4/62003 {-the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond}(not used)

NOTE

For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last

mentioned atoms except for compounds marked with * where the charge is on the marked atom

- C08F 4/62006 {Bidentate ligand (not used)}
- C08F 4/62082 {Tridentate ligand (not used)}
- C08F 4/62168 {Tetra- or multi-dentate ligand (not used)}
- C08F 4/622 Component covered by group [C08F 4/62](#) with an organo-aluminium compound [(-[C08F 4/62003](#) - [C08F 4/62196](#) take precedence-)]
- C08F 4/6222 {-Component of [C08F 4/62](#) containing at least two different metals-}
- C08F 4/623 Component covered by group [C08F 4/62](#) with a metal or compound covered by group [C08F 4/44](#) other than an organo-aluminium compound [(-[C08F 4/62003](#) - [C08F 4/62196](#) take precedence-)]
- C08F 4/6232 {-Component of [C08F 4/62](#) containing at least two different metals-}
- C08F 4/625 Component covered by group [C08F 4/62](#) with a metal or compound covered by group [C08F 4/44](#) , not provided for in a single group of groups [C08F 4/622](#) or [C08F 4/623](#) [(-[C08F 4/62003](#) - [C08F 4/62196](#) take precedence-)]
- C08F 4/6252 {-Component of [C08F 4/62](#) containing at least two different metals-}
- C08F 4/626 Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group [C08F 4/62](#) [(-[C08F 4/62003](#) - [C08F 4/62196](#) take precedence-)]
- C08F 4/627 Catalysts containing a specific non-metal or metal-free compound [(-[C08F 4/62003](#) - [C08F 4/62196](#) take precedence-)]
- C08F 4/63 Pretreating the metal or compound covered by group [C08F 4/62](#) before the final contacting with the metal or compound covered by group [C08F 4/44](#) [(-[C08F 4/62003](#) - [C08F 4/62196](#) take precedence-)]
- U C08F 4/632 Pretreating with metals or metal-containing compounds
- C08F 4/633 with metals covered by group [C08F 4/62](#) or compounds thereof
- U C08F 4/634 with magnesium or compounds thereof
- C08F 4/6341 {-and metals of [C08F 4/62](#) or compounds thereof-}
- U C08F 4/6343 {halides of magnesium}
- C08F 4/6345 {-and metals of [C08F 4/62](#) or compounds thereof-}
- C08F 4/6348 {-magnesium or compounds thereof not provided for in [C08F 4/6345](#) or [C08F 4/6346](#)-}
- U C08F 4/635 with aluminium or compounds thereof
- C08F 4/6352 {-and metals of [C08F 4/62](#) or compounds thereof-}
- U C08F 4/6355 {and magnesium or compounds thereof}
- C08F 4/6357 {-and metals of [C08F 4/62](#) or compounds thereof-}
- U C08F 4/636 with silicon or compounds thereof
- C08F 4/6362 {-and metals of [C08F 4/62](#) or compounds thereof-}
- C08F 4/637 with metals or metal-containing compounds, not provided for in groups [C08F 4/633](#) to [C08F 4/636](#)
- C08F 4/6372 {-and metals of [C08F 4/62](#) or compounds thereof-}
- C08F 4/638 with metals or metal-containing compounds, not provided for in asingle group of groups [C08F 4/633](#) to [C08F 4/637](#)
- C08F 4/6381 {-and metals or metal-containing compounds of [C08F 4/62](#)-}
- C08F 4/6388 {-and metals or metal-containing compounds of [C08F 4/637](#)-}
- C08F 4/639 Component covered by group [C08F 4/62](#) containing a transition metal-carbon bond [(-[C08F 4/62003](#) - [C08F 4/62196](#) take precedence-)]

- C08F 4/63904 {in combination with another component of [C08F 4/62](#)}
- U C08F 4/64 Titanium, zirconium, hafnium or compounds thereof
- NOTE
Group [C08F 4/64003](#) takes precedence over groups [C08F 4/642](#) to [C08F 4/659](#)
- U C08F 4/64003 {the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond}(not used)
- NOTE
For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom
- C08F 4/64006 {Bidentate ligand (not used)}
- C08F 4/64082 {Tridentate ligand (not used)}
- C08F 4/64168 {Tetra- or multi-dentate ligand (not used)}
- C08F 4/642 Component covered by group [C08F 4/64](#) with an organo-aluminium compound [(-[C08F 4/64003](#) - [C08F 4/64196](#) take precedence-)]
- C08F 4/6423 {-Component of [C08F 4/64](#) containing at least two different metals-}
- C08F 4/643 Component covered by group [C08F 4/64](#) with a metal or compound covered by group [C08F 4/44](#) other than an organo-aluminium compound [(-[C08F 4/64003](#) - [C08F 4/64196](#) take precedence-)]
- C08F 4/6432 {-Component of [C08F 4/64](#) containing at least two different metals-}
- C08F 4/645 Component covered by group [C08F 4/64](#) with a metal or compound covered by group [C08F 4/44](#) , not provided for in a single group of groups [C08F 4/642](#) to [C08F 4/643](#) [(-[C08F 4/60003](#) - [C08F 4/60196](#) take precedence-)]
- C08F 4/6452 {-Component of [C08F 4/64](#) containing at least two different metals-}
- C08F 4/646 Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group [C08F 4/64](#) [(-[C08F 4/64003](#) - [C08F 4/64196](#) take precedence-)]
- C08F 4/647 Catalysts containing a specific non-metal or metal-free compound [(-[C08F 4/64003](#) - [C08F 4/64196](#) take precedence-)]
- C08F 4/65 Pretreating the metal or compound covered by group [C08F 4/64](#) before the final contacting with the metal or compound covered by group [C08F 4/44](#) [(-[C08F 4/64003](#) - [C08F 4/64196](#) take precedence-)]
- U C08F 4/652 Pretreating with metals or metal-containing compounds
- C08F 4/653 with metals of [C08F 4/64](#) or compounds thereof
- U C08F 4/654 with magnesium or compounds thereof
- C08F 4/6541 {-and metals of [C08F 4/64](#) or compounds thereof-}
- U C08F 4/6543 {halides of magnesium}
- C08F 4/6545 {-and metals of [C08F 4/64](#) or compounds thereof-}
- C08F 4/6548 {-magnesium or compounds thereof, not provided for in [C08F 4/6543](#) or [C08F 4/6546](#)-}
- U C08F 4/655 with aluminium or compounds thereof
- C08F 4/6552 {-and metals of [C08F 4/64](#) or compounds thereof-}
- U C08F 4/6555 {and magnesium or compounds thereof}

- C08F 4/6557 {-and metals of [C08F 4/64](#) or compounds thereof-}
- U C08F 4/656 with silicon or compounds thereof
- C08F 4/6562 {-and metals of [C08F 4/64](#) or compounds thereof-}
- C08F 4/657 with metals or metal-containing compounds, not provided for in groups [C08F 4/653](#) to [C08F 4/656](#)
- C08F 4/6572 {-and metals of [C08F 4/64](#) or compounds thereof-}
- C08F 4/658 with metals or metal-containing compounds, not provided for in a single group of groups [C08F 4/653](#) to [C08F 4/657](#)
- C08F 4/6581 {-and metals of [C08F 4/64](#) or compounds thereof-}
- C08F 4/6588 {-and metals or metal-containing compounds of [C08F 4/657](#)-}
- C08F 4/659 Component covered by group [C08F 4/64](#) containing a transition metal-carbon bond [(-[C08F 4/64003](#) - [C08F 4/64196](#) take precedence-)]
- C08F 4/65904 {-in combination with another component of [C08F 4/64](#)-}
- U C08F 4/68 Vanadium, niobium, tantalum or compounds thereof
- U C08F 4/68008 {the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond}(not used)

NOTE

For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom

- C08F 4/68017 {Bidentate ligand (not used)}
- C08F 4/68206 {Tridentate ligand (not used)}
- C08F 4/68422 {Tetra- or multi-dentate ligand (not used)}
- U C08F 4/69 Chromium, molybdenum, tungsten or compounds thereof
- U C08F 4/69008 {the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond}(not used)

NOTE

For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom

- C08F 4/69017 {Bidentate ligand (not used)}
- C08F 4/69206 {Tridentate ligand (not used)}
- C08F 4/69422 {Tetra- or multi-dentate ligand (not used)}
- U C08F 4/70 Iron group metals, platinum group metals or compounds thereof
- U C08F 4/7001 {the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond}(not used)

NOTE

For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom

- C08F 4/7003 {Bidentate ligand (not used)}

- C08F 4/7039 · · · · · {Tridentate ligand (not used)}
- C08F 4/708 · · · · · {Tetra- or multi-dentate ligand (not used)}
- C08F 4/7095 · · · · · {Cobalt, nickel or compounds thereof (-C08F 4/7001 to C08F 4/7093 take precedence)}
- C08F 4/72 · · selected from metals not provided for in group C08F 4/44 (-C08F 4/54 to C08F 4/70 take precedence)

C08F 6/00 Post-polymerisation treatments (-C08F 8/00 takes precedence; of conjugated diene rubbers C08C-)

NOTE

1. In groups C08F 6/00 to C08F 6/28 the treatment of specific polymers is indicated using the subdivision of C08L 23/00 to C08L 57/12 in the form of C-Sets. Example: (C08F 6/12 , C08L 25/06) 2. Groups C08F 6/001, C08F 6/006, C08F 6/008, C08F 6/02 , C08F 6/04 take precedence over the other groups.

- C08F 6/02 · Neutralisation of the polymerisation mass, e.g. killing the catalyst (-short-stopping C08F 2/42-){also removal of catalyst residues}
- U C08F 6/06 · Treatment of polymer solutions
- C08F 6/08 · · Removal of catalyst residues{ not used, see C08F 6/02-}
- C08F 6/26 · Treatment of polymers prepared in bulk {also solid polymers or polymer melts}

C08F 8/00 Chemical modification by after-treatment (-graft polymers, block polymers, cross-linking with unsaturated monomers or with polymers C08F 251/00 to C08F 299/00 ; of conjugated diene rubbers C08C; cross-linking in general C08J-)

NOTE

Classification is given in the form of C-Sets when sufficient information is provided concerning the polymer to be modified. In groups C08F 8/00 to C08F 8/50 , the chemical modification of specific polymers is indicated using the subdivisions of C08F 10/00 to C08F 34/04 , C08F 38/00 to C08F 38/04 , C08F 110/00 to C08F 134/04 , C08F 138/00 to C08F 138/04 , C08F 210/00 to C08F 234/04 , C08F 238/00 to C08F 299/08 . Example: (C08F 8/44 , C08F 16/06) Otherwise, only the C08F 8/00 - C08F 8/50 symbol(s) is (are) given.

- C08F 8/30 · Introducing nitrogen atoms or nitrogen-containing groups (-polymeric products of isocyanates or thiocyanates C08G-)
- C08F 8/50 · Partial depolymerisation
- U C08F 14/00 **Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen**
- U C08F 14/18 · Monomers containing fluorine

WARNING

In group C08F 14/18 and subgroups, the method of polymerisation may be indicated using the subdivision of C08F 2/02 , C08F 2/04 , C08F 2/16 , C08F 2/38 , C08F 2/44 and C08F 2/46 in the form of C-Sets. Example: (C08F 14/22 , C08F 2/38)

- C08F 14/185 · · {-Monomers containing fluorine not covered by the groups C08F 14/20 to C08F 14/28-}

- U C08F 22/00** Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides or nitriles thereof
- U C08F 22/10** · Esters
- C08F 22/12** · · of phenols or saturated alcohols{(-[C08F 22/105](#) takes precedence-)}
- C08F 22/26** · · of unsaturated alcohols{(-[C08F 22/105](#) takes precedence-)}
- C08F 24/00** Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (-cyclic esters of polyfunctional acids [C08F 18/00](#) ; cyclic anhydrides of unsaturated acids [C08F 20/00](#) , [C08F 22/00](#)-)
- C08F 30/00** Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds)
- U C08F 32/00** Homopolymers and copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system
- C08F 32/08** · having two condensed rings (-coumarone-indene polymers [C08F 244/00](#)-)
- C08F 34/00** Homopolymers and copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (-cyclic esters of polyfunctional acids [C08F 18/00](#) ; cyclic anhydrides or imides [C08F 22/00](#)-)
- C08F 34/02** · in a ring containing oxygen (-coumarone-indene polymers [C08F 244/00](#)-)
- C08F 36/00** Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (-[C08F 32/00](#) takes precedence-)
- NOTE**
- In [C08F 36/00](#) to [C08F 36/22](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/60](#), [C08F 4/62](#), [C08F 4/64](#), [C08F 4/642](#), [C08F 4/6421](#), [C08F 4/643](#) or [C08F 4/68](#) to [C08F 4/82](#) in the form of C-Sets. Example: ([C08F 36/04](#) , [C08F 4/642](#))
- U C08F 38/00** Homopolymers and copolymers of compounds having one or more carbon-to-carbon triple bonds
- C08F 38/04** · Vinylacetylene
- U C08F 114/00** Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen
- U C08F 114/18** · Monomers containing fluorine
- C08F 114/185** · · {-Monomers containing fluorine not covered by the groups [C08F 114/20](#) to [C08F 114/28](#)-}

- U C08F 122/00** Homopolymers of compounds having one or more unsaturated aliphatic radicals each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides or nitriles thereof
- U C08F 122/10 · Esters
- C08F 122/12 · · of phenols or saturated alcohols{(-C08F 122/105 takes precedence-)}
- C08F 122/26 · · of unsaturated alcohols{(-C08F 122/105 takes precedence-)}
- C08F 124/00** Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (-cyclic esters of polyfunctional acids [C08F 118/00](#) ; cyclic anhydrides of unsaturated acids [C08F 120/00](#) , [C08F 122/00](#)-)
- C08F 130/00** Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds)
- C08F 134/00** Homopolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (-cyclic esters of polyfunctional acids [C08F 118/00](#) ; cyclic anhydrides or imides [C08F 122/00](#)-)
- C08F 136/00** Homopolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (-[C08F 132/00](#) takes precedence-)
- NOTE
- In [C08F 136/00](#) to [C08F 136/22](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/60](#) , [C08F 4/62](#) , [C08F 4/64](#) , [C08F 4/642](#) , [C08F 4/6421](#) , [C08F 4/643](#) or [C08F 4/68](#) to [C08F 4/82](#) in the form of C-Sets. Example: ([C08F 136/18](#) , [C08F 2/26](#))
- U C08F 138/00** Homopolymers of compounds having one or more carbon-to-carbon triple bonds
- C08F 138/04 · Vinylacetylene
- U C08F 214/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen
- U C08F 214/18 · Monomers containing fluorine
- C08F 214/182 · · {-Monomers containing fluorine not covered by the groups [C08F 214/20](#) to [C08F 214/28](#)-}
- U C08F 220/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical or a salt, anhydride ester, amide, imide or nitrile thereof
- C08F 220/62 · Monocarboxylic acids having ten or more carbon atoms; Derivatives thereof (-copolymers of drying oils [C08F 242/00](#)-)

- U C08F 222/00** Copolymers of compounds having one or more unsaturated aliphatic radicals each having only one carbon-to-carbon double bond, at least one being terminated by a carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides or nitriles thereof
- U C08F 222/10** · Esters
- C08F 222/12** · · of phenols or saturated alcohols{(-[C08F 222/1006](#) takes precedence-)}
- C08F 222/26** · · of unsaturated alcohols{(-[C08F 222/1006](#) takes precedence-)}
- C08F 224/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (-cyclic esters of polyfunctional acids [C08F 218/00](#) ; cyclic anhydrides of unsaturated acids [C08F 220/00](#) , [C08F 222/00](#)-)
- C08F 230/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds)
- U C08F 232/00** Copolymers of cyclic compounds containing no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system
- C08F 232/08** · having condensed rings (-coumarone-indene polymers [C08F 244/00](#)-)
- C08F 234/00** Copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (-cyclic esters of polyfunctional acids [C08F 218/00](#) ; cyclic anhydrides or imides [C08F 222/00](#)-)
- C08F 234/02** · in a ring containing oxygen (-coumarone-indene polymers [C08F 244/00](#)-)
- C08F 236/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (-[C08F 232/00](#) takes precedence-)
- NOTE**
- In [C08F 236/00](#) to [C08F 236/22](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/60](#), [C08F 4/62](#), [C08F 4/64](#), [C08F 4/642](#), [C08F 4/6421](#), [C08F 4/643](#) or [C08F 4/68](#) to [C08F 4/82](#) in the form of C-Sets. Example: ([C08F 236/10](#) , [C08F 4/46](#))
- C08F 255/00** Macromolecular compounds obtained by polymerising monomers on to polymers of hydrocarbons as defined in group [C08F 10/00](#)
- U C08F 255/02** · on to polymers of olefins having two or three carbon atoms
- C08F 255/04** · · on to ethene-propene copolymers{(-[C08F 255/023](#) takes precedence-)}
- C08F 255/06** · · on to ethene-propene-diene terpolymers{(-[C08F 255/023](#) takes precedence-)}
- C08F 257/00** Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 12/00](#)
- C08F 259/00** Macromolecular compounds obtained by polymerising monomers on to polymers of halogen containing monomers as defined in group [C08F 14/00](#)
- C08F 261/00** Macromolecular compounds obtained by polymerising monomers on to polymers of oxygen-containing monomers as defined in group [C08F 16/00](#)

- C08F 263/00** Macromolecular compounds obtained by polymerising monomers on to polymers of esters of unsaturated alcohols with saturated acids as defined in group [C08F 18/00](#)
- C08F 265/00** Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated monocarboxylic acids or derivatives thereof as defined in group [C08F 20/00](#)
- C08F 267/00** Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated polycarboxylic acids or derivatives thereof as defined in group [C08F 22/00](#)
- C08F 269/00** Macromolecular compounds obtained by polymerising monomers on to polymers of heterocyclic oxygen-containing monomers as defined in group [C08F 24/00](#)
- C08F 271/00** Macromolecular compounds obtained by polymerising monomers on to polymers of nitrogen-containing monomers as defined in group [C08F 26/00](#)
- C08F 273/00** Macromolecular compounds obtained by polymerising monomers on to polymers of sulfur-containing monomers as defined in group [C08F 28/00](#)
- C08F 275/00** Macromolecular compounds obtained by polymerising monomers on to polymers of monomers containing phosphorus, selenium, tellurium or a metal as defined in group [C08F 30/00](#)
- C08F 277/00** Macromolecular compounds obtained by polymerising monomers on to polymers of carbocyclic or heterocyclic monomers as defined respectively in group [C08F 32/00](#) or in group [C08F 34/00](#)
- C08F 279/00** Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having two or more carbon-to-carbon double bonds as defined in group [C08F 36/00](#)

NOTE

In [C08F 279/02](#) and [C08F 279/04](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#) , [C08F 2/16](#) , [C08F 2/18](#) or [C08F 2/22](#) in the form of C-Sets. Example: ([C08F 279/02](#) , [C08F 2/22](#))

- C08F 281/00** Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having carbon-to-carbon triple bonds as defined in group [C08F 38/00](#)
- C08F 283/00** Macromolecular compounds obtained by polymerising monomers on to polymers provided for in subclass [C08G](#) **{(-on to polymers modified by introduction of aliphatic unsaturated end or side groups [C08F 290/00](#)-)}**
- C08F 283/006** · {-on to polymers provided for in [C08G 18/00](#)-([C08F 283/004](#) takes precedence-)}
- C08F 283/01** · on to unsaturated polyesters{(-[C08F 283/004](#) takes precedence-)}

NOTE

After the symbol of group [C08F 283/01](#) - [C08F 283/14](#) and using the C-Sets, notations concerning the method of polymerisation or the nature of the catalyst can be indicated. These notations are selected from groups [C08F 2/00](#) , [C08F 2/16](#) , [C08F 2/46](#) , [C08F 2/48](#) , [C08F 2/50](#) , [C08F 4/00](#) , [C08F 4/04](#) , [C08F 4/06](#) , [C08F 4/28](#) and [C08F 4/42](#) . Example: ([C08F 283/01](#) , [C08F 2/16](#))

- C08F 283/02** · on to polycarbonates or saturated polyesters{(-[C08F 283/004](#) takes precedence-)}

- C08F 283/04 · on to polycarbonamides, polyesteramides or polyimides{(-C08F 283/004 takes precedence-)}
- C08F 283/06 · on to polyethers, polyoxymethylenes or polyacetals{(-C08F 283/004 takes precedence-)}
- C08F 283/10 · on to polymers containing more than one epoxy radical per molecule{(-C08F 283/004 takes precedence-)}
- C08F 283/14 · on to polymers obtained by ring-opening polymerisation of carbocyclic compounds having one or more carbon-to-carbon double bonds in the carbocyclic ring, i.e. polyalkeneamers{(-C08F 283/004 takes precedence-)}
- C08F 285/00 Macromolecular compounds obtained by polymerising monomers on to preformed graft polymers{(-C08F 283/00 takes precedence-)}**
- C08F 287/00 Macromolecular compounds obtained by polymerising monomers on to block polymers{(-C08F 283/00 takes precedence-)}**
- C08F 289/00 Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds not provided for in groups [C08F 251/00](#) to [C08F 287/00](#)**
- U C08F 290/00 Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups**
- U C08F 290/02 · on to polymers modified by introduction of unsaturated end groups
- C08F 290/04 · · Polymers provided for in subclasses [C08C](#) or [C08F](#)
- C08F 290/042 · · · {-Polymers of hydrocarbons as defined in group [C08F 10/00](#)-}
- C08F 290/044 · · · {-Polymers of aromatic monomers as defined in group [C08F 12/00](#)-}
- C08F 290/048 · · · {-Polymers of monomers having two or more carbon-to-carbon double bonds as defined in group [C08F 36/00](#)-}
- C08F 290/06 · · Polymers provided for in subclass [C08G](#)
- U C08F 290/08 · on to polymers modified by introduction of unsaturated side groups
- C08F 290/10 · · Polymers provided for in subclass [C08B](#)
- C08F 290/12 · · Polymers provided for in subclasses [C08C](#) or [C08F](#)
- C08F 290/122 · · · {-Polymers of hydrocarbons as defined in group [C08F 10/00](#)-}
- C08F 290/124 · · · {-Polymers of aromatic monomers as defined in group [C08F 12/00](#)-}
- C08F 290/128 · · · {-Polymers of monomers having two or more carbon-to-carbon double bonds as defined in group [C08F 36/00](#)-}
- C08F 290/14 · · Polymers provided for in subclass [C08G](#)
- C08F 291/00 Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds according to more than one of the groups [C08F 251/00](#) to [C08F 289/00](#)**
- NOTE
- In [C08F 291/00](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#) , [C08F 2/16](#) , [C08F 2/18](#) or [C08F 2/22](#) in the form of C-Sets. Example: ([C08F 291/00](#) , [C08F 2/16](#))
- C08F 291/18 · on to irradiated or oxidised macromolecules (-epoxidised [C08F 291/10](#)-)
- C08F 293/00 Macromolecular compounds obtained by polymerisation on to a macromolecule having groups capable of inducing the formation of new polymer chains bound exclusively at one or both ends of the starting macromolecule (-on to polymers modified by introduction of unsaturated end groups [C08F 290/02](#)-)**

C08F 299/00	Macromolecular compounds obtained by interreacting polymers involving only carbon-to-carbon unsaturated bond reactions, in the absence of non-macromolecular monomers (in the presence of non-macromolecular monomers C08F 251/00 to C08F 291/00 ; involving other reactions C08G 81/00)
C08F 301/00	Macromolecular compounds not provided for in groups C08F 10/00 to C08F 299/00
C08F 2410/00	Catalyst preparation (not used)
C08F 2420/00	Metallocene catalysts (not used)
C08F 2500/00	Characteristics or properties of obtained polymers; Use thereof (not used)
C08F 2800/00	Copolymer characterised by the proportions of the comonomers expressed (not used)
C08F 2810/00	Chemical modification of a polymer (not used)

Project: N/A (C08G)

U C08G 18/00	Polymeric products of isocyanates or isothiocyanates (preparatory processes of porous or cellular materials, in which the monomers or catalysts are not specific C08J)
U C08G 18/06	· with compounds having active hydrogen
U C08G 18/08	· · Processes
C08G 18/0895	· · · {-Manufacture of polymers by continuous processes (C08G 18/0838 takes precedence)}
	NOTES
	After the symbols C08G 18/10 and C08G 18/12 and separated by a "," sign, are indicated the reactive components of a second or following step by one of the symbols C08G 18/2805 , C08G 18/30 to C08G 18/38 , C08G 18/40 to C08G 18/64 without subnotations, C08G 18/65 to C08G 18/66 , C08G 18/70 to C08G 18/80
	After the symbols C08G 18/10 and C08G 18/12 and separated by a "," sign are indicated the oligomerisation of isocyanate- or isothiocyanate groups in the prepolymers or in the added reactive components involving reaction of at least a part of the isocyanate- or isothiocyanate groups with each other in the reaction mixture by the symbols C08G 18/02 or C08G 18/09 respectively or by subnotations thereof
C08G 18/14	· · · Manufacture of cellular products
U C08G 18/70	· · characterised by the isocyanates or isothiocyanates used
U C08G 18/72	· · · Polyisocyanates or polyisothiocyanates
U C08G 18/80	· · · · Masked polyisocyanates
U C08G 18/8003	· · · · · {-masked with compounds having at least two groups containing active hydrogen}
U C08G 18/8006	· · · · · · {-with compounds of C08G 18/32 }
C08G 18/8009	· · · · · · · {-with compounds of C08G 18/3203 }
C08G 18/8032	· · · · · · · · {-Masked aliphatic or cycloaliphatic polyisocyanates not provided for in one single of the groups C08G 18/8016 and C08G 18/8025 }
C08G 18/8038	· · · · · · · · · {-with compounds of C08G 18/3225 }

- U C08G 59/00 Polycondensates containing more than one epoxy group per molecule (low-molecular-weight polyepoxy compounds [C07](#)); Macromolecules obtained by polymerising compounds containing more than one epoxy group per molecule using curing agents or catalysts which react with the epoxy groups**
- U C08G 59/02 · Polycondensates containing more than one epoxy group per molecule
- C08G 59/022 · · {-characterised by the preparation process or apparatus used}
- C08G 59/025 · · {-characterised by the purification methods used}
- C08G 59/027 · · {-obtained by epoxydation of unsaturated precursor, e.g. polymer or monomer}
- U C08G 59/04 · · of polyhydroxy compounds with epihalohydrins or precursors thereof
- U C08G 59/06 · · · of polyhydric phenols
- C08G 59/066 · · · · {-with chain extension or advancing agents}
- U C08G 59/18 · Macromolecules obtained by polymerising compounds containing more than one epoxy group per molecule using curing agents or catalysts which react with the epoxy groups; { e.g. general methods of curing}
- U C08G 59/20 · · characterised by the epoxy compounds used
- NOTE**
Preparation and curing of epoxy polycondensates, in which the epoxy polycondensate is not exclusively low-molecular-weight compound and in which the method of curing is not important, are classified only in groups [C08G 59/02](#) to [C08G 59/12](#).
- U C08G 59/22 · · · Di-epoxy compounds
- C08G 59/223 · · · · {-together with monoepoxy compounds}
- U C08G 59/30 · · · · containing atoms other than carbon, hydrogen, oxygen and nitrogen
- C08G 59/308 · · · · · {-containing halogen atoms}
- U C08G 59/32 · · · Epoxy compounds containing three or more epoxy groups
- U C08G 59/3254 · · · · {-containing atoms other than carbon, hydrogen, oxygen or nitrogen}
- C08G 59/3263 · · · · · {-containing sulfur}
- C08G 59/3272 · · · · · {-containing phosphorus}
- C08G 59/3281 · · · · · {-containing silicon}
- C08G 59/329 · · · · · {-containing halogen atoms}
- U C08G 63/00 Macromolecular compounds obtained by reactions forming a carboxylic ester link in the main chain of the macromolecule (polyester-amides [C08G 69/44](#); polyester-imides [C08G 73/16](#))**
- NOTE**
Compounds characterised by the chemical constitution of the polyesters are classified in the groups for the type of polyester compound. Compounds characterised by the preparation process of the polyesters are classified in the groups for the process employed (groups [C08G 63/78](#) to [C08G 63/87](#)). Compounds characterised both by the chemical constitution and by the preparation process are classified according to each of these aspects.
- U C08G 63/78 · Preparation processes
- U C08G 63/82 · · characterised by the catalyst used
- C08G 63/826 · · · {Metals not provided for in groups [C08G 63/83](#) to [C08G 63/86](#)-([C08G 63/823](#) takes precedence)}

- U C08G 73/00** **Macromolecular compounds obtained by reactions forming a linkage containing nitrogen with or without oxygen or carbon in the main chain of the macromolecule, not provided for in groups [C08G 12/00](#) to [C08G 71/00](#) {{(polycarbodiimides prepared from isocyanates [C08G 18/025](#), [C08G 18/797](#))}}**
- U C08G 73/02 · Polyamines
- U C08G 73/026 · · {Wholly aromatic polyamines}
- C08G 73/0266 · · · {-Polyanilines or derivatives thereof}
- U C08G 77/00** **Macromolecular compounds obtained by reactions forming a linkage containing silicon with or without sulfur, nitrogen, oxygen or carbon in the main chain of the macromolecule**
- WARNING
- Groups [C08G 77/70](#) - [C08G 77/80](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [C08G 77/70](#): [C08G 77/04](#) - [C08G 77/80](#): [C08G 77/04](#)
- C08G 77/70 · {-Siloxanes defined by use of the MDTQ nomenclature}
- C08G 77/80 · {-Siloxanes having aromatic substituents, e.g. phenyl side groups}
- U C08G 81/00** **Macromolecular compounds obtained by interreacting polymers in the absence of monomers, e.g. block polymers (involving only carbon-to-carbon unsaturated bond reactions [C08F 299/00](#); {polyester-amides [C08G 69/44](#); polyester-imides [C08G 73/16](#); polyamides-imides [C08G 73/14](#); block- or graft polymers containing polysiloxane sequences [C08G 77/42](#))}**
- U C08G 81/02 · at least one of the polymers being obtained by reactions involving only carbon-to-carbon unsaturated bonds
- C08G 81/021 · · {-Block or graft polymers containing only sequences of polymers of [C08C](#) or [C08F](#)}
- C08G 81/022 · · · {-containing sequences of polymers of conjugated dienes and of polymers of alkenyl aromatic compounds}
- U C08G 83/00** **Macromolecular compounds not provided for in groups [C08G 2/00](#) to [C08G 81/00](#)**
- U C08G 83/002 · {Dendritic macromolecules}
- C08G 83/003 · · {-Dendrimers}
- C08G 83/004 · · · {-After treatment of dendrimers}
- C08G 83/005 · · {-Hyperbranched macromolecules}
- C08G 83/006 · · · {-After treatment of hyperbranched macromolecules}
- C08G 83/008 · {-Supramolecular polymers}

Project: N/A (C08J)**C08J**

WORKING-UP; GENERAL PROCESSES OF COMPOUNDING; AFTER-TREATMENT NOT COVERED BY SUBCLASSES [C08B](#), [C08C](#), [C08F](#), [C08G](#)(-mechanical aspects [B29](#); layered products, manufacture thereof [B32B](#); treatment of macromolecular material specially adapted to enhance its filling properties in mortars, concrete or artificial stone [C04B 16/04](#) , [C04B 18/20](#) , [C04B 20/00](#) ; treatment of textiles [D06](#)-)

NOTE

1. This subclass covers processes, not covered by subclasses [C08B](#) to [C08H](#), for treating polymers.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place

2. When classifying in subclass [C08J](#), the treatment of specific polymers is indicated using indexing codes chosen from [C08J 2300/00](#) or subgroups thereof.

Example:

- Preparation of particles of polystyrene by impregnation of the particles with the blowing agent: [C08J 9/18](#) and [C08J 2325/06](#) .

The use of a polymeric component in minority, e.g. masterbatch, coating, impregnating agent or thin binder is indicated using indexing codes chosen from [C08J 2400/00](#) or subgroups thereof. Examples:

- Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/10](#)

- Bonding of polystyrene by heating: [C08J 5/121](#) and [C08J 2325/06](#)

- Coating of a polyethylene substrate with a polyurethane coating: [C08J 7/047](#) and [C08J 2323/06](#) and [C08J 2475/04](#) - Use of ABS as an additive for foamed polyacrylamide : [C08J 9/0061](#) and [C08J 2333/26](#) and [C08J 2455/02](#)

In the following subgroups, the codes of [C08J 2300/00](#) to [C08J 2399/00](#) are used to specify: - [C08J 3/226](#) : the polymeric material to which the masterbatch carrier is added. - [C08J 7/047](#) : the polymeric substrate to be coated. - [C08J 9/0061](#) : the polymeric component in majority in a multicomponents foamable blend.

3. Group [C08J 2400/00](#) was introduced on January 1st, 2012. Patent documents are continuously being reclassified. As a consequence, documents published before 01/01/2012, and to which [C08J 2400/00](#) indexing codes were allocated, are indexed in the corresponding head group. Example: -

Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/00](#) , instead of [C08J 2433/10](#) . In the following subgroups, the codes of [C08J 2400/00](#) to [C08J 2499/00](#) are used to specify: - [C08J 3/226](#) : the polymeric carrier in a masterbatch. - [C08J 5/12](#) : the chemical nature of the adhesive - [C08J 7/047](#) : the chemical nature of the coating(s). - [C08J 9/0061](#) : the polymeric component in minority in a multicomponents foamable blend. - [C08J 9/224](#) , [C08J 9/236](#) , [C08J 9/36](#) , [C08J 9/40](#) and [C08J 9/42](#) : the polymer used for coating, binding, or impregnating the foam. [C08J 9/26](#) : the polymer to be leached out. - [C08J 9/33](#) and [C08J 9/35](#) : the foam fragments included in the (foamable) polymer matrix. - in all other subgroups, when the presence of a polymeric component in minority is of relevance.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C08J 5/14](#) covered by [B24D 3/20](#) , [F16D 69/02](#)

[C08J 5/16](#) covered by [C10M](#)

U [C08J 3/00](#)

[C08J 3/12](#)

[C08J 3/124](#)

[C08J 3/126](#)

[C08J 3/128](#)

[C08J 3/14](#)

Processes of treating or compounding macromolecular substances

- Powdering or granulating{(-preparation of active ingredients, e.g. medical preparations in form of capsules [A61K 9/51](#) ; making granules [B29B 9/00-](#))}
- {Treatment for improving the free-flowing characteristics (-agglomerates, granulates or microbeadlets [A61K 9/16](#) ; process or devices for granulating material, e.g. non-sticking properties [B01J 2/30](#) ; auxiliary treatment of particle [B29B 9/16-](#))}
- {Polymer particles coated by polymer, e.g. core shell structures (-process or devices for granulating material, e.g. coating [B01J 2/003-](#))}
- {Polymer particles coated by inorganic and organic compounds (-macromolecules [C08J 3/126-](#))}
- by precipitation from solutions{(-[C08J 3/122](#) takes precedence-)}

- C08J 3/16
- by coagulating dispersions{(-[C08J 3/122](#) takes precedence; treatment of polymer emulsion, e.g. coagulation [C08F 6/22](#)-)}
- C08J 3/18
- Plasticising macromolecular compounds (-plasticisers [C08K](#)-)
- U C08J 3/20
- Compounding polymers with additives, e.g. colouring
- C08J 3/205
- in the presence of a {continuous}liquid phase
- C08J 3/24
- Crosslinking, e.g. vulcanising, of macromolecules (-mechanical aspects [B29C 35/00](#) ; crosslinking agents [C08K](#) ; { crosslinking aspects not classifiable in [C08G](#) , [C08F](#) , [C08K](#) ; compounding [C08J 3/20](#) })
- C08J 3/241
- {Preventing premature crosslinking by physical separation of components, e.g. encapsulation (-of other ingredients [C08K 9/00](#)-)}
- C08J 5/00**
- Manufacture of articles or shaped materials containing macromolecular substances (-shaping of foodstuffs [A23P](#) ; manufacture of semi-permeable membranes [B01D 67/00](#) to [B01D 71/00](#) ; mechanical features, see the relevant classes, e.g. [B29](#))**
- C08J 5/005
- {Reinforced macromolecular compounds with nanosized materials, e.g. nanoparticles, nanofibres, nanotubes, nanowires, nanorods or nanolayered materials (-use of ingredients characterised by shape [C08K 7/00](#) ; nanotechnology for materials and surface science [B82Y 30/00](#)-)}
- C08J 5/04
- Reinforcing macromolecular compounds with loose or coherent fibrous material (-after-treatment of threads during manufacture [D01F](#) ; { finishing of textiles [D06M](#) })
- C08J 5/12
- Bonding of a preformed macromolecular material to the same or other solid material such as metal, glass, leather, e.g. using adhesives{(-mechanical aspects [B29C 65/00](#)-)}
- C08J 5/124
- {using adhesives based on a macromolecular component (-adhesive compositions per se [C09J 4/00](#) , [C09J 101/00](#) to [C09J 201/00](#)-)}
- C08J 5/18
- Manufacture of films or sheets{ Producing films or sheets [B29D 7/01](#) ; wrappers or flexible covers, packaging materials of special type or form [B65D 65/00](#) - [B65D 65/466](#) ; shaping by stretching characterized by the choice of materials [B29C 55/005](#) ; layered products essentially comprising synthetic resin [B32B 27/00](#) - [B32B 27/42](#)-}
- C08J 5/20
- Manufacture of shaped of ion-exchange resins [Use of macromolecular compounds as anion [B01J 41/14](#) or cation [B01J 39/20](#) exchangers]
- C08J 5/22
- Films, membranes, or diaphragms{(-ion-exchange in general, [B01J 39/18](#) - [B01J 39/22](#) , [B01J 41/12](#) - [B01J 41/16](#) , [B01J 43/00](#) , [B01J 45/00](#) , [B01J 47/12](#) - [B01J 49/00](#) ; fuel cells with polymeric electrolyte material [H01M 8/1018](#)-)}

NOTE

[N: Notes:

1. Membranes of which at least the ion-exchanging parts are inorganic, i.e. mixtures of non polymeric ion exchange compounds, e.g. inorganic salts, and at least one polymer are classified in [C08J 5/22](#) ; membranes based on cellulose are classified in [C08J 5/2212](#) .
2. Methods for incorporating reinforcement supports or filling bodies are classified in [C08J 5/2206](#) (the support or filling body has no ion exchange activity).
3. Groups, e.g. SO₂F, which do not have ion-exchanging properties, but which may, by simple hydrolysis in an alkaline, neutral or acid medium, be transformed into ion-exchanging groups, e.g. SO₂H, are considered as such.
4. Ion-exchanging fibrous fabrics are considered as heterogeneous membranes and are classified in [C08J 5/2275](#) ; they include composite membranes, mixtures of two or more (ion exchange) polymers.
5. Membranes obtained by homogeneous melting or from a solution are considered as homogeneous, even if the membrane contains (after

solidification of the melt or the solution) heterogeneous elements, e.g. filling bodies, supports e.g. in the form of fabrics, or the like, i.e. the ion exchange resin forms the membrane.

6. Reactions which change the nature of the ion-exchanging groups, introduction of ion-exchanging groups, after-treatment (membrane has already been formed) are classified in [C08J 5/2287](#).

7. Quaternising reactions are not considered as after-treatments.

- U C08J 5/2206
 - • • {based on organic and/or inorganic macromolecular compounds}
- U C08J 5/2218
 - • • • {Synthetic macromolecular compounds}
- U C08J 5/2231
 - • • • • {based on macromolecular compounds obtained by reactions involving unsaturated carbon-to-carbon bonds}
- C08J 5/2243
 - • • • • • {-obtained by introduction of active groups capable of ion-exchange into compounds of the type [C08J 5/2231](#)-}
- C08J 7/00**
 - Chemical treatment or coating of shaped articles made of macromolecular substances (-coating with metallic material [C23C](#) ; electrolytic deposition of metals [C25](#)-)**
- C08J 7/04
 - Coating{(-~~Coating compositions per se [C09D 4/00](#) , [C09D 101/00](#) to [C09D 201/00](#)~~ ~~Coating compositions per se [C09D 4/00](#) , [C09D 101/00](#) to [C09D 201/00](#)~~)}
- C08J 7/047
 - • {with only one layer of a composition containing a polymer binder (-with more layers [C08J 7/042](#)-)}
- U C08J 7/12
 - Chemical modification
- C08J 7/123
 - • {Treatment by wave energy or particle radiation (-[C08J 7/18](#) takes precedence; surface shaping of articles by plasma treatment [B29C 59/14](#) , by wave energy or particle radiation [B29C 59/16](#)-)}
- C08J 9/00**
 - Working-up of macromolecular substances to porous or cellular articles or materials; After-treatment thereof (-mechanical aspects [B29C 44/00](#) ; foamed polymeric products of isocyanates or isothiocyanates characterised by the monomers or catalysts used [C08G 18/00](#)-)**
- C08J 9/0085
 - {Use of fibrous compounding ingredients (-[C08J 9/0076](#) takes precedence-)}
- U C08J 9/04
 - using blowing gases generated by a previously added blowing agent
- U C08J 9/12
 - • by a physical blowing agent
- U C08J 9/14
 - • • organic
- C08J 9/149
 - • • • {-Mixtures of blowing agents covered by more than one of the groups [C08J 9/141](#) to [C08J 9/143](#)-}
- NOTE**

In groups [C08J 9/16](#) to [C08J 9/232](#) , the following term is used with the meaning indicated:
- "expandable" includes also expanding, pre-expanded or expanded
- C08J 9/24
 - by surface fusion and bonding of particles to form voids, e.g. sintering (-of expandable particles [C08J 9/232](#)-)
- C08J 9/32
 - from compositions containing microballoons, e.g. syntactic foams (-making microballoons [B01J 13/02](#)-)
- C08J 11/00**
 - Recovery or working-up of waste materials (-polymerisation processes involving purification or recycling of waste polymers or their depolymerisation products [C08B](#) , [C08C](#) , [C08F](#) , [C08G](#) , [C08H](#) ; mechanical treatments [B29](#)-)**
- U C08J 11/04
 - of polymers

- U C08J 11/06
- without chemical reactions
- C08J 11/08
- • using selective solvents for polymer components (-working-up tar by extraction with selective solvents [C10C 1/18](#) ; working-up pitch, asphalt, bitumen by selective extraction [C10C 3/08](#)-)
- C08J 11/10
- • by chemically breaking down the molecular chains of polymers or breaking of crosslinks, e.g. devulcanisation (-depolymerisation to the original monomer [C07](#); production of liquid hydrocarbon mixtures from rubber or rubber waste [C10G 1/10](#) ; { depolymerisation of halogenated hydrocarbon polymers [C07C 17/367](#) ; depolymerisation of polyesters, [C07C 51/09](#) , [C07C 63/26](#) ; depolymerisation of polyamides [C07D 201/12](#) ; depolymerisation of rubber [C08C 19/08](#) })
- C08J 11/12
- • by dry-heat treatment only (-destructive distillation of carbonaceous materials for production of gas, coke, tar or similar matters [C10B](#)-)
- C08J 11/16
- • by treatment with inorganic material (-[C08J 11/14](#) takes precedence-)
- U C08J 2201/00** **Foams characterised by the foaming process**
- U C08J 2201/02
- characterised by mechanical pre- or post-treatments
- C08J 2201/032
- • Impregnation of a formed object with a gas (-expandable particles, e.g. polystyrene beads [C08J 9/18](#)-)
- C08J 2305/00** **Characterised by the use of polysaccharides or of their derivatives not provided for in groups [C08J 2301/00](#) or [C08J 2303/00](#)**
- U C08J 2309/00** **Characterised by the use of homopolymers or copolymers of conjugated diene hydrocarbons**
- C08J 2309/10
- Latex (-[C08J 2309/04](#) , [C08J 2309/08](#) take precedence-)
- C08J 2315/00** **Characterised by the use of rubber derivatives (-[C08J 2311/00](#) , [C08J 2313/00](#) takes precedence-)**
- C08J 2319/00** **Characterised by the use of rubbers not provided for in groups [C08J 2307/00](#) to [C08J 2317/00](#)**
- U C08J 2323/00** **Characterised by the use of homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Derivatives of such polymers**
- U C08J 2323/02
- not modified by chemical after treatment
- U C08J 2323/04
- • Homopolymers or copolymers of ethene
- C08J 2323/08
- • • Copolymers of ethene (-[C08J 2323/16](#) takes precedence-)
- U C08J 2323/10
- • Homopolymers or copolymers of propene
- C08J 2323/14
- • • Copolymers of propene (-[C08J 2323/16](#) takes precedence-)
- U C08J 2323/26
- modified by chemical after-treatment
- C08J 2323/28
- • by reaction with halogens or halogen-containing compounds (-[C08J 2323/32](#) takes precedence-)
- U C08J 2325/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Derivatives of such polymers**
- U C08J 2325/02
- Homopolymers or copolymers of hydrocarbons
- U C08J 2325/04
- • Homopolymers or copolymers of styrene
- C08J 2325/08
- • • Copolymers of styrene (-[C08J 2329/08](#) , [C08J 2335/06](#) , [C08J 2355/02](#) take precedence-)

- U C08J 2329/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehyde, ketonic, acetal, or ketal radical; Hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Derivatives of such polymer
- C08J 2329/02 · Homopolymers or copolymers of unsaturated alcohols (~~C08J 2329/14~~ takes precedence)
- C08J 2329/10 · Homopolymers or copolymers of unsaturated ethers (~~C08J 2335/08~~ takes precedence)
- C08J 2331/00** Characterised by the use of copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, or carbonic acid, or of a haloformic acid (~~of hydrolysed polymers C08J 2329/00~~)
- U C08J 2333/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides, or nitriles thereof; Derivatives of such polymers.
- U C08J 2333/18 · Homopolymers or copolymers of nitriles
- C08J 2333/20 · Homopolymers or copolymers of acrylonitrile (~~C08J 2355/02~~ takes precedence)
- U C08J 2335/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Derivatives of such polymers
- C08J 2335/02 · Characterised by the use of homopolymers or copolymers of esters (~~C08J 2335/06~~ , C08J 2335/08 take precedence)
- C08J 2335/04 · Homopolymers or copolymers of nitriles (~~C08J 2335/06~~ , C08J 2335/08 take precedence)
- C08J 2337/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (~~of cyclic esters of polyfunctional acids C08J 2331/00~~ ; of cyclic anhydrides of unsaturated acids ~~C08J 2335/00~~); Derivatives of such polymers
- C08J 2343/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing boron, silicon, phosphorus, selenium, tellurium or a metal; Derivatives of such polymers (of metal salts, e.g. phenolates, alcoholates, see the parent compounds)
- C08J 2345/00** Characterised by the use of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Derivatives of such polymers (~~of cyclic anhydrides or imides C08J 2335/00~~ ; of cyclic esters of polyfunctional acids ~~C08J 2331/00~~)

- C08J 2347/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Derivatives of such polymers (-C08J 2345/00 takes precedence; of conjugated diene rubbers C08J 2309/00 to C08J 2321/00-)
- C08J 2351/00** Characterised by the use of graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (-for ABS polymers C08J 2355/02-); Derivatives of such polymers
- C08J 2353/00** Characterised by the use of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups C08J 2323/00 to C08J 2353/00
- C08J 2355/00** Characterised by the use of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups C08J 2323/00 to C08J 2353/00
- C08J 2361/00** Characterised by the use of condensation polymers of aldehydes or ketones (-with polyalcohols C08J 2359/00 ; with polynitriles C08J 2377/00-); Derivatives of such polymers
- C08J 2361/20 · Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (-with amino phenols C08J 2361/04-)
- C08J 2361/34 · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups C08J 2361/04 , C08J 2361/18 , and C08J 2361/20
- C08J 2365/00** Characterised by the use of macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain (-C08J 2307/00 to C08J 2357/00 , C08J 2361/00 take precedence-); Derivatives of such polymers
- C08J 2367/00** Characterised by the use of polyesters obtained by reactions forming a carboxylic ester link in the main chain (-of polyester-amides C08J 2377/12 ; of polyester-imides C08J 2379/08-); Derivatives of such polymers
- C08J 2367/02 · Polyesters derived from dicarboxylic acids and dihydroxy compounds; (-C08J 2367/06 takes precedence-)
- C08J 2367/04 · Polyesters derived from hydroxy carboxylic acids, e.g. lactones (-C08J 2367/06 takes precedence-)
- C08J 2371/00** Characterised by the use of polyethers obtained by reactions forming an ether link in the main chain (-of polyacetals C08J 2359/00 ; of epoxy resins C08J 2363/00 ; of polythioether-ethers C08J 2381/02 ; of polyethersulfones C08J 2381/06-); Derivatives of such polymers
- C08J 2371/08 · Polyethers derived from hydroxy compounds or from their metallic derivatives (-C08J 2371/02 takes precedence-)
- C08J 2373/00** Characterised by the use of macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups C08J 2359/00 to C08J 2371/00-; Derivatives of such polymers
- C08J 2377/00** Characterised by the use of polyamides obtained by reactions forming a carboxylic amide link in the main chain (-of polyhydrazides C08J 2379/06 ; of polyamide-imides or polyamide acids C08J 2379/08-); Derivatives of such polymers
- C08J 2377/02 · Polyamides derived from omega-amino carboxylic acids or from lactams thereof (-C08J 2377/10 takes precedence-)

- C08J 2377/04 · Polyamides derived from alpha-amino carboxylic acids (~~C08J 2377/10~~ takes precedence-)
- C08J 2377/06 · Polyamides derived from polyamines and polycarboxylic acids (~~C08J 2377/10~~ takes precedence-)
- C08J 2379/00** **Characterised by the use of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen with or without oxygen, or carbon only, not provided for in groups [C08J 2361/00](#) to [C08J 2377/00](#)**
- U C08J 2383/00** **Characterised by the use of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon with or without sulfur, nitrogen, oxygen, or carbon only; Derivatives of such polymers**
- U C08J 2383/04 · Polysiloxanes
- C08J 2383/06 · · containing silicon bound to oxygen-containing groups (~~C08J 2383/12~~ takes precedence-)
- C08J 2383/10 · Block- or graft-copolymers containing polysiloxane sequences (~~obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C08J 2351/08](#) , [C08J 2353/00](#)~~)
- C08J 2383/14 · in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (~~C08J 2383/10~~ takes precedence-)
- C08J 2393/00** **Characterised by the use of natural resins; Derivatives thereof (~~of polysaccharides [C08J 2301/00](#) to [C08J 2305/00](#) ; of natural rubber [C08J 2317/00](#)~~)**
- C08J 2397/00** **Characterised by the use of lignin-containing materials (~~of polysaccharides [C08J 2301/00](#) to [C08J 2305/00](#)~~)**
- C08J 2399/00** **Characterised by the use of natural macromolecular compounds or of derivatives thereof not provided for in groups [C08J 2301/00](#) to [C08J 2307/00](#) or [C08J 2389/00](#) to [C08J 2397/00](#)**
- C08J 2405/00** **Characterised by the use of polysaccharides or of their derivatives not provided for in groups [C08J 2401/00](#) or [C08J 2403/00](#)**
- U C08J 2409/00** **Characterised by the use of homopolymers or copolymers of conjugated diene hydrocarbons**
- C08J 2409/10 · Latex (~~C08J 2409/04~~ , ~~C08J 2409/08~~ take precedence-)
- C08J 2415/00** **Characterised by the use of rubber derivatives (~~C08J 2411/00~~ , ~~C08J 2413/00~~ takes precedence-)**
- C08J 2419/00** **Characterised by the use of rubbers not provided for in groups [C08J 2407/00](#) to [C08J 2417/00](#)**
- U C08J 2423/00** **Characterised by the use of homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Derivatives of such polymers**
- U C08J 2423/02 · not modified by chemical after treatment
- U C08J 2423/04 · · Homopolymers or copolymers of ethene
- C08J 2423/08 · · · Copolymers of ethene (~~C08J 2423/16~~ takes precedence-)
- U C08J 2423/10 · · Homopolymers or copolymers of propene
- C08J 2423/14 · · · Copolymers of propene (~~C08J 2423/16~~ takes precedence-)
- U C08J 2423/26 · modified by chemical after-treatment

- C08J 2423/28
- · by reaction with halogens or halogen-containing compounds (~~C08J 2423/32~~ takes precedence-)
- U C08J 2425/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Derivatives of such polymers**
- U C08J 2425/02
- Homopolymers or copolymers of hydrocarbons
- U C08J 2425/04
- · Homopolymers or copolymers of styrene
- C08J 2425/08
- · · Copolymers of styrene (~~C08J 2429/08~~ , ~~C08J 2435/06~~ , ~~C08J 2455/02~~ take precedence-)
- U C08J 2429/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehyde, ketonic, acetal, or ketal radical; Hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Derivatives of such polymer**
- C08J 2429/02
- Homopolymers or copolymers of unsaturated alcohols (~~C08J 2429/14~~ takes precedence-)
- C08J 2429/10
- Homopolymers or copolymers of unsaturated ethers (~~C08J 2435/08~~ takes precedence-)
- C08J 2431/00** **Characterised by the use of copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, or carbonic acid, or of a haloformic acid (-of hydrolysed polymers [C08J 2429/00](#)-)**
- U C08J 2433/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides, or nitriles thereof; Derivatives of such polymers**
- U C08J 2433/18
- Homopolymers or copolymers of nitriles
- C08J 2433/20
- · Homopolymers or copolymers of acrylonitrile (~~C08J 2455/02~~ takes precedence-)
- U C08J 2435/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Derivatives of such polymers**
- C08J 2435/02
- Characterised by the use of homopolymers or copolymers of esters (~~C08J 2435/06~~ , ~~C08J 2435/08~~ take precedence-)
- C08J 2435/04
- Homopolymers or copolymers of nitriles (~~C08J 2435/06~~ , ~~C08J 2435/08~~ take precedence-)
- C08J 2437/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (-of cyclic esters of polyfunctional acids [C08J 2431/00](#) ; of cyclic anhydrides of unsaturated acids [C08J 2435/00](#)-); Derivatives of such polymers**

- C08J 2443/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing boron, silicon, phosphorus, selenium, tellurium or a metal; Derivatives of such polymers (of metal salts, e.g. phenolates, alcoholates, see the parent compounds)
- C08J 2445/00** Characterised by the use of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Derivatives of such polymers (-of cyclic anhydrides or imides [C08J 2435/00](#) ; of cyclic esters of polyfunctional acids [C08J 2431/00](#)-)
- C08J 2447/00** Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Derivatives of such polymers (-[C08J 2445/00](#) takes precedence; of conjugated diene rubbers [C08J 2409/00](#) to [C08J 2421/00](#)-)
- C08J 2451/00** Characterised by the use of graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (-for ABS polymers [C08J 2455/02](#)-); Derivatives of such polymers
- C08J 2453/00** Characterised by the use of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups [C08J 2423/00](#) to [C08J 2453/00](#)
- C08J 2455/00** Characterised by the use of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups [C08J 2423/00](#) to [C08J 2453/00](#)
- C08J 2461/00** Characterised by the use of condensation polymers of aldehydes or ketones (-with polyalcohols [C08J 2459/00](#) ; with polynitriles [C08J 2477/00](#)-); Derivatives of such polymers
- C08J 2461/20** · Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (-with amino phenols [C08J 2461/04](#)-)
- C08J 2461/34** · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C08J 2461/04](#) , [C08J 2461/18](#) , and [C08J 2461/20](#)
- C08J 2465/00** Characterised by the use of macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain (-[C08J 2407/00](#) to [C08J 2457/00](#) , [C08J 2461/00](#) take precedence-); Derivatives of such polymers
- C08J 2467/00** Characterised by the use of polyesters obtained by reactions forming a carboxylic ester link in the main chain (-of polyester-amides [C08J 2477/12](#) ; of polyester-imides [C08J 2479/08](#)); Derivatives of such polymers
- C08J 2467/02** · Polyesters derived from dicarboxylic acids and dihydroxy compounds (-[C08J 2467/06](#) takes precedence-)
- C08J 2467/04** · Polyesters derived from hydroxy carboxylic acids, e.g. lactones (-[C08J 2467/06](#) takes precedence-)
- C08J 2471/00** Characterised by the use of polyethers obtained by reactions forming an ether link in the main chain (-of polyacetals [C08J 2459/00](#) ; of epoxy resins [C08J 2463/00](#) ; of polythioether-ethers [C08J 2481/02](#) ; of polyethersulfones [C08J 2481/06](#)); Derivatives of such polymers
- C08J 2471/08** · Polyethers derived from hydroxy compounds or from their metallic derivatives (-[C08J 2471/02](#) takes precedence-)

- C08J 2473/00** Characterised by the use of macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups [C08J 2459/00](#) to [C08J 2471/00](#); Derivatives of such polymers
- C08J 2477/00** Characterised by the use of polyamides obtained by reactions forming a carboxylic amide link in the main chain (-of polyhydrazides [C08J 2479/06](#) ; of polyamide-imides or polyamide acids [C08J 2479/08](#)); Derivatives of such polymers
- C08J 2477/02 · Polyamides derived from omega-amino carboxylic acids or from lactams thereof (-[C08J 2477/10](#) takes precedence-)
- C08J 2477/04 · Polyamides derived from alpha-amino carboxylic acids (-[C08J 2477/10](#) takes precedence-)
- C08J 2477/06 · Polyamides derived from polyamines and polycarboxylic acids (-[C08J 2477/10](#) takes precedence-)
- C08J 2479/00** Characterised by the use of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen with or without oxygen, or carbon only, not provided for in groups [C08J 2461/00](#) to [C08J 2477/00](#)
- U C08J 2483/00** Characterised by the use of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon with or without sulfur, nitrogen, oxygen, or carbon only; Derivatives of such polymers
- U C08J 2483/04 · Polysiloxanes
- C08J 2483/06 · · containing silicon bound to oxygen-containing groups (-[C08J 2483/12](#) takes precedence-)
- C08J 2483/10 · Block- or graft-copolymers containing polysiloxane sequences (-obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C08J 2451/08](#) , [C08J 2453/00](#)-)
- C08J 2483/14 · in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (-[C08J 2483/10](#) takes precedence-)
- C08J 2493/00** Characterised by the use of natural resins; Derivatives thereof (-of polysaccharides [C08J 2401/00](#) to [C08J 2405/00](#) ; of natural rubber [C08J 2417/00](#)-)
- C08J 2497/00** Characterised by the use of lignin-containing materials (-of polysaccharides [C08J 2401/00](#) to [C08J 2405/00](#)-)
- C08J 2499/00** Characterised by the use of natural macromolecular compounds or of derivatives thereof not provided for in groups [C08J 2401/00](#) to [C08J 2407/00](#) or [C08J 2489/00](#) to [C08J 2497/00](#)

Project: N/A (C08K)

- U C08K 3/00** Use of inorganic ingredients
- U C08K 3/0008 · {Inorganic ingredients according to more than one of the "one dot" groups of [C08K 3/02](#) to [C08K 3/40](#)}
- C08K 3/005 · · {-Biocides; (macromolecular substances as carriers for biocide material [A01N 25/10](#))}
- U C08K 3/02 · Elements
- C08K 2003/023 · · {-Silicon}
- C08K 2003/026 · · {-Phosphorus}
- U C08K 3/04 · · Carbon

- C08K 2003/045 . . . {-Fullerenes}
- U C08K 3/08 . . Metals
 - C08K 2003/0806 . . . {-Silver}
 - C08K 2003/0812 . . . {-Aluminium}
 - C08K 2003/0818 . . . {-Alkali metal}
 - C08K 2003/0831 . . . {-Gold}
 - C08K 2003/0837 . . . {-Bismuth}
 - C08K 2003/0843 . . . {-Cobalt}
 - C08K 2003/085 . . . {-Copper}
 - C08K 2003/0856 . . . {-Iron}
 - C08K 2003/0862 . . . {-Nickel}
 - C08K 2003/0868 . . . {-Osmium}
 - C08K 2003/0875 . . . {-Antimony}
 - C08K 2003/0881 . . . {-Titanium}
 - C08K 2003/0887 . . . {-Tungsten}
 - C08K 2003/0893 . . . {-Zinc}
- U C08K 3/16 . Halogen-containing compounds
 - C08K 2003/162 . . {-Calcium, strontium or barium halides, e.g. calcium, strontium or barium chloride }
 - C08K 2003/164 . . {-Aluminum halide, e.g. aluminium chloride}
 - C08K 2003/166 . . {-Magnesium halide, e.g. magnesium chloride}
 - C08K 2003/168 . . {-Zinc halides}
- U C08K 3/18 . Oxygen-containing compounds, e.g. metal carbonyls
- U C08K 3/20 . . Oxides; Hydroxides
- U C08K 3/22 . . . of metals
 - C08K 2003/2203 {-of lithium}
 - C08K 2003/2206 {-of calcium, strontium or barium}
 - C08K 2003/221 {-of rare earth metal }
 - C08K 2003/2213 {-of cerium}
 - C08K 2003/2217 {-of magnesium}
 - C08K 2003/222 {-Magnesia, i.e. magnesium oxide}
 - C08K 2003/2224 {-Magnesium hydroxide}
 - C08K 2003/2227 {-of aluminium}
 - C08K 2003/2231 {-of tin}
 - C08K 2003/2234 {-of lead}
 - C08K 2003/2237 {-of titanium}
 - C08K 2003/2241 {-Titanium dioxide}
 - C08K 2003/2244 {-of zirconium}
 - C08K 2003/2248 {-of copper}
 - C08K 2003/2251 {-of chromium}
 - C08K 2003/2255 {-of molybdenum}
 - C08K 2003/2258 {-of tungsten}
 - C08K 2003/2262 {-of manganese}
 - C08K 2003/2265 {-of iron}

- C08K 2003/2268 {-Ferrous oxide (FeO)}
- C08K 2003/2272 {-Ferric oxide (Fe₂O₃)}
- C08K 2003/2275 {-Ferroso-ferric oxide (Fe₃O₄)}
- U C08K 3/2279 {of antimony}
- C08K 2003/2282 {-Antimonates}
- C08K 2003/2286 {-of silver}
- C08K 2003/2289 {-of cobalt}
- C08K 2003/2293 {-of nickel }
- C08K 2003/2296 {-of zinc}
- U C08K 3/24 Acids; Salts thereof {(C08K 3/16 takes precedence)}
- U C08K 3/26 Carbonates; Bicarbonates
 - C08K 2003/262 {-Alkali metal carbonates}
 - C08K 2003/265 {-Calcium, strontium or barium carbonate}
 - C08K 2003/267 {-Magnesium carbonate}
- U C08K 3/28 Nitrogen-containing compounds
 - C08K 2003/282 {-Binary compounds of nitrogen with aluminium}
 - C08K 2003/285 {-Ammonium nitrates}
 - C08K 2003/287 {-Calcium, strontium or barium nitrates}
- U C08K 3/30 Sulfur-, selenium- or tellurium-containing compounds
 - C08K 2003/3009 {-Sulfides}
 - C08K 2003/3018 {-of magnesium, calcium, strontium or barium}
 - C08K 2003/3027 {-of cadmium}
 - C08K 2003/3036 {-of zinc }
 - C08K 2003/3045 {-Sulfates}
 - C08K 2003/3054 {-Ammonium sulfates}
 - C08K 2003/3063 {-Magnesium sulfate}
 - C08K 2003/3072 {-Iron sulfates}
 - C08K 2003/3081 {-Aluminum sulfate}
 - C08K 2003/309 {-Sulfur containing acids}
- U C08K 3/32 Phosphorus-containing compounds
 - C08K 2003/321 {-Phosphates}
 - C08K 2003/322 {-Ammonium phosphate}
 - C08K 2003/323 {-Ammonium polyphosphate}
 - C08K 2003/324 {-Alkali metal phosphate}
 - C08K 2003/325 {-Calcium, strontium or barium phosphate}
 - C08K 2003/326 {-Magnesium phosphate}
 - C08K 2003/327 {-Aluminium phosphate}
 - C08K 2003/328 {-Phosphates of heavy metals}
 - C08K 2003/329 {-Phosphorus containing acids}
- U C08K 3/34 Silicon-containing compounds
 - C08K 2003/343 {-Peroxyhydrates, peroxyacids or salts thereof}
- U C08K 3/38 Boron-containing compounds
 - C08K 2003/382 {-and nitrogen}
 - C08K 2003/385 {-Binary compounds of nitrogen with boron}

C08K 2003/387

- {-Borates}

U C08K 5/00**Use of organic ingredients**

U C08K 5/0008

- {Organic ingredients according to more than one of the "one dot" groups of [C08K 5/01](#) to [C08K 5/59](#)}

C08K 5/0025

- {-Crosslinking or vulcanising agents; including accelerators}

C08K 5/0058

- {-Biocides; (macromolecular substances as carriers for biocide material [A01N 25/10](#))}

Project: N/A (C08L)

C08L

COMPOSITIONS OF MACROMOLECULAR COMPOUNDS (pesticides, herbicides [A01N](#); pharmaceuticals, cosmetics [A61K](#); explosives [C06B](#); compositions based on polymerisable monomers [C08F](#), [C08G](#); paints, inks, varnishes, dyes, polishes, adhesives [C09](#); lubricants [C10M](#); detergents [C11D](#); artificial filaments or fibres [D01F](#); textile treating compositions [D06](#))

NOTES

Compositions classified in [C08K](#) according to note 3 of [C08K](#), are not classified in [C08L](#).

Documents classified before 09.2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set. List of **M08L** codes: [C08L 23/00](#) , [C08L 23/26](#) , [C08L 25/00](#) , [C08L 27/00](#) , [C08L 27/04](#) , [C08L 27/12](#), [C08L 29/00](#) , [C08L 31/00](#) , [C08L 33/00](#) , [C08L 35/00](#) , [C08L 37/00](#) , [C08L 51/00](#) , [C08L 53/00](#) , [C08L 55/02](#) , [C08L 61/04](#) , [C08L 61/20](#) , [C08L 63/00](#) , [C08L 67/00](#) , [C08L 67/02](#) , [C08L 67/025](#), [C08L 67/03](#) , [C08L 67/04](#) , [C08L 67/06](#) , [C08L 67/07](#) , [C08L 69/00](#) , [C08L 69/005](#), [C08L 71/00](#), [C08L 75/04](#) , [C08L 77/00](#) , [C08L 77/08](#) , [C08L 77/12](#) , [C08L 79/08](#) , [C08L 79/085](#), [C08L 81/00](#) , [C08L 83/00](#) , [C08L 85/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/00](#) - [C08L 2666/86](#) . Documents from group [C08L 23/00](#) - [C08L 23/36](#) , [C08L 45/00](#) - [C08L 45/02](#) and [C08L 49/00](#) have all been reclassified following Note 3 below. An additive is classified in the last appropriate place in the list as selected for each [C08L](#) group. Examples:

a. A composition based on a polyamide and a graft polymer is classified in ([C08L 77/00](#) , [C08L 2666/24](#)).

b. A composition based on polyvinylchloride and containing CaCO₃ is classified according to note 4 of C08K, i.e. in ([C08K 3/26](#) , [C08L 27/06](#)). If this composition contains also a polyamide, then the classification will be ([C08L 27/06](#) , [C08L 77/00](#) , [C08K 3/26](#)).

c. A composition based on a polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/04](#) , [C08L 2666/34](#) , [C08L 2666/58](#)).

From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) class, and the minor components are characterised by Indexing Codes taken from **M08L** or **M08K** and they are linked or unlinked. The polymer in majority is always first in the C-Set. List of **M08L** codes in the C-Set: [C08L 1/00](#) , [C08L 81/00](#) , [C08L 83/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/02](#) - [C08L 2666/08](#) , [C08L 2666/14](#) - [C08L 2666/26](#) . Examples:

- a. A blend of 60 parts polyvinylchloride ([C08L 27/06](#)) and 40 parts polyamide is classified in ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08L 77/00](#) . b. A blend of 50 parts polyvinylchloride ([C08L 27/06](#)) and 50 parts polyamide ([C08L 77/00](#)) is classified

in ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08L 77/00](#) , as well as in ([C08L 77/00](#) , [C08L 2666/04](#)) and [C08L 27/06](#) . c. A composition based on polyvinylchloride and containing CaCO₃ is classified according to [N: Note 4 of C08K, i.e. in ([C08K 3/26](#) , [C08L 27/06](#)). If this composition contains also a polyamide, then the classification will be ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08K 3/26](#) . d. A composition based on a first polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/04](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) .

From April 2012 onwards, after the notation [C08L](#), notations concerning the other constituents of the composition may be added, in the form of C-Sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00 - C08L555/86](#) or [C08K](#) and they may be linked or unlinked: - [C08L 1/00 - C08L 101/10](#) are linked. - [C08L 2201/00 - C08L 2555/86](#) are unlinked. The polymer in majority is always first in the C-Set. Examples:
a. A blend of 60 parts polyvinylchloride ([C08L 27/06](#)) and 40 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 77/00](#)). b. A blend of 50 parts polyvinylchloride ([C08L 27/06](#)) and 50 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 77/00](#)) and ([C08L 77/00](#) , [C08L 27/06](#)). c. A composition based on polyvinylchloride and containing CaCO₃ is classified according to [N: Note 4 of [C08K](#), i.e. in ([C08K 3/26](#) , [C08L 27/06](#)). If this composition contains also a polyamide, then the classification will be ([C08L 27/06](#) , [C08L 77/00](#) , [C08K 3/26](#)). d. A composition based on a first polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/04](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) . e. A composition containing a polyamide in majority, a polyester and a polyethylene is classified in ([C08L 77/00](#) , [C08L 67/00](#) , [C08L 23/06](#)) and [C08L 2205/03](#) .

WARNING

"Rubber" includes:

natural or conjugated diene rubbers;
rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for compositions of such macromolecular compounds).

In this subclass:

compositions are classified according to the mutual proportions by weight of only the macromolecular constituents;
compositions are classified according to the macromolecular constituent or constituents present in the highest proportion: if all these constituents are present in equal proportions the composition is classified according to each of these constituents.

U [C08L 1/00](#)
U [C08L 1/08](#)
U [C08L 1/26](#)
U [C08L 1/28](#)

Compositions of cellulose, modified cellulose or cellulose derivatives

• Cellulose derivatives
• • Cellulose ethers
• • • Alkyl ethers

- C08L 1/286 · · · {substituted with acid radicals, e.g. carboxymethyl cellulose [CMC] (-C08L 1/282 takes precedence-)}
- C08L 5/00** **Compositions of polysaccharides or of their derivatives not provided for in groups C08L 1/00 or C08L 3/00**
- U C08L 9/00** **Compositions of homopolymers or copolymers of conjugated diene hydrocarbons**
- C08L 9/10 · Latex (-C08L 9/04 , C08L 9/08 take precedence-)
- C08L 15/00** **Compositions of rubber derivatives (-C08L 11/00 , C08L 13/00 take precedence-)**
- C08L 19/00** **Compositions of rubbers not provided for in groups C08L 7/00 to C08L 17/00**
- U C08L 21/00** **Compositions of unspecified rubbers**
- C08L 21/02 · Latex
- C08L 23/00 - C08L 57/00** **Compositions of macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds**
- NOTE
Groups [C08L 23/00](#) to [C08L 49/00](#) are to be interpreted in accordance with Notes 2), 3) and 4 a) following the title of subclass [C08F](#)]
- U C08L 23/02** · not modified by chemical after-treatment
- U C08L 23/04** · · Homopolymers or copolymers of ethene
- C08L 23/08 · · · Copolymers of ethene (-C08L 23/16 takes precedence-)
- U C08L 23/10** · · Homopolymers or copolymers of propene
- C08L 23/14 · · · Copolymers of propene (-C08L 23/16 takes precedence-)
- U C08L 23/26** · modified by chemical after-treatment
- C08L 23/28 · · by reaction with halogens or compounds containing halogen (-C08L 23/32 takes precedence-)
- U C08L 25/00** **Compositions of, homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Compositions of derivatives of such polymers**
- U C08L 25/02** · Homopolymers or copolymers of hydrocarbons
- U C08L 25/04** · · Homopolymers or copolymers of styrene
- C08L 25/08 · · · Copolymers of styrene (-C08L 29/08 , C08L 35/06 , C08L 55/02 take precedence-)
- U C08L 29/00** **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal or ketal radical; Compositions of hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Compositions of derivatives of such polymers**
- C08L 29/02 · Homopolymers or copolymers of unsaturated alcohols (-C08L 29/14 takes precedence-)
- C08L 29/10 · Homopolymers or copolymers of unsaturated ethers (-C08L 35/08 takes precedence-)

- C08L 31/00** Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid or of a haloformic acid (of hydrolysed polymers [C08L 29/00](#)); Compositions of derivatives of such polymers
- U C08L 33/00** Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Compositions of derivatives of such polymers
- C08L 33/04 · Homopolymers or copolymers of esters (of [C08L 43/04](#) takes precedence)
- U C08L 33/06** · · of esters containing only carbon, hydrogen and oxygen, which oxygen atoms are present only as part of the carboxyl radical
- C08L 33/062 · · · {Copolymers with monomers not covered by [C08L 33/06](#)}
- U C08L 33/18** · Homopolymers or copolymers of nitriles
- C08L 33/20 · · Homopolymers or copolymers of acrylonitrile (of [C08L 55/02](#) takes precedence)
- U C08L 35/00** Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Compositions of derivatives of such polymers
- C08L 35/02 · Homopolymers or copolymers of esters (of [C08L 35/06](#) , [C08L 35/08](#) take precedence)
- C08L 35/04 · Homopolymers or copolymers of nitriles (of [C08L 35/06](#) , [C08L 35/08](#) take precedence)
- C08L 37/00** Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (of cyclic esters of polyfunctional acids [C08L 31/00](#) ; of cyclic anhydrides of unsaturated acids [C08L 35/00](#)); Compositions of derivatives of such polymers
- C08L 43/00** Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing boron, silicon, phosphorus, selenium, tellurium or a metal; Compositions of derivatives of such polymers (of metal salts, e.g. phenolates, alcoholates, see the parent compounds)
- C08L 45/00** Compositions of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Compositions of derivatives of such polymers (of cyclic anhydrides or imides [C08L 35/00](#) ; of cyclic esters of polyfunctional acids [C08L 31/00](#))
- C08L 47/00** Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Compositions of derivatives of such polymers (of [C08L 45/00](#) takes precedence; of conjugated diene rubbers [C08L 9/00](#) to [C08L 21/00](#))

- C08L 51/00** Compositions of graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (-for ABS polymers [C08L 55/02](#)); Compositions of derivatives of such polymers
- C08L 51/003 · {grafted on to macromolecular compounds obtained by reactions only involving unsaturated carbon-to-carbon bonds (-[C08L 51/04](#) , [C08L 51/06](#) take precedence-)}
- C08L 55/00** Compositions of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups [C08L 23/00](#) to [C08L 53/00](#)
- U C08L 57/00** Compositions of unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds
- U C08L 57/06 · Homopolymers or copolymers containing elements other than carbon and hydrogen
- C08L 57/12 · · containing nitrogen atoms
- C08L 59/00** Compositions of polyacetals; Compositions of derivatives of polyacetals (-of polyvinyl acetals [C08L 29/14](#))
- C08L 61/00** Compositions of condensation polymers of aldehydes or ketones (-with polyalcohols [C08L 59/00](#) ; with polynitriles [C08L 77/00](#)); Compositions of derivatives of such polymers
- C08L 61/20 · Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (-with aminophenols [C08L 61/04](#)-)
- C08L 61/34 · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C08L 61/04](#) , [C08L 61/18](#) and [C08L 61/20](#)
- U C08L 63/00** Compositions of epoxy resins; Compositions of derivatives of epoxy resins
- C08L 63/10 · Epoxy resins modified by unsaturated compounds
- NOTE
In groups [C08L 65/00](#) to [C08L 85/00](#) , in the absence of an indication to the contrary, compositions of macromolecular compounds, obtained by reactions forming two different linkages in the main chain, are classified only according to the linkage present in excess
- C08L 65/00** Compositions of macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain (-[C08L 7/00](#) to [C08L 57/00](#) , [C08L 61/00](#) take precedence-); Compositions of derivatives of such polymers
- C08L 67/00** Compositions of polyesters obtained by reactions forming a carboxylic ester link in the main chain (-of polyester-amides [C08L 77/12](#) ; of polyester-imides [C08L 79/08](#)); Compositions of derivatives of such polymers
- C08L 67/02 · Polyesters derived from dicarboxylic acids and dihydroxy compounds (-[C08L 67/06](#) takes precedence-)
- C08L 67/04 · Polyesters derived from hydroxycarboxylic acids, e.g. lactones (-[C08L 67/06](#) takes precedence-)
- C08L 71/00** Compositions of polyethers obtained by reactions forming an ether link in the main chain (-of polyacetals [C08L 59/00](#) ; of epoxy resins [C08L 63/00](#) ; of polythioether-ethers [C08L 81/02](#) ; of polyether-sulfones [C08L 81/06](#)); Compositions of derivatives of such polymers
- C08L 71/08 · Polyethers derived from hydroxy compounds or from their metallic derivatives (-[C08L 71/02](#) takes precedence-){not used}
- C08L 71/10 · · from phenols {not used}

- C08L 73/00** Compositions of macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups [C08L 59/00](#) to [C08L 71/00](#); Compositions of derivatives of such polymers
- C08L 77/00** Compositions of polyamides obtained by reactions forming a carboxylic amide link in the main chain (–of polyhydrazides [C08L 79/06](#) ; of polyamideimides or polyamide acids [C08L 79/08](#)–); Compositions of derivatives of such polymers
- C08L 77/02 • Polyamides derived from omega-amino carboxylic acids or from lactams thereof (–[C08L 77/10](#) takes precedence–)
- C08L 77/04 • Polyamides derived from alpha-amino carboxylic acids (–[C08L 77/10](#) takes precedence–)
- C08L 77/06 • Polyamides derived from polyamines and polycarboxylic acids (–[C08L 77/10](#) takes precedence–)
- C08L 79/00** Compositions of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen with or without oxygen or carbon only, not provided for in groups [C08L 61/00](#) to [C08L 77/00](#)
- U C08L 83/00** Compositions of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon with or without sulfur, nitrogen, oxygen or carbon only; Compositions of derivatives of such polymers
- NOTE
In this main group, from 01.09.2010 onwards, new documents are classified according to the following system. The composition is identified with the C-Set, e.g. ([C08L 83/04](#), [C08L 83/04](#)) (for a composition containing two or more siloxanes), while the info
- U C08L 83/04** • Polysiloxanes
- C08L 83/06 • • containing silicon bound to oxygen-containing groups (–[C08L 83/12](#) takes precedence–)
- C08L 83/10 • Block- or graft-copolymers containing polysiloxane sequences (–obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C08L 51/08](#) , [C08L 53/00](#)–)
- C08L 83/14 • in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (–[C08L 83/10](#) takes precedence–)
- U C08L 87/00** Compositions of unspecific macromolecular compounds, obtained otherwise than by polymerisation reactions only involving unsaturated carbon-to-carbon bonds
- C08L 87/005 • {–Block or graft polymers not provided for in groups [C08L 1/00](#) to [C08L 85/04](#)}
- C08L 89/00 - C08L 101/00** Compositions of natural macromolecular compounds or of derivatives thereof (–of polysaccharides [C08L 1/00](#) to [C08L 5/00](#) ; of natural rubber [C08L 7/00](#)–)
- C08L 89/00** Compositions of proteins; Compositions of derivatives thereof (–foodstuff preparations [A23J 3/00](#)–)
- C08L 91/00** Compositions of oils, fats or waxes; Compositions of derivatives thereof (polishing compositions, ski waxes [C09G](#); soaps, detergent compositions [C11D](#))
- C08L 93/00** Compositions of natural resins; Compositions of derivatives thereof (polishing compositions [C09G](#))

- C08L 93/02 · Shellac (~~French polish C09F~~ *French polish C09F*)
- U C08L 97/00** **Compositions of lignin-containing materials**
- C08L 97/002 · {Peat, lignite, coal (~~-ceramic products based on carbon or carbides C04B 35/00~~ ; working-up peat [C10F 7/00](#) ; briquettes [C10L 5/00](#)-)}
- C08L 99/00** **Compositions of natural macromolecular compounds or of derivatives thereof not provided for in groups [C08L 89/00](#) to [C08L 97/00](#)**
- U C08L 101/00** **Compositions of unspecified macromolecular compounds**
- U C08L 101/02 · characterised by the presence of specified groups,{e.g. terminal or pendant functional groups}
- C08L 101/06 · · containing oxygen atoms{(~~C08L 101/025~~ takes precedence-)}
- C08L 101/12 · characterised by physical features, e.g. anisotropy, viscosity or electrical conductivity (~~-liquid crystal materials or compositions C09K 19/00-~~)
- U C08L 2205/00** **Polymer mixtures characterised by other features**
- C08L 2205/02 · containing two or more polymers of the same [C08L](#) -group
- U C08L 2207/00** **Properties characterising the ingredient of the composition**
- U C08L 2207/06 · Properties of polyethylene
- C08L 2207/066 · · LDPE (*radical process*)(~~radical process~~)
- C08L 2666/00** **Composition of polymers characterized by a further compound in the blend, being organic macromolecular compounds, natural resins, waxes or and bituminous materials, non-macromolecular organic substances, inorganic substances or characterized by their function in the composition (not used)**

NOTE

These codes are not used for the classification of new documents. They are a replacement of the combination classes.

- U C08L 2666/02 · Organic macromolecular compounds, natural resins, waxes or and bituminous materials
- C08L 2666/04 · · Macromolecular compounds according to groups [C08L 7/00](#) to [C08L 49/00](#) ,or [C08L 55/00](#) to [C08L 57/00](#)-; Derivatives thereof
- C08L 2666/08 · · · Homopolymers or copolymers according to [C08L 7/00](#) to [C08L 21/00](#)-; Derivatives thereof
- C08L 2666/10 · · Homopolymers or copolymers according to [C08L 39/00](#) to [C08L 49/00](#)-; Derivatives thereof
- C08L 2666/12 · · Homopolymers or copolymers not provided for in [C08L 2666/06](#) to [C08L 2666/10](#)
- C08L 2666/14 · · Macromolecular compounds according to [C08L 59/00](#) to [C08L 87/00](#)-; Derivatives thereof
- C08L 2666/16 · · · Addition or condensation polymers of aldehydes or ketones according to [C08L 59/00](#) to [C08L 61/00](#)-; Derivatives thereof
- C08L 2666/18 · · · Polyesters or polycarbonates according to [C08L 67/00](#) to [C08L 69/00](#)-; Derivatives thereof
- C08L 2666/20 · · · Macromolecular compounds having nitrogen in the main chain according to [C08L 75/00](#) to [C08L 79/00](#)-; Derivatives thereof
- C08L 2666/22 · · · Macromolecular compounds not provided for in [C08L 2666/16](#) to [C08L 2666/20](#)
- C08L 2666/24 · · Graft or block copolymers according to groups [C08L 51/00](#) , [C08L 53/00](#) or [C08L 55/02](#)-; Derivatives thereof

C08L 2666/26

- • Natural polymers, natural resins or derivatives thereof according to [C08L 1/00](#) to [C08L 5/00](#) , [C08L 89/00](#) , [C08L 93/00](#) , [C08L 97/00](#) or [C08L 99/00](#)

Project: N/A (C09B)**C09B****ORGANIC DYES OR CLOSELY-RELATED COMPOUNDS FOR PRODUCING DYES; MORDANTS; LAKES (fermentation or enzyme-using processes to synthesise a desired chemical compound [C12P](#))**NOTE

In this subclass, in the absence of an indication to the contrary, a compound is classified in the last appropriate place

WARNINGS

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

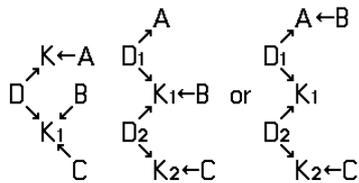
C09B 23/01	covered by	C09B 23/0008	to
C09B 23/0091			
C09B 29/01	" "	C09B 29/0003	to
C09B 29/0022			
C09B 29/03	" "	C09B 29/0007	
C09B 29/033	" "	C09B 29/0025	
C09B 29/036	" "	C09B 29/0029	
C09B 29/039	" "	C09B 29/0074	to
C09B 29/0081			
C09B 29/042	" "	C09B 29/0085	
C09B29/045	" "	C09B 29/0088	
C09B 29/048	" "	C09B 29/0092	
C09B 29/085	" "	C09B 29/0003	,
C09B 29/0801	to	C09B 29/0848	
C09B 29/09	" "	C09B 29/0025	,
C09B 29/0801	to	C09B 29/0848	
C09B 29/15	" "	C09B 29/103	
C09B 29/40	" "	C09B 29/3608	to
C09B 29/3613			
C09B 29/42	" "	C09B 29/3617	to
C09B 29/3639			
C09B 29/44	" "	C09B 29/3643	
C09B 29/46	" "	C09B 29/3652	
C09B 29/48	" "	C09B 29/3656	
C09B 29/50	" "	C09B 29/366	
C09B 29/52	" "	C09B 29/3665	
C09B 33/13	" "	C09B 33/12	
C09B 46/00	" "	C09B 27/00	to
C09B 45/00			
C09B 67/02	" "	C09B 67/0097	
C09B 67/04	" "	C09B 67/0001	
C09B 67/06	" "	C09B 67/0003	
C09B 67/08	" "	C09B 67/0004	
C09B 67/10	" "	C09B 67/0014	
C09B 67/12	" "	C09B 67/0016	
C09B 67/14	" "	C09B 67/0017	
C09B 67/16	" "	C09B 67/0019	
C09B 67/18	" "	C09B 67/002	
C09B 67/20	" "	C09B 67/006	
C09B 67/22	" "	C09B 67/0033	
C09B 67/24	" "	C09B 67/0072	
C09B 67/26	" "	C09B 67/0073	
C09B 67/28	" "	C09B 67/0077	

C09B 67/30	"	"	C09B 67/0078
C09B 67/32	"	"	C09B 67/0075
C09B 67/34	"	"	C09B 67/0076
C09B 67/36	"	"	C09B 67/0079
C09B 67/38	"	"	C09B 67/008
C09B 67/40	"	"	C09B 67/0082
C09B 67/42	"	"	C09B 67/0071
C09B 67/44	"	"	C09B 67/0083
C09B 67/46	"	"	C09B 67/0084
C09B 67/48	"	"	C09B 67/0025
C09B 67/50	"	"	C09B 67/0026
C09B 67/52	"	"	C09B 67/0027
C09B 67/54	"	"	C09B 67/0096

- U C09B 1/00** **Dyes with anthracene nucleus not condensed with any other ring**
- C09B 1/02 • Hydroxy-anthraquinones; Ethers or esters thereof{(–[C09B 1/007](#) takes precedence–)}
- C09B 1/16 • Amino-anthraquinones{(–[C09B 1/007](#) takes precedence–)}
- U C09B 1/20** • • Preparation from starting materials already containing the anthracene nucleus
- C09B 1/205 • • • {Dyes with an unsaturated C on the N atom attached to the nucleus (–C=O and C=S, [C09B 1/36–](#))}
- C09B 1/206 • • • {Dyes with amino groups substituted by heterocyclic radicals (–triazinic or analogous heterocyclic radical, [C09B 1/46–](#))}
- U C09B 1/26** • • • Dyes with amino groups substituted by hydrocarbon radicals
- C09B 1/32 • • • • substituted by aryl groups (–anthrimides [C09B 1/48–](#))
- C09B 1/50 • Amino-hydroxy-anthraquinones; Ethers and esters thereof{(–[C09B 1/007](#) takes precedence–)}
- U C09B 1/51** • • N-substituted amino-hydroxy anthraquinone
- C09B 1/514 • • • N-aryl derivatives (–N-aryl derivatives [C09B 1/515–](#))
- C09B 1/56 • Mercapto-anthraquinones{(–[C09B 1/007](#) takes precedence–)}
- U C09B 5/00** **Dyes with an anthracene nucleus condensed with one or more heterocyclic rings with or without carbocyclic rings**
- C09B 5/02 • the heterocyclic ring being {only}condensed in peri position
- C09B 5/022 • • {–not provided for in one of the sub groups [C09B 5/04](#) to [C09B 5/20–](#)}
- C09B 5/24 • the heterocyclic rings being {only}condensed with an anthraquinone nucleus in 1-2 or 2-3 position
- C09B 5/2409 • • {–not provided for in one of the sub groups [C09B 5/26](#) to [C09B 5/62–](#)}
- U C09B 11/00** **Diaryl- or thriarylmethane dyes**
- U C09B 11/04** • derived from triarylmethanes,{i.e. central C-atom is substituted by amino, cyano, alkyl}
- C09B 11/06 • • Hydroxy derivatives of triarylmethanes in which at least one OH group is bound to an aryl nucleus {and their ethers or esters}
- U C09B 11/10** • • Amino derivatives of triarylmethanes
- U C09B 11/12** • • • without any OH group bound to an aryl nucleus
- C09B 11/20 • • • • Preparation from other triarylmethane derivatives,{e.g. by substitution, by replacement of substituents(–for dyesalts of triarylmethane dyes [C09B 69/06–](#))}
- C09B 11/22 • • • containing OH groups bound to an aryl nucleus {and their ethers and esters}

- C09B 11/26
- Triarylmethane dyes in which at least one of the aromatic nuclei is heterocyclic{ phthaleins [C09B 11/24](#)-}
- U C09B 13/00** **Oxyketone dyes**
- C09B 13/06
- of the acetophenone series
- U C09B 23/00** **Methine or polymethine dyes, e.g. cyanine dyes**
- C09B 23/0091
- {having only one heterocyclic ring at one end of the methine chain, e.g. hemicyamines, hemioxonol (-styryl dyes see [C09B 23/14](#)-)}
- C09B 23/10
- The polymethine chain containing an even number of >CH- groups{ styryl dyes [C09B 23/14](#) (-[C09B 23/14](#) takes precedence-)}
- C09B 23/102
- {two heterocyclic rings linked carbon-to-carbon (-[C09B 7/00](#) takes precedence-)}
- U C09B 23/14** • Styryl dyes
- C09B 23/148
- {Stilbene dyes containing the moiety -C₆H₅-CH=CH-C₆H₅(-stilbene azo dyes [C09B 29/00](#)-)}
- U C09B 23/16** • the polymethine chain containing hetero atoms
- C09B 23/162
- {only nitrogen atoms (-azomethine dyes [C09B 55/00](#) , e.g. those of formula aryl-CH=N-aryl; formazan dyes [C09B 50/00](#) , e.g. dyes containing the moiety -N=N=CR-N=N-)}
- C09B 23/166
- {containing two or more nitrogen atoms (-Hydrazon dyes -CH=N-N- [C09B 26/02](#) -Hydrazon dyes -CH=N-N- [C09B 26/02](#))}
- U C09B 26/00** **Hydrazone Dyes; Triazene Dyes**
- C09B 26/02
- Hydrazone dyes (-hydrazone-azo dyes [C09B 56/18](#)-)
- C09B 26/06
- Triazene dyes (-triazene-azo dyes [C09B 56/20](#)-)
- U C09B 29/00** **Monoazo dyes prepared by diazotising and coupling**
- U C09B 29/0003**
- {from diazotized anilines}
- C09B 29/0011
- {from diazotized anilines directly substituted by a heterocyclic ring (*not condensed*)} (*not condensed*)
- U C09B 29/06** • from coupling components containing amino as the only directing group
- U C09B 29/08** • Amino benzenes
- U C09B 29/0805** • {free of acid groups}
- U C09B 29/0807** • {characterised by the amino group}
- U C09B 29/0809** • {substituted amino group}
- U C09B 29/0811** • {further substituted alkylamino, alkenylamino, alkynylamino, cycloalkylamino aralkylamino or arylamino}
- C09B 29/0813
- {substituted by OH, O-C(=X)-R, O-C(=X)-X-R, O-R (*X being O,S,NR (X being O,S,NR; R being hydrocarbonyl); R being hydrocarbonyl*)}
- U C09B 29/0823** • {substituted by CN}
- C09B 29/0828
- {-having (Image)-}
- C09B 29/083
- {-having -N< (*in a ring*)} (*in a ring*)}
- U C09B 29/0833** • {characterised by the substituent on the benzene ring excepted the substituents: CH₃, C₂H₅, O-alkyl, NHCO-alkyl, NHCOO-alkyl, NHCO- C₆H₅, NHCOO-C₆H₅}
- C09B 29/0834
- {linked through -O-(for OH see [C09B 29/24](#) , [C09B 29/26](#)-)}
- C09B 29/0836
- {linked through -N= (for heterocyclic ring, see [C09B 29/0846](#)-)}
- C09B 29/0842
- {-linked through-C-, -CS-, (Image) ; -CN-}

- U C09B 33/00 Disazo and polyazo dyes of the types $A \rightarrow K \leftarrow B$, $A \rightarrow B \rightarrow K \leftarrow C$, or the like, prepared by diazotising and coupling**
- U C09B 33/18
C09B 33/24
- Trisazo or higher polyazo dyes
 - • Trisazo dyes of the type
- $$A \rightarrow K \begin{cases} \leftarrow B \\ \leftarrow C \end{cases}$$
- C09B 33/30
- • Tetrazo dyes of the type
- $$A \rightarrow K \begin{cases} \leftarrow B \\ \leftarrow C \leftarrow D \end{cases}$$
- C09B 33/32
- • Tetrazo dyes of the type
- $$A \rightarrow K \begin{cases} \leftarrow B \\ \leftarrow C \rightarrow D \end{cases}$$
- U C09B 35/00 Disazo and polyazo dyes of the type $A \leftarrow D \rightarrow B$ prepared by diazotising and coupling**
- U C09B 35/02
- Disazo dyes
- U C09B 35/039
- • characterised by the tetrazo component
- U C09B 35/205
- • • the tetrazo component being a derivative of a diaryl- or triaryl- alkane or alkene
- C09B 35/215
- • • • of diarylethane or diarylethene { other stilbene-azo dyes, [C09B 56/04](#) , [C09B 56/06](#) }
- C09B 35/36
- Trisazo dyes of the type
- $$D \begin{cases} \rightarrow A \rightarrow B \\ \rightarrow E \end{cases}$$
- C09B 35/378
- Trisazo dyes of the type
- $$A \leftarrow T \begin{cases} \rightarrow B \\ \rightarrow E \end{cases}$$
- C09B 35/38
- Trisazo dyes of the type
- $$D \begin{cases} \rightarrow K \leftarrow A \\ \rightarrow K_1 \end{cases}$$
- U C09B 35/50
- Tetrazo dyes
- C09B 35/52
- • of the type
- $$D \begin{cases} \rightarrow K \leftarrow A \\ \rightarrow K_1 \leftarrow B \end{cases}$$
- C09B 35/54
- • of the type
- $$D \begin{cases} \rightarrow K \leftarrow A \\ \rightarrow B \rightarrow K_1 \end{cases}$$
- C09B 35/56
- • of the type
- $$D \begin{cases} \rightarrow A \rightarrow C \\ \rightarrow B \rightarrow E \end{cases}$$
- C09B 35/58
- • of the type
- $$D \begin{cases} \rightarrow K \\ \rightarrow B \rightarrow K_1 \leftarrow A \end{cases}$$
- C09B 35/60
- • of the type
- $$K \begin{cases} \leftarrow D \rightarrow B \\ \leftarrow D_1 \rightarrow C \end{cases}$$
- C09B 35/62
- • of the type
- $$K \begin{cases} \leftarrow D \rightarrow C \\ \leftarrow B \leftarrow A \end{cases}$$

- C09B 35/64
- Higher polyazo dyes, e.g. of the types
- 
- C09B 41/00** Special methods of performing the coupling reaction{ reaction of mixtures of diazo and coupling components, [C09B 67/0033](#)}
- U C09B 41/001
- {characterised by the coupling medium}
- C09B 41/003
- {containing a polymer (-surface-active polyethylene glycols, [C09B 41/005-](#))}
- U C09B 43/00** Preparation of azo dyes from other azo compounds
- C09B 43/11
- by introducing hydrocarbon radicals or substituted hydrocarbon radicals on primary or secondary amino groups (-formation of an amino group by reduction, e.g. of a nitro groups, [C09B 43/08-](#))
- C09B 43/18
- by acylation of hydroxyl group {or of mercapto group; (-OPO3H2 and OP(X)(XR)2 with X=O,S,NH and R being hydrocarbon, [C09B 69/007-](#))}
- U C09B 44/00** Azo dyes containing onium groups
- U C09B 44/10
- containing cyclammonium groups attached to an azo group by a carbon atom of the ring system
- C09B 44/14
- 1, 2-Diazoles or hydrogenated 1,2-diazoles {Pyrazolium; Indazolium}
- C09B 47/00** Porphines; Azaporphines{ non-dyeing compounds [C07D 487/22](#)}
- C09B 47/04
- Phthalocyanines {abbreviation: Pc}
- U C09B 47/06
- Preparation from carboxylic acids or derivatives thereof,{e.g. anhydrides, amides, mononitriles, phthalimide, o-cyanobenzamide}
- C09B 47/067
- from phthalodinitriles {naphthalenedinitriles, aromatic dinitriles prepared in situ, hydrogenated phthalodinitrile}
- U C09B 55/00** Azomethine dyes
- C09B 55/001
- {Azomethine dyes forming a 1,2 complex metal compound, e.g. with Co or Cr, with an other dye, e.g. with an azo or azomethine dye (-for 1,1 complexes with other ligands, [C09B 55/00-](#))}
- U C09B 56/00** Azo dyes containing other chromophoric systems
- C09B 56/02
- Azomethine-azo dyes{ 1,2-Complex dyes of AZOMETHINE and AZO dyes, [C09B 55/001-](#)}
- C09B 56/04
- Stilbene-azo dyes{ disazo dyes from diaminostilbene, [C09B 35/215](#)}
- C09B 56/12
- Anthraquinone-azo dyes{ from diazotised aminoanthracene [C09B 29/0022](#), azo dyes containing hydroxyl groups acylated with polyfunctional anthraquinone derivatives [C09B 43/26-](#)}
- U C09B 57/00** Other synthetic dyes of known constitution
- C09B 57/002
- {Aminoketone dyes, e.g. arylaminoketone dyes (-[C09B 13/00](#) takes precedence-)}
- U C09B 62/00** Reactive dyes, i.e. dyes which form covalent bonds with the substrates or which polymerise with themselves
- C09B 62/002
- with the linkage of the reactive group being alternatively specified {not used}
- C09B 62/0025
- {-Specific dyes not provided for in groups [C09B 62/004](#) to [C09B 62/018](#)-}
- C09B 62/004
- Anthracene dyes{ [C09B 62/0068](#) takes precedence-}
- U C09B 62/02
- with the reactive group directly attached to a heterocyclic ring

- C09B 62/021 · · {-Specific dyes not provided for in groups [C09B 62/024](#) to [C09B 62/038](#)-}
- C09B 62/022 · · the heterocyclic ring being alternatively specified {not used}
- U C09B 62/04 · · to a triazine ring
- C09B 62/046 · · · {-Specific dyes not provided for in group [C09B 62/06](#) to [C09B 62/10](#)-}
- U C09B 62/12 · · to a pyridazine ring
- C09B 62/125 · · · {-Specific dyes non provided for in groups [C09B 62/14](#) to [C09B 62/18](#)-}
- C09B 62/14 · · · Anthracene dyes{ [C09B 62/162](#) takes precedence-}
- C09B 62/18 · · · Porphyrins; Prophyrazins{ [C09B 62/162](#) takes precedence-}
- U C09B 62/20 · · to a pyrimidine ring
- C09B 62/205 · · · {-Specific dyes not provided for in groups [C09B 62/22](#) to [C09B 62/26](#)-}
- C09B 62/22 · · · Anthracene dyes{ [C09B 62/242](#) takes precedence-}
- C09B 62/26 · · · Porphyrins; Porphyrazins{ [C09B 62/242](#) takes precedence-}
- U C09B 62/28 · · to a pyrazine ring
- C09B 62/285 · · · {-Specific dyes not provided for in groups [C09B 62/30](#) to [C09B 62/34](#)-}
- C09B 62/30 · · · Anthracene dyes{ [C09B 62/322](#) takes precedence-}
- C09B 62/34 · · · Porphyrins; Porphyrazins{ [C09B 62/322](#) takes precedence-}
- U C09B 62/343 · · to a five membered ring
- C09B 62/3435 · · · {-Specific dyes not provided for in groups [C09B 62/345](#) to [C09B 62/357](#)-}
- U C09B 62/36 · · to some other heterocyclic ring
- C09B 62/365 · · · {-Specific dyes not provided for in groups [C09B 62/38](#) to [C09B 62/42](#)-}
- U C09B 62/44 · with the reactive group not directly attached to a heterocyclic ring
- U C09B 62/503 · · the reactive group being an esterified or non-esterified hydroxyalkyl sulfonyl or mercaptoalkyl sulfonyl group, a quaternised or non-quaternised aminoalkyl sulfonyl group, a heterylmercapto alkyl sulfonyl group, a vinyl sulfonyl or a substituted vinyl sulfonyl group, or a thiophene-dioxide group
- C09B 62/505 · · · Anthracene dyes{(-[C09B 62/5033](#) , [C09B 62/5036](#) take precedence-)}
- C09B 62/507 · · · Azo dyes{(-[C09B 62/5033](#) , [C09B 62/5036](#) take precedence-)}
- C09B 62/517 · · · Porphines; Azaporhines{(-[C09B 62/5033](#) , [C09B 62/5036](#) take precedence-)}
- U C09B 63/00 Lakes**
- C09B 63/005 · {Metal lakes of dyes (-complex metal compounds of azo dyes [C09B 45/00](#) , metal complexes of colourless compounds [C09B 57/10](#)-)}
- C09B 65/00 Compositions containing mordants (-preparation of the mordant compounds [C01](#) , [C07](#)-)**
- C09B 67/00 Influencing the physical, e.g. the dyeing or printing properties of dyestuffs without chemical reactions, e.g. by treating with solvents {grinding or grinding assistants, coating of pigments or dyes}; Process features in the making of dyestuff preparations; Dyestuff preparations of a special physical nature, e.g. tablets, films**
- C09B 67/0032 · {Treatment of phthalocyanine pigments (-[C09B 67/0016](#) , [C09B 67/0019](#) take precedence-)}
- U C09B 68/00 {Organic pigments surface-modified by grafting, e.g. by establishing covalent or complex bonds, in order to improve the pigment properties, e.g. dispersibility or rheology}**

WARNING

Groups [C09B 68/00](#) to [C09B 68/485](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [C09B 68/40](#) : [C09B 67/00](#) or subgroups - [C09B 68/41](#) : [C09B 67/00](#) or subgroups - [C09B 68/42](#) : [C09B 67/00](#) or subgroups

- U C09B 68/20
 - {characterised by the process features}
- C09B 68/22
 - · {Acid treatment (-for acid pasting [C09B 67/0015](#)-)}
- U C09B 68/40
 - {characterised by the chemical nature of the attached groups}
- C09B 68/41
 - · {Polymers attached to the pigment surface (-[C09B 68/444](#) , [C09B 68/446](#) take precedence-)}
- U C09B 68/46
 - · {Aromatic cyclic groups}
- U C09B 68/467
 - · · {Heteroaromatic groups}
- U C09B 68/4677
 - · · · {6-Membered rings}
- C09B 68/46775
 - · · · · {Triazine (-[C09B 68/427](#) takes precedence-)}
- U **C09B 69/00**
 - Dyes not provided for by a single group of this subclass**
- C09B 69/02
 - Dyestuff salts, e.g. salts of acid dyes with basic dyes (for Na, K or NH₄⁺ salts or for chlorides, sulfates or chlorozincates, see the relevant dye groups)
- C09B 69/06
 - · of cationic dyes with organic acids {or with inorganic complex acids}
- C09B 69/10
 - Polymeric dyes; Reaction products of dyes with monomers or with macromolecular compounds{-addition products of alkylene oxide to dyes, [C09B 69/00](#) ; dyeing with polymeric dyes [D06P 1/0056](#)-}

Project: N/A (C09C)

- U **C09C 1/00**
 - Treatment of specific inorganic materials other than fibrous fillers (luminescent or tenebrescent materials [C09K](#)); Preparation of carbon black**
- C09C 1/0015
 - {-Pigments exhibiting interference colours, e.g. transparent platelets of appropriate thinness or flaky substrates, e.g. mica, bearing appropriate thin transparent coatings ([C09C 1/0078](#), [C09C 1/62](#) take precedence)}
- NOTE**
- 1. The optical properties of the interference pigments are depending on the order of the different layers applied on the substrate in view of their refractive indices; A refractive index < or = 1.8 is considered low, a refractive index >1.8 is considered high; A dye is always an organic, coloured material. An aluminium lake compound would for classification purposes also fall under this definition, as well as any coloured metal chelate or metal complex with organic ligands; An interference pigment can e.g. have a flaky, spherical or ellipsoidal core; A pigment comprising a core consisting of a metal is only considered as an interference pigment if it shows properties typical for interference pigments

2. In groups [C09C 1/0015](#) to [C09C 1/0075](#) it is desirable to add indexing codes relating to the compositional and structural details chosen from groups [C09C 2200/00](#) to [C09C 2220/20](#)
- C09C 1/0021
 - · {-comprising a core coated with only one layer having a high or low refractive index}
- C09C 1/0024
 - · {-comprising a stack of coating layers with alternating high and low refractive indices, wherein the first coating layer on the core surface has the high refractive index}
- C09C 1/0027
 - · · {-One layer consisting of at least one sub-stoichiometric inorganic compound}
- C09C 1/003
 - · · {-comprising at least one light-absorbing layer}
- C09C 1/0033
 - · · · {-consisting of a metal or an alloy}

- C09C 1/0036 {consisting of at least one dye}
- C09C 1/0039 {consisting of at least one coloured inorganic material}
- C09C 1/0042 {Sub-stoichiometric inorganic materials}
- C09C 1/0045 {consisting of a carbonaceous material, e.g. carbon black, graphite, SWNT, MWNT incorporated within an inorganic material}
- C09C 1/0048 . . . {comprising at least one optically active layer with at least one organic material layer, e.g. liquid crystal polymers}
- C09C 1/0051 . {comprising a stack of coating layers with alternating low and high refractive indices, wherein the first coating layer on the core surface has the low refractive index}
- C09C 1/0054 . . . {one layer consisting of at least one sub-stoichiometric inorganic compound}
- C09C 1/0057 . . . {comprising at least one light-absorbing layer}
- C09C 1/006 {consisting of a metal or an alloy}
- C09C 1/0063 {consisting of at least one dye}
- C09C 1/0066 {consisting of at least one coloured inorganic material}
- C09C 1/0069 {Sub-stoichiometric inorganic materials}
- C09C 1/0072 {consisting of a carbonaceous material, e.g. carbon black, graphite, SWNT, MWNT incorporated within an inorganic material}
- C09C 1/0075 . . . {comprising at least one optically active layer with at least one organic material layer, e.g. liquid crystal polymers}
- U C09C 1/36 . Compounds of titanium {([C09C 1/0009](#), [C09C 1/0015](#), [C09C 1/0078](#) take precedence)}
- C09C 1/3607 . . {Titanium dioxide}

NOTES

Combinations of treatment steps, characterised by the sequence or the nature of two or more individual steps, are classified in [C09C 1/3692](#).

The individual steps are classified with symbols chosen from groups [C09C 1/3615](#) to [C09C 1/3684](#).

- U C09C 1/44 . Carbon
- U C09C 1/48 . . Carbon black
- C09C 1/482 . . . {Preparation from used rubber products, e.g. tyres (recovery of plastics or other constituents of waste material containing plastics [B29B 17/00](#))}
- C09C 1/50 . . . Furnace black; {Preparation thereof-(separation or recovery [C09C 1/487](#))}
- C09C 1/52 . . . Channel black; {Preparation thereof-(separation or recovery [C09C 1/487](#))}
- C09C 1/54 . . . Acetylene black; Thermal black; {Preparation thereof-(separation or recovery [C09C 1/487](#))}
- U **C09C 3/00** **Treatment in general of inorganic materials, other than fibrous fillers, to enhance their pigmenting or filling properties (dyeing other macromolecular particles [C08J 3/20](#); dyeing macromolecular fibres [D06P](#))**
- C09C 3/006 . {Combinations of treatments provided for in groups [C09C 3/04](#) to [C09C 3/12](#)}

NOTE

When classifying in this group, it is desirable to classify the individual treatment steps with symbols chosen from groups [C09C 3/04](#) to [C09C 3/12](#).

Project: N/A (C09D)

C09D

COATING COMPOSITIONS, e.g. PAINTS, VARNISHES OR LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOVERS; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR (-cosmetics [A61K](#); processes for applying liquids or other fluent materials to surfaces, in general, [B05D](#); staining wood [B27K 5/02](#); glazes or vitreous enamels [C03C](#); organic macromolecular compounds [C08](#); organic dyes or closely-related compounds for producing dyes, mordants or lakes, per se, [C09B](#); treatment of inorganic materials other than fibrous fillers used as pigments or fillers [C09C](#); natural resins, French polish, drying-oils, driers, turpentine, per se, [C09F](#); polishing compositions other than French polish, ski waxes [C09G](#); preparation of glue or gelatine [C09H](#), { [C08H 1/06](#) } ; adhesives or use of materials as adhesives [C09J](#); materials for sealing or packing joints or covers [C09K 3/10](#); materials for stopping leaks [C09K 3/12](#); processes for the electrolytic or electrophoretic production of coatings [C25D](#); textile-treating compositions [D06](#); paper-making [D21](#); conductors, insulators [H01B](#)-)

NOTES

In this subclass, the following terms or expressions are used with the meanings indicated:

- "use of materials for coating compositions" means the use of known or new polymers or products;
- "rubber" includes:
 - a) natural or conjugated diene rubbers;
 - b) rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for coating compositions based on such macromolecular compounds);
- "based on" is defined by means of Note 3, below;
- "filling pastes" means materials used to fill up the holes or cavities of a substrate in order to smooth its surface prior to coating.

In this subclass, coating compositions containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

Example: a coating composition containing polyethene and amino-propyltrimethoxysilane is classified in group [C09D 123/06](#).

However, coating compositions containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09D 159/00](#) to [C09D 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09D 4/00](#).

Example: a coating composition containing polyethene and styrene monomer is classified in group [C09D 4/06](#).

Aspects relating to the physical nature of the coating compositions or to the effects produced, as defined in group [C09D 5/00](#), if clearly and explicitly stated, are also classified in this subclass.

Coating compositions characterised by other features, e.g. additives, are classified in group [C09D 7/00](#), unless the macromolecular constituent is specified.

In this subclass, coating compositions comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the composition is based. If the composition is based on two or more constituents,

present in equal proportions, the composition is classified according to each of these constituents.

Examples:

A coating composition containing 80 parts of polyethylene and 20 parts of polyvinylchloride is classified in group [C09D 123/06](#) ;

A coating composition containing 40 parts of polyethylene and 40 parts of polyvinylchloride is classified in groups [C09D 123/06](#) and [C09D 127/06](#) .

Documents classified up until 04.2012: after the notation of group [C09D 4/06](#) , and separated therefrom by a + sign, notations concerning the macromolecular compound may be added. The notations are selected from the main groups [C08F 251/00](#) to [C08F 291/00](#) and from the subgroups of [C08F 290/00](#) to [C08F 290/048](#) and [C08F 290/08](#) to [C08F 290/128](#) .

Example: a paint based on a mixture of methylmethacrylate monomer and a polymer of vinylchloride is classified in [C09D 4/06](#) + [C08F 259/04](#) .

From April 2012 onwards, after the notation [C09D 4/00](#) , classification concerning the monomer may be added, in the form of C-sets. The notation is selected from [C08F 210/00](#) to [C08F 246/00](#) , [C08G 77/00](#) to [C08G 77/04](#) or [C08G 77/20](#) to [C08G 77/30](#) . Ex.: A paint based on a mixture of methylmethacrylate monomer and a polymer of vinylchloride is classified ([C09D 4/06](#) , [C08F 259/04](#)) .

Documents classified up until 09-2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C09D 101/00](#) - [C09D 201/10](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set. List of **M08L** codes: [C08L 23/00](#) , [C08L 23/26](#) , [C08L 25/00](#) , [C08L 27/00](#) , [C08L 27/04](#) , [C08L 27/12](#) , [C08L 29/00](#) , [C08L 31/00](#) , [C08L 33/00](#) , [C08L 35/00](#) , [C08L 37/00](#) , [C08L 51/00](#) , [C08L 53/00](#) , [C08L 55/02](#) , [C08L 61/04](#) , [C08L 61/20](#) , [C08L 63/00](#) , [C08L 67/00](#) , [C08L 67/02](#) , [C08L 67/025](#) , [C08L 67/03](#) , [C08L 67/04](#) , [C08L 67/06](#) , [C08L 67/07](#) , [C08L 69/00](#) , [C08L 69/005](#) , [C08L 71/00](#) , [C08L 75/04](#) , [C08L 77/00](#) , [C08L 77/08](#) , [C08L 77/12](#) , [C08L 79/08](#) , [C08L 79/085](#) , [C08L 81/00](#) , [C08L 83/00](#) , [C08L 85/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/00](#) - [C08L 2666/86](#) . Documents from group [C09D 123/00](#) - [C09D 123/36](#) , [C09D 145/00](#) - [C09D 145/02](#) and [C09D 149/00](#) have all been reclassified following Note 3 below. An additive is classified in the last appropriate place in the list as selected for each [C09D](#) group.

Examples: a. A coating composition based on a polyamide and a graft polymer is classified in ([C09D 177/00](#) , [C08L 2666/24](#)) . b. A coating composition based on polyvinylchloride and containing CaCO₃ is classified according to note 4 of [C08K](#) , i.e. in [C08K 3/26](#) and [C09D 127/06](#) . If this coating composition contains also a polyamide, then the classification will be ([C09D 127/06](#) , [C08L 77/00](#) , [C08K 3/26](#)) . c. A coating composition based on a polysiloxane ([C09D 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09D 183/04](#) , [C08L 83/04](#) , [C08L 2666/34](#) , [C08L 2666/54](#)) .

From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a [C09D](#) symbol, and the minor components are characterised by Indexing Codes taken from **M08L** or **M08K** and they are linked or unlinked. The polymer in majority is always first in the C-set. List of indexing codes in the C-Sets: [C08L 1/00](#) , [C08L 81/00](#) , [C08L 83/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/02](#) - [C08L 2666/08](#) , [C08L 2666/14](#) - [C08L 2666/26](#) . Examples:

a. A coating of 60 parts polyvinylchloride ([C09D 127/06](#)) and 40 parts polyamide is classified in ([C09D 127/06](#) , [C08L 2666/20](#)), [C08L 77/00](#) . b. A coating of 50 parts polyvinylchloride ([C09D 127/06](#)) and 50 parts polyamide ([C09D 177/00](#)) is classified in ([C09D 127/06](#) , [C08L 2666/20](#)), and [C08L 77/00](#) , as well as ([C09D 177/00](#) , [C08L 2666/04](#)) and [C08L 27/06](#) . c. A coating composition based on polyvinylchloride and containing CaCO₃ is classified according to [N: Note 4 of [C08K](#), i.e. in [C08K 3/26](#) , [C09D 127/06](#) . If this composition contains also a polyamide, then the classification will be ([C09D 127/06](#) , [C08L 2666/20](#)) and [C08K 3/26](#) .

d. A composition based on a first polysiloxane ([C09D 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09D 183/04](#) , [C08L 83/00](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) .

From April 2012 onwards, after the notation of groups [C09D 101/00](#) to [C09D 201/00](#) , notations concerning the other constituents of the coating composition may be added, in the form of C-Sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) -[C08L555/86](#) or [C08K](#) and they may be linked or unlinked: - [C08L 1/00](#) - [C08L 101/10](#) are linked. - [C08L 2201/00](#) - [C08L 2555/86](#) are unlinked. The polymer in majority is always first in the C-set. Examples:

a. A coating composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09D 123/06](#) and [C08K 5/544](#) (unlinked).

b. A coating composition containing 80 parts of polyethylene and 20 parts of polyvinylchloride is classified in ([C09D 123/06](#) , [C08L 27/06](#)). c. A coating composition containing 40 parts of polyethylene and 40 parts of polyvinylchloride is classified in ([C09D 123/06](#) , [C08L 27/06](#)) and ([C09D 127/06](#) , [C08L 23/06](#)). d. A coating composition containing 90% of polysiloxane ([C09D 183/04](#)) further containing 10% of polyester ([C08L 67/00](#)) and an alcohol is classified in ([C09D 183/04](#) , [C08L 67/00](#) , [C08K 5/05](#)).

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C09D 4/02](#) covered by [C09D 4/00](#)
, [C08F 220/00](#)
[C09D 4/04](#) covered by [C09D 4/00](#)
, [C08F 222/00](#)
[C09D 5/23](#) covered by
[H01F 41/16](#)
[C09D 5/25](#) covered by
[H01B 3/308](#)
[C09D 5/33](#) covered by
[C09D 5/004](#)
[C09D 5/46](#) covered by
[C09D 5/03](#)
[C09D 161/08](#) , [C09D 161/10](#)
covered by [C09D 161/06](#)

[C09D 163/02](#) covered by
[C09D 163/00](#)
[C09D 171/08](#) covered by
[C09D 171/02](#)
[C09D 171/10](#) covered by
[C09D 171/12](#)
[C09D 183/05](#) covered by
[C09D 183/04](#)
[C09D 183/07](#) covered by [C09D 183/04](#)
, [C09D 183/06](#)

- C09D 1/00** Coating compositions, e.g. paints, varnishes or lacquers, based on inorganic substances (~~C04B~~ takes precedence; glazes or vitreous enamels ~~C03C~~)
- C09D 4/00** Coating compositions, e.g. paints, varnishes or lacquers, based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond; { Coating compositions, based on monomers of macromolecular compounds of groups [C09D 183/00](#) to [C09D 183/16](#) }
- C09D 5/00** Coating compositions, e.g. paints, varnishes or lacquers, characterised by their physical nature or the effects produced; Filling pastes (magnetisable or magnetic paints [H01F 1/00](#) ; electrically insulating paints [H01B 3/00](#) ; paints for electrophoretic applications [C25D 13/00](#))
- C09D 5/002 • {Priming paints (~~C09D 5/08~~ takes precedence)}
 - C09D 5/008 • {Temporary coatings (~~C09D 5/20~~ takes precedence)}
 - C09D 5/02 • Emulsion paints {including aerosols}
 - C09D 5/021 • • {Aerosols (aerosol compositions [C09K 3/30](#))}
 - U C09D 5/024 • • {characterised by the additives}
 - C09D 5/027 • • • {Dispersing agents (anti-settling agents [C09D 7/02](#))}
 - U C09D 5/03 • Powdery paints
 - U C09D 5/033 • • {characterised by the additives}
 - C09D 5/034 • • • {Charge control agents (for toners [G03G 9/097](#))}
 - C09D 5/035 • • • {Coloring agents, e.g. pigments (~~C09D 5/032~~ takes precedence)}
 - C09D 5/036 • • • {Stabilisers (organic stabilisers for paints [C09D 7/1241](#))}
 - C09D 5/14 • Paints containing biocides, e.g. fungicides, insecticides or pesticides (~~C09D 5/16~~ takes precedence)
 - U C09D 5/16 • Antifouling paints; Under-water paints
 - U C09D 5/1606 • • {characterised by the anti-fouling agent}
 - U C09D 5/1637 • • • {Macromolecular compounds}
 - C09D 5/165 • • • • {containing hydrolysable groups (~~C09D 5/1643~~ takes precedence)}
 - C09D 5/1656 • • {characterised by the film-forming substance (~~C09D 5/1637~~ takes precedence)}
 - C09D 5/18 • Fireproof paints {including high temperature resistant paints}
 - C09D 5/22 • Luminous paints { luminescent compositions [C09K 11/00](#) }
 - C09D 5/24 • Electrically-conducting paints { conductive materials [H01B 1/00](#) }
 - C09D 5/34 • Filling pastes (materials for sealing or packing joints or covers [C09K 3/10](#) ; materials for stopping leaks [C09K 3/12](#))
 - C09D 5/38 • Paints containing free metal not provided for above in groups [C09D 5/00](#) - [C09D 5/36](#)

- C09D 5/44
- for electrophoretic applications (processes for coating by electrophoresis [C25D 13/00](#))
- NOTE**
The groups [C09D 5/4403](#) to [C09D 5/4476](#) relating to paints based on a specified film-forming polymer or mixture of polymers take precedence over the groups [C09D 5/448](#) to [C09D 5/4496](#) relating to paints characterised by other features
- C09D 5/448
- {characterised by the additives used (~~C09D 5/4403~~ to ~~C09D 5/4476~~, ~~C09D 5/4492~~ take precedence)}
- C09D 5/4484
- {Anodic paints (~~C09D 5/4403~~ to ~~C09D 5/4476~~ take precedence)}
- C09D 5/4488
- {Cathodic paints (~~C09D 5/4403~~ to ~~C09D 5/4476~~ take precedence)}
- C09D 7/00**
- Features of coating compositions, not provided for in group [C09D 5/00](#) (driers [C09F 9/00](#))**
- C09D 7/007
- {Use of organic pigments or dyes (inorganic pigments [C09D 7/1216](#))}
- C09D 7/008
- {Paint detackifiers or coagulants, e.g. for the treatment of oversprays in paint spraying installations (chemical paint removers [C09D 9/00](#))}
- U C09D 7/12
- Other additives
- U C09D 7/1208
- {non-macromolecular}
- C09D 7/1216
- • {inorganic (~~C09D 7/1291~~ takes precedence)}
- C09D 7/125
- {macromolecular (~~C09D 7/1291~~ takes precedence)}
- C09D 7/1258
- {characterised by particle size (not used)}
- C09D 9/00**
- Chemical paint or ink removers (fluid media for correction of typographical errors by coating [C09D 10/00](#))**
- C09D 10/00**
- Correcting fluids, e.g. fluid media for correction of typographical errors by coating (correcting errors by overprinting [B41J 29/36](#))**
- U **C09D 11/00**
- Inks**
- C09D 11/02
- Printing inks (~~C09D 11/30~~ takes precedence)
- C09D 17/00**
- Pigment pastes, e.g. for mixing in paints (artists' paints [C09D 5/06](#))**
- C09D 17/001
- {in aqueous medium (~~C09D 17/003~~, ~~C09D 17/004~~ take precedence)}
- C09D 17/002
- {in organic medium (~~C09D 17/003~~, ~~C09D 17/004~~ take precedence)}
- C09D 17/003
- {containing an organic pigment (process features in the making of dye stuff preparations [C09B 67/00](#))}
- U **C09D 101/00**
- Coating compositions based on cellulose, modified cellulose, or cellulose derivatives**
- U C09D 101/08
- Cellulose derivatives
- C09D 101/10
- • Esters of organic acids (of both organic acids and inorganic acids [C09D 101/20](#))
- C09D 101/16
- • Esters of inorganic acids (of both organic acids and inorganic acids [C09D 101/20](#))
- U C09D 101/26
- • Cellulose ethers
- U C09D 101/28
- • • Alkyl ethers
- C09D 101/286
- • • {substituted with acid radicals (~~C09D 101/282~~ takes precedence)}
- C09D 105/00**
- Coating compositions based on polysaccharides or on their derivatives, not provided for in groups [C09D 101/00](#) or [C09D 103/00](#)**

- U C09D 109/00** **Coating compositions based on homopolymers or copolymers of conjugated diene hydrocarbons**
 C09D 109/10 · Latex (-C09D 109/04 , C09D 109/08 take precedence-)
- C09D 115/00** **Coating compositions based on rubber derivatives (-C09D 111/00 , C09D 113/00 take precedence-)**
- C09D 119/00** **Coating compositions based on rubbers, not provided for in groups C09D 107/00 to C09D 117/00**
- U C09D 121/00** **Coating compositions based on unspecified rubbers**
 C09D 121/02 · Latex
- U C09D 123/00** **Coating compositions based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Coating compositions based on derivatives of such polymers**
- U C09D 123/02 · not modified by chemical after-treatment
- U C09D 123/04 · · Homopolymers or copolymers of ethene
- C09D 123/08 · · · Copolymers of ethene (-C09D 123/16 takes precedence-)
- U C09D 123/10 · · Homopolymers or copolymers of propene
- C09D 123/14 · · · Copolymers of propene (-C09D 123/16 takes precedence-)
- U C09D 123/18 · · Homopolymers or copolymers of hydrocarbons having four or more carbon atoms
- U C09D 123/20 · · · having four to nine carbon atoms
- C09D 123/22 · · · · Copolymers of isobutene; Butyl rubber {Homo- or copolymers of other iso-olefines}
- U C09D 123/26 · modified by chemical after-treatment
- C09D 123/28 · · by reaction with halogens or compounds containing halogen (-C09D 123/32 takes precedence-)
- U C09D 125/00** **Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Coating compositions based on derivatives of such polymers**
- U C09D 125/02 · Homopolymers or copolymers of hydrocarbons
- U C09D 125/04 · · Homopolymers or copolymers of styrene
- C09D 125/08 · · · Copolymers of styrene (-C09D 129/08 , C09D 135/06 , C09D 155/02 take precedence-)
- U C09D 129/00** **Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical; Coating compositions based on hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Coating compositions based on derivatives of such polymers**
- C09D 129/02 · Homopolymers or copolymers of unsaturated alcohols (-C09D 129/14 takes precedence-)
- C09D 129/10 · Homopolymers or copolymers of unsaturated ethers (-C09D 135/08 takes precedence-)

- C09D 131/00** Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid (-based on hydrolysed polymers [C09D 129/00](#)); Coating compositions based on derivatives of such polymers
- U C09D 133/00** Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides, or nitriles thereof; Coating compositions based on derivatives of such polymers
- C09D 133/04 · Homopolymers or copolymers of esters{ [C09D 143/04](#) takes precedence-}
- U C09D 133/06** · · of esters containing only carbon, hydrogen and oxygen, the oxygen atom being present only as part of the carboxyl radical
- C09D 133/062 · · · {-Copolymers with monomers not covered by [C09D 133/06](#)-}
- U C09D 133/18** · Homopolymers or copolymers of nitriles
- C09D 133/20 · · Homopolymers or copolymers of acrylonitrile (-[C09D 155/02](#) takes precedence-)
- U C09D 135/00** Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least another carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Coating compositions based on derivatives of such polymers
- C09D 135/02 · Homopolymers or copolymers of esters (-[C09D 135/06](#) , [C09D 135/08](#) take precedence-)
- C09D 135/04 · Homopolymers or copolymers of nitriles (-[C09D 135/06](#) , [C09D 135/08](#) take precedence-)
- C09D 137/00** Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (-based on polymers of cyclic esters of polyfunctional acids [C09D 131/00](#) ; based on polymers of cyclic anhydrides of unsaturated acids [C09D 135/00](#)); Coating compositions based on derivatives of such polymers
- C09D 145/00** Coating compositions based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic system; Coating compositions based on derivatives of such polymers (-based on polymers of cyclic esters of polyfunctional acids [C09D 131/00](#) ; based on polymers of cyclic anhydrides or imides [C09D 135/00](#)-)
- C09D 147/00** Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Coating compositions based on derivatives of such polymers (-[C09D 145/00](#) takes precedence; based on conjugated diene rubbers [C09D 109/00](#) to [C09D 121/00](#)-)

- C09D 151/00** Coating compositions based on graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (-based on ABS polymers [C09D 155/02](#)); Coating compositions based on derivatives of such polymers
- C09D 151/003 · {grafted on to macromolecular compounds obtained by reactions only involving unsaturated carbon-to-carbon bonds (-[C09D 151/04](#) , [C09D 151/06](#) take precedence-)}
- C09D 155/00** Coating compositions based on homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups [C09D 123/00](#) to [C09D 153/00](#)
- U C09D 157/00** Coating compositions based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds
- U C09D 157/06** · Homopolymers or copolymers containing elements other than carbon and hydrogen
- C09D 157/12 · · containing nitrogen atoms
- C09D 161/00** Coating compositions based on condensation polymers of aldehydes or ketones (-with polyalcohols [C09D 159/00](#) ; with polynitriles [C09D 177/00](#)); Coating compositions based on derivatives of such polymers
- C09D 161/20 · Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (-with amino phenols [C09D 161/04](#)-)
- C09D 161/34 · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C09D 161/04](#) , [C09D 161/18](#) and [C09D 161/20](#)
- C09D 165/00** Coating compositions based on macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain (-[C09D 107/00](#) to [C09D 157/00](#) , [C09D 161/00](#) take precedence-); Coating compositions based on derivatives of such polymers
- C09D 167/00** Coating compositions based on polyesters obtained by reactions forming a carboxylic ester link in the main chain (-based on polyester-amides [C09D 177/12](#) ; based on polyester-imides [C09D 179/08](#)-); Coating compositions based on derivatives of such polymers
- C09D 167/02 · Polyesters derived from dicarboxylic acids and dihydroxy compounds (-[C09D 167/06](#) takes precedence-)
- C09D 167/04 · Polyesters derived from hydroxycarboxylic acids, e.g. lactones (-[C09D 167/06](#) takes precedence-)
- C09D 171/00** Coating compositions based on polyethers obtained by reactions forming an ether link in the main chain (-based on polyacetals [C09D 159/00](#) ; based on epoxy resins [C09D 163/00](#) ; based on polythioether-ethers [C09D 181/02](#) ; based on polyethersulfones [C09D 181/06](#)-); Coating compositions based on derivatives of such polymers
- C09D 171/08 · Polyethers derived from hydroxy compounds or from their metallic derivatives (-[C09D 171/02](#) takes precedence-){not used}
- C09D 171/10 · · from phenols {not used}
- C09D 173/00** Coating compositions based on macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups [C09D 159/00](#) to [C09D 171/00](#); Coating compositions based on derivatives of such polymers

- C09D 177/00** Coating compositions based on polyamides obtained by reactions forming a carboxylic amide link in the main chain (-based on polyhydrazides [C09D 179/06](#) ; based on polyamide-imides [C09D 179/08](#)); Coating compositions based on derivatives of such polymers
- C09D 177/02 · Polyamides derived from omega-amino carboxylic acids or from lactams thereof (-[C09D 177/10](#) takes precedence-)
- C09D 177/04 · Polyamides derived from alpha-amino carboxylic acids (-[C09D 177/10](#) takes precedence-)
- C09D 177/06 · Polyamides derived from polyamines and polycarboxylic acids (-[C09D 177/10](#) takes precedence-)
- C09D 179/00** Coating compositions based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen, with or without oxygen, or carbon only, not provided for in groups [C09D 161/00](#) to [C09D 177/00](#)
- U C09D 183/00** Coating compositions based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon, with or without sulfur, nitrogen, oxygen, or carbon only; Coating compositions based on derivatives of such polymers
- NOTE
In this main group and its subgroups, from 01.09.2010 onwards, new documents are classified according to the following system. The coating composition is identified with the C-Set, e.g. ([C09D 183/04](#) , [C08L 83/04](#)) (for a coating composition containing two or more siloxanes), while the information as to which different polymers are present in the coating composition is identified with additional indexing codes, e.g. [C08G 77/12](#) and [C08G 77/20](#) .
- U C09D 183/04** · Polysiloxanes
- C09D 183/06 · containing silicon bound to oxygen-containing groups (-[C09D 183/12](#) takes precedence-)
- C09D 183/10 · Block or graft copolymers containing polysiloxane sequences (-obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C09D 151/08](#) , [C09D 153/00](#)-)
- C09D 183/14 · in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (-[C09D 183/10](#) takes precedence-)
- U C09D 187/00** Coating compositions based on unspecified macromolecular compounds, obtained otherwise than by polymerisation reactions only involving unsaturated carbon-to-carbon bonds
- C09D 187/005 · {-Block or graft polymers not provided for in groups [C09D 101/00](#) to [C09D 185/04](#)}
- C09D 189/00 - C09D 201/00** Coating compositions based on natural macromolecular compounds or on derivatives thereof (based on polysaccharides [C09D 101/00](#) to [C09D 105/00](#) ; based on natural rubber [C09D 107/00](#))
- C09D 189/00** Coating compositions based on proteins; Coating compositions based on derivatives thereof (-foodstuff preparations [A23J 3/00](#)-)
- C09D 191/00** Coating compositions based on oils, fats or waxes; Coating compositions based on derivatives thereof (-polishing compositions, ski waxes [C09G](#) ; soaps, detergent compositions [C11D](#)-)
- C09D 193/00** Coating compositions based on natural resins; Coating compositions based on derivatives thereof (-polishing compositions [C09G](#)-)
- U C09D 197/00** Coating compositions based on lignin-containing materials

C09D 197/002 · {Peat, lignite, coal (-briquettes [C10L 5/00](#) ; working-up peat ; ceramic products based on carbon or carbides-)}

C09D 199/00 **Coating compositions based on natural macromolecular compounds or on derivatives thereof, not provided for in groups [C09D 189/00](#) to [C09D 197/00](#)**

U C09D 201/00 **Coating compositions based on unspecified macromolecular compounds**

U C09D 201/02 · characterised by the presence of specified groups,{e.g. terminal or pendant functional groups}

C09D 201/06 · · containing oxygen atoms{(-[C09D 201/025](#) takes precedence-)}

Project: N/A (C09H)

C09H 11/00 **Adhesives based on glue or gelatine**

Project: N/A (C09J)

C09J **ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES (-surgical adhesives [A61L 24/00](#) ; processes for applying liquids or other fluent materials to surfaces in general [B05D](#); adhesives on the basis of non specified organic macromolecular compounds used as bonding agents in layered products [B32B](#); organic labelling fabrics or comparable materials or articles with deformable surface using adhesives and thermo-activatable adhesives respectively [B65C 5/02](#) , [B65C 5/04](#) ; organic macromolecular compounds [C08](#); production of multi-layer textile fabrics [D06M 17/00](#) ; preparation of glue or gelatine [C09H](#) ; adhesive labels, tag tickets or similar identification of indication means [G09F 3/10](#))**

NOTES

In this subclass, the following terms or expressions are used with the meanings indicated:

- "use of materials as adhesives" means the use of known or new polymers or products;

- "rubber" includes:

a) natural or conjugated diene rubbers;

b) rubber in general (for a specific rubber, other than a natural rubber or a conjugated

diene rubber, see the group provided for adhesives based on such macromolecular

compounds);

- "based on" is defined by means of Note 3, below.

In this subclass, adhesives containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

Example: an adhesive containing polyethene and amino-propyltrimethoxysilane is classified

in group [C09J 123/06](#) .

However, adhesives containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09J 159/00](#) to [C09J 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09J 4/00](#) .

Example: an adhesive containing polyethene and styrene monomer is classified in

group [C09J 4/06](#) .

Aspects relating to the physical nature of the adhesives or to the effects produced, as defined in group [C09J 9/00](#) , if clearly and explicitly stated, are also classified in this subclass. Adhesives characterised by other features,

e.g. additives, are classified in group [C09J 11/00](#) , unless the macromolecular constituent is specified.

In this subclass, adhesives comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the adhesive is based. If the adhesive is based on two or more constituents, present in equal proportions, the adhesive is classified according to each of these constituents.

Examples: An adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride

is classified in group [C09J 123/06](#) ;

An adhesive containing 40 parts of polyethene and 40 parts of polyvinylchloride is

classified in groups [C09J 123/06](#) and [C09J 127/06](#) .

An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#) Documents classified up until 09-2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C09J 101/00](#) - [C09J 201/10](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set.

List of **M08L** codes: [C08L 23/00](#) , [C08L 23/26](#) , [C08L 25/00](#) , [C08L 27/00](#) , [C08L 27/04](#) , [C08L 27/12](#) , [C08L 29/00](#) , [C08L 31/00](#) , [C08L 33/00](#) , [C08L 35/00](#) , [C08L 37/00](#) , [C08L 51/00](#) , [C08L 53/00](#) , [C08L 55/02](#) , [C08L 61/04](#) , [C08L 61/20](#) , [C08L 63/00](#) , [C08L 67/00](#) , [C08L 67/02](#) , [C08L 67/025](#) , [C08L 67/03](#) , [C08L 67/04](#) , [C08L 67/06](#) , [C08L 67/07](#) , [C08L 69/00](#) , [C08L 69/005](#) , [C08L 71/00](#) , [C08L 75/04](#) , [C08L 77/00](#) , [C08L 77/08](#) , [C08L 77/12](#) , [C08L 79/08](#) , [C08L 79/085](#) , [C08L 81/00](#) , [C08L 83/00](#) , [C08L 85/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/00](#) - [C08L 2666/86](#) . An additive is classified in the last appropriate place in the list as selected for each [C09J](#) group. Examples:

a. An adhesive composition based on a polyamide and a graft polymer is classified in ([C09J 177/00](#) , [C08L 2666/24](#)). b. An adhesive composition based on polyvinylchloride and containing CaCO₃ is classified according to note 4 of [C08K](#) , i.e. in [C08K 3/26](#) and [C09J 127/06](#) . If this adhesive composition contains also a polyamide, then the classification will be ([C09J 127/06](#) , [C08L 77/00](#) , [C08K 3/26](#)). c. An adhesive composition based on a polysiloxane ([C09J 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09J 183/04](#) , [C08L 83/04](#) , [C08L 2666/34](#) , [C08L 2666/54](#)).

3. From April 2012, after the notation [C09J 4/00](#) , classification concerning the monomer may be added, in the form of C-sets. The notation is selected from [C08F 210/00](#) to [C08F 246/00](#) , [C08G 77/00](#) to [C08G 77/04](#) or [C08G 77/20](#) to [C08G 77/30](#) . Ex. 1: An adhesive based on methylmethacrylate monomer is classified in ([C09J 4/00](#) , [C08F 220/00](#)). Ex. 2: An adhesive based on a dialkoxysilane monomer compound is classified in ([C09J 4/00](#) , [C08G 77/04](#)).

From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) class, and the minor components are characterised by Indexing Codes taken from **M08L** or [C08K](#) and they are linked or unlinked. The polymer in majority is always first in the C-set. List of indexing codes in the C-Sets: [C08L 1/00](#)

, [C08L 81/00](#) , [C08L 83/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/02](#) - [C08L 2666/08](#) , [C08L 2666/14](#) - [C08L 2666/26](#) . Examples:

a. An adhesive blend of 60 parts polyvinylchloride ([C09J 127/06](#)) and 40 parts polyamide is classified in ([C09J 127/06](#) , [C08L 2666/20](#)), [C08L 77/00](#) . b. An adhesive blend of 50 parts

polyvinylchloride ([C09J 127/06](#)) and 50 parts polyamide ([C09J 177/00](#)) is classified in ([C09J 127/06](#) , [C08L 2666/20](#)), ([C09J 177/00](#) , [C08L 2666/04](#)), [C08L 77/00](#) and [C08L 27/06](#) . c.

An adhesive composition based on polyvinylchloride and containing CaCO₃ is classified according to [N: Note 4 of [C08K](#), i.e. in [C08K 3/26](#) , [C09J 127/06](#)

. If this composition contains also a polyamide, then the classification will be ([C09J 127/06](#) , [C08L 2666/20](#)) and [C08K 3/26](#) .

d. A composition based on a first polysiloxane ([C09J 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09J 183/04](#) , [C08L 83/00](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) .

From April 2012 onwards, after the notation of groups [C09J 101/00](#) to [C09J 201/00](#) , notations concerning the other constituents of the adhesive composition may be added, in the form of C-sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) - [C08L 555/86](#) or [C08K](#) and they may be linked or unlinked: - [C08L 1/00](#) - [C08L 101/16](#) are linked. - [C08L 2201/00](#) - [C08L 2555/86](#) are unlinked. The polymer in majority is always first in the C-set.

Examples:

a. An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#) (unlinked).

b. An adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in group ([C09J 123/06](#) , [C08L 27/06](#)). c. An

adhesive containing 40 parts of polyethene and 40 parts of polyvinylchloride is classified in groups ([C09J 123/06](#) , [C08L 27/06](#)) and ([C09J 127/06](#) , [C08L 23/06](#)). d. An adhesive containing

90% of polysiloxane ([C09J 183/04](#)) further containing of polyester ([C08L 67/00](#)) and an alcohol is classified in ([C09J 183/04](#) , [C08L 67/00](#) , [C08K 5/05](#)).

WARNING

The following IPC group is not used in the CPC system: Subject matter covered by these groups is classified in the following CPC group: [C09J 163/02](#) covered by [C09J 163/00](#)

C09J 4/00 Adhesives based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond; { adhesives, based on monomers of macromolecular compounds of groups [C09J 183/00](#) to [C09J 183/16](#) }

C09J 5/00 Adhesive processes in general; Adhesive processes not provided for elsewhere, e.g. relating to primers (- devices for applying glue to surfaces to be joined [B05](#), [B27G 11/00](#) -)

- U C09J 7/00 Adhesives in the form of films or foils**
NOTE
 In this group, the indexing codes of subclass **M09J** are used
- U C09J 7/02 · on carriers
 C09J 7/04 · · on paper or textile fabric (adhesive bandages, dressings or adsorbent pads, {e.g. plasters} , [A61F 13/02-](#))
- C09J 9/00 Adhesives characterised by their physical nature or the effects produced, e.g. glue sticks (-C09J 7/00 takes precedence-)**
- C09J 11/00 Features of adhesives not provided for in group [C09J 9/00](#) , e.g. additives**
- U C09J 101/00 Adhesives based on cellulose, modified cellulose, or cellulose derivatives**
- U C09J 101/08 · Cellulose derivatives
 C09J 101/10 · · Esters of organic acids (-of both organic acids and inorganic acids [C09J 101/20-](#))
 C09J 101/16 · · Esters of inorganic acids (-of both organic acids and inorganic acids [C09J 101/20-](#))
- U C09J 101/26 · · Cellulose ethers
 U C09J 101/28 · · · Alkyl ethers
 C09J 101/286 · · · {substituted with acid radicals (-[C09J 101/282](#) takes precedence-)}
- C09J 105/00 Adhesives based on polysaccharides or on their derivatives, not provided for in groups [C09J 101/00](#) or [C09J 103/00](#)**
- U C09J 109/00 Adhesives based on homopolymers or copolymers of conjugated diene hydrocarbons**
 C09J 109/10 · Latex (-[C09J 109/04](#) , [C09J 109/08](#) take precedence-)
- C09J 115/00 Adhesives based on rubber derivatives (-[C09J 111/00](#) , [C09J 113/00](#) take precedence-)**
- C09J 119/00 Adhesives based on rubbers, not provided for in groups [C09J 107/00](#) to [C09J 117/00](#)**
- U C09J 123/00 Adhesives based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Adhesives based on derivatives of such polymers**
- U C09J 123/02 · not modified by chemical after-treatment
 U C09J 123/04 · · Homopolymers or copolymers of ethene
 C09J 123/08 · · · Copolymers of ethene (-[C09J 123/16](#) takes precedence-)
 U C09J 123/10 · · Homopolymers or copolymers of propene
 C09J 123/14 · · · Copolymers of propene (-[C09J 123/16](#) takes precedence-)
 U C09J 123/18 · · Homopolymers or copolymers of hydrocarbons having four or more carbon atoms
 U C09J 123/20 · · · having four to nine carbon atoms
 C09J 123/22 · · · · Copolymers of isobutene; Butyl rubber {Homo- or copolymers of other iso-olefines}
 U C09J 123/26 · modified by chemical after-treatment
 C09J 123/28 · · by reaction with halogens or compounds containing halogen (-[C09J 123/32](#) takes precedence-)

- U C09J 125/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Adhesives based on derivatives of such polymers
- U C09J 125/02 · Homopolymers or copolymers of hydrocarbons
- U C09J 125/04 · · Homopolymers or copolymers of styrene
- C09J 125/08 · · · Copolymers of styrene (~~C09J 129/08~~ , ~~C09J 135/06~~ , ~~C09J 155/02~~ take precedence-)
- U C09J 129/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal, or ketal radical; Adhesives based on hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Adhesives based on derivatives of such polymers
- C09J 129/02 · Homopolymers or copolymers of unsaturated alcohols (~~C09J 129/14~~ takes precedence-)
- C09J 129/10 · Homopolymers or copolymers of unsaturated ethers (~~C09J 135/08~~ takes precedence-)
- C09J 131/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid, or of a haloformic acid (~~-based on hydrolysed polymers C09J 129/00-~~); Adhesives based on derivatives of such polymers
- U C09J 133/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by only one carboxyl radical, or of salts, anhydrides, esters, amides, imides, or nitriles thereof; Adhesives based on derivatives of such polymers
- C09J 133/04 · Homopolymers or copolymers of esters{ ~~C09J 143/04~~ takes precedence-}
- U C09J 133/06 · · of esters containing only carbon, hydrogen and oxygen, the oxygen atom being present only as part of the carboxyl radical
- C09J 133/062 · · · {-Copolymers with monomers not covered by ~~C09J 133/06-~~}
- U C09J 133/18 · Homopolymers or copolymers of nitriles
- C09J 133/20 · · Homopolymers or copolymers of acrylonitrile (~~C09J 155/02~~ takes precedence-)
- U C09J 135/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least another carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Adhesives based on derivatives of such polymers
- C09J 135/02 · Homopolymers or copolymers of esters (~~C09J 135/06~~ , ~~C09J 135/08~~ take precedence-)
- C09J 135/04 · Homopolymers or copolymers of nitriles (~~C09J 135/06~~ , ~~C09J 135/08~~ take precedence-)

- C09J 137/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (~~based on polymers of cyclic esters of polyfunctional acids [C09J 131/00](#) ; based on polymers of cyclic anhydrides of unsaturated acids [C09J 135/00](#)~~); Adhesives based on derivatives of such polymers
- C09J 145/00** Adhesives based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic system; Adhesives based on derivatives of such polymers (~~based on polymers of cyclic esters of polyfunctional acids [C09J 131/00](#) ; based on polymers of cyclic anhydrides or imides [C09J 135/00](#)~~)
- C09J 147/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Adhesives based on derivatives of such polymers (~~C09J 145/00 takes precedence; based on conjugated diene rubbers [C09J 109/00](#) to [C09J 121/00](#)~~)
- C09J 151/00** Adhesives based on graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (~~based on ABS polymers [C09J 155/02](#)~~); Adhesives based on derivatives of such polymers
- C09J 151/003
 - {grafted on to macromolecular compounds obtained by reactions only involving unsaturated carbon-to-carbon bonds (~~C09J 151/04 , [C09J 151/06](#) take precedence~~)}
- C09J 155/00** Adhesives based on homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups [C09J 123/00](#) to [C09J 153/00](#)
- U C09J 157/00** Adhesives based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds
- U C09J 157/06
 - Homopolymers or copolymers containing elements other than carbon and hydrogen
- C09J 157/12
 - · containing nitrogen atoms
- C09J 161/00** Adhesives based on condensation polymers of aldehydes or ketones (~~with polyalcohols [C09J 159/00](#) ; with polynitriles [C09J 177/00](#)~~); Adhesives based on derivatives of such polymers
- C09J 161/20
 - Condensation polymers of aldehydes or ketones with only compounds containing hydrogen attached to nitrogen (~~with amino phenols [C09J 161/04](#)~~)
- C09J 161/34
 - Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C09J 161/04](#) , [C09J 161/18](#) and [C09J 161/20](#)
- C09J 165/00** Adhesives based on macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain (~~C09J 107/00 to [C09J 157/00](#) , [C09J 161/00](#) take precedence~~); Adhesives based on derivatives of such polymers
- C09J 167/00** Adhesives based on polyesters obtained by reactions forming a carboxylic ester link in the main chain (~~based on polyester-amides [C09J 177/12](#) ; based on polyester-imides [C09J 179/08](#)~~); Adhesives based on derivatives of such polymers
- C09J 167/02
 - Polyesters derived from dicarboxylic acids and dihydroxy compounds (~~C09J 167/06 takes precedence~~)

- C09J 167/04 · Polyesters derived from hydroxycarboxylic acids, e.g. lactones (~~C09J 167/06~~ takes precedence-)
- C09J 171/00 Adhesives based on polyethers obtained by reactions forming an ether link in the main chain** (~~based on polyacetals C09J 159/00~~ ; based on epoxy resins [C09J 163/00](#) ; based on polythioether-ethers [C09J 181/02](#) ; based on polyethersulfones [C09J 181/06](#)); Adhesives based on derivatives of such polymers
- C09J 171/08 · Polyethers derived from hydroxy compounds or from their metallic derivatives (~~C09J 171/02~~ takes precedence-){not used}
- C09J 171/10 · · from phenols {not used}
- C09J 173/00 Adhesives based on macromolecular compounds obtained by reactions forming a linkage containing oxygen or oxygen and carbon in the main chain, not provided for in groups C09J 159/00 to C09J 171/00**; Adhesives based on derivatives of such polymers
- C09J 177/00 Adhesives based on polyamides obtained by reactions forming a carboxylic amide link in the main chain** (~~based on polyhydrazides C09J 179/06~~ ; based on ~~C09Jn~~ polyamide-imides [C09J 179/08](#)); Adhesives based on derivatives of such polymers
- C09J 177/02 · Polyamides derived from omega-amino carboxylic acids or from lactams thereof (~~C09J 177/10~~ takes precedence-)
- C09J 177/04 · Polyamides derived from alpha-amino carboxylic acids (~~C09J 177/10~~ takes precedence-)
- C09J 177/06 · Polyamides derived from polyamines and polycarboxylic acids (~~C09J 177/10~~ takes precedence-)
- C09J 179/00 Adhesives based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen, with or without oxygen, or carbon only, not provided for in groups C09J 161/00 to C09J 177/00**
- U C09J 183/00 Adhesives based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon, with or without sulfur, nitrogen, oxygen, or carbon only; Adhesives based on derivatives of such polymers**
- NOTE
In this main group, from 01.09.2010 onwards, new documents are classified according to the following system. The adhesive is identified with the previous existing ECLA(+B) notation, e.g. [C09J 183/04](#) +B4S (for an adhesive containing two or more siloxanes), while the information as to which different polymers are present in the adhesive is identified with additional indexing codes, e.g. [C08G 77/12](#) and [C08G 77/20](#)
- U C09J 183/04** · Polysiloxanes
- C09J 183/06 · · containing silicon bound to oxygen-containing groups (~~C09J 183/12~~ takes precedence-)
- C09J 183/10 · Block or graft copolymers containing polysiloxane sequences (~~obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane C09J 151/08 , C09J 153/00~~-)
- C09J 183/14 · in which at least two but not all the silicon atoms are connected by linkages other than oxygen atoms (~~C09J 183/10~~ takes precedence-)
- U C09J 187/00 Adhesives based on unspecified macromolecular compounds, obtained otherwise than by polymerisation reactions only involving unsaturated carbon-to-carbon bonds**

- C09J 187/005 · {-Block or graft polymers not provided for in groups [C09J 101/00](#) to [C09J 185/04](#)}
- C09J 189/00 -
C09J 201/00** **Adhesives based on natural macromolecular compounds or on derivatives thereof (-based on polysaccharides [C09J 101/00](#) to [C09J 105/00](#) ; based on natural rubber [C09J 107/00](#)-)**
- C09J 189/00 **Adhesives based on proteins; Adhesives based on derivatives thereof (-foodstuff preparations [A23J 3/00](#)-)**
- C09J 191/00 **Adhesives based on oils, fats or waxes; Adhesives based on derivatives thereof (-polishing compositions, ski waxes [C09G](#) ; soaps, detergent compositions [C11D](#)-)**
- C09J 193/00 **Adhesives based on natural resins; Adhesives based on derivatives thereof (-polishing compositions [C09G](#)-)**
- U C09J 197/00** **Adhesives based on lignin-containing materials**
- C09J 197/002 · {Peat, lignite, coal (-briquettes [C10L 5/00](#) ; working-up peat; ceramic products based on carbon or carbides-)}
- C09J 199/00 **Adhesives based on natural macromolecular compounds or on derivatives thereof, not provided for in groups [C09J 189/00](#) to [C09J 197/00](#)**
- U C09J 201/00** **Adhesives based on unspecified macromolecular compounds**
- U C09J 201/02 · characterised by the presence of specified groups,{e.g. terminal or pendant functional groups}
- C09J 201/06 · · containing oxygen atoms{(-[C09J 201/025](#) takes precedence-)}
- C09J 2499/00** **Presence of natural macromolecular compounds or on derivatives thereof, not provided for in groups [C09J 2489/00](#) to [C09J 2497/00](#)**

Project: N/A (C09K)

- U C09K 3/00** **Materials not provided for elsewhere**
- NOTE
When classifying in groups [C09K 3/10](#) to [C09K 3/1028](#) the properties and uses of the material can be further indexed by using indexing codes chosen from [C09K 2003/1034](#) to [C09K 2003/1096](#) and the chemical nature of the materials can be further indexed by using indexing codes chosen from [C09K 2200/00](#) to [C09K 2200/0697](#)
- C09K 3/10 · {Materials in mouldable or extrudable form}for sealing or packing joints or covers (-filling pastes [C09D 5/34](#)-)
- C09K 3/12 · Materials for stopping leaks, e.g. in radiators, in tanks (-filling pastes [C09D 5/34](#)-)
- C09K 3/14 · Anti-slip materials; Abrasives{(-products specifically intended for the fabrication of abrasive tools, blocks or papers, or for operations of the kind of sand-blasting and barrelling [B24B 31/14](#) , [B24C 1/00](#) ; polishing compositions containing abrasive or grinding agents [C09G 1/02](#) ; polishing of semi-conductors [H01L](#); friction compositions for brakes or clutches [F16D 69/02](#)-)}
- NOTE
In this group, boron and silicon are considered as being metals. Likewise for associations of carbon with metals, e.g. carbides.
- C09K 3/1409 · · {Abrasive particles per se (-preparation of diamond [C01B 31/06](#)-)}

- C09K 3/18
- for application to surfaces to minimize adherence of ice, mist or water thereto (-rendering particulate materials free flowing, in general, e.g. making them hydrophobic [B01J 2/30](#)-); Thawing or antifreeze materials for application to surfaces (-used in liquids for heat-transfer, heat-exchange or heat-storage or for the production of heat or cold other than by combustion, e.g. radiator liquids, [C09K 5/00](#)-)
- C09K 3/30
- for aerosols (-aerosol containers [B65D 83/14](#)-)
- U C09K 5/00** **Heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants; Materials for the production of heat or cold by chemical reactions other than by combustion**
- C09K 5/02
- Materials undergoing a change of physical state when used (-[C09K 5/16](#) , [C09K 5/20](#) take precedence-)
- C09K 5/08
- Materials not undergoing a change of physical state when used (-[C09K 5/16](#) , [C09K 5/20](#) take precedence-)
- WARNING**
- The subgroups of [C09K 5/08](#) might be incomplete as some of the patent documents classified in [C09K 5/08](#) might need reclassification to one or more of groups [C09K 5/10](#) to [C09K 5/14](#)
- C09K 5/20
- Antifreeze additives therefor, e.g. for radiator liquids (-for application to surfaces [C09K 3/18](#) ; inhibiting corrosion by liquids [C23F 11/00](#)-)
- U C09K 8/00** **Compositions for drilling of boreholes or wells; Compositions for treating boreholes or wells, e.g. for completion or for remedial operations**
- NOTE**
- In groups [C09K 8/00](#) to [C09K 8/94](#) it is desirable to add indexing codes for aspects relating to compositions for drilling or treating boreholes or wells. The indexing codes are chosen from groups [C09K 2208/00](#) to [C09K 2208/32](#)
- U C09K 8/02
- Well-drilling compositions
- U C09K 8/04
- Aqueous well-drilling compositions
- C09K 8/06
- . . Clay-free compositions (-containing inorganic compounds only [C09K 8/05](#)-)
- C09K 8/14
- . . Clay-containing compositions (-containing inorganic compounds [C09K 8/05](#)-)
- C09K 8/42
- Compositions for cementing, e.g. for cementing casings into boreholes; Compositions for plugging, e.g. for killing wells (-compositions for plastering [C09K 8/50](#)-)
- C09K 8/50
- Compositions for plastering borehole walls, i.e. compositions for temporary consolidation of borehole walls (-compositions for consolidating loose sand or the like around wells [C09K 8/56](#)-)
- C09K 8/504
- . Compositions based on water or polar solvents (-[C09K 8/502](#) takes precedence-)
- U C09K 8/506
- . . containing organic compounds
- C09K 8/508
- . . . macromolecular compounds{(-[C09K 8/512](#) takes precedence-)}
- C09K 8/514
- of natural origin, e.g. polysaccharides, cellulose (-[C09K 8/512](#) takes precedence-)
- C09K 8/54
- Compositions for ~~<u>in situ</u>~~ *in situ* inhibition of corrosion in boreholes or wells
- C09K 8/56
- Compositions for consolidating loose sand or the like around wells without excessively decreasing the permeability thereof (-compositions for plastering borehole walls [C09K 8/50](#) ; { Soil-conditioning materials or soil-stabilising materials in general [C09K 17/00](#) })

- C09K 8/57
- • Compositions based on water or polar solvents ([-C09K 8/565](#) takes precedence-)
- U C09K 8/575
- • • containing organic compounds
- C09K 8/5751
- • • • {Macromolecular compounds} ([-C09K 8/5756](#) takes precedence-)
- C09K 8/5758
- • • • • {of natural origin, e.g. polysaccharides, cellulose ([-C09K 8/5756](#) takes precedence-)}
- U C09K 8/58
- Compositions for enhanced recovery methods for obtaining hydrocarbons, i.e. for improving the mobility of the oil, e.g. displacing fluids
- C09K 8/588
- • characterised by the use of specific polymers{([-polymeric surfactants C09K 8/584-](#))}
- C09K 8/594
- • Compositions used in combination with injected gas {e.g. CO₂ or carbonated gas} ([-C09K 8/592](#) takes precedence-)
- U C09K 8/60
- Compositions for stimulating production by acting on the underground formation
- U C09K 8/62
- • Compositions for forming crevices or fractures
- C09K 8/66
- • • Compositions based on water or polar solvents ([-C09K 8/64](#) takes precedence-)
- C09K 8/665
- • • • {containing inorganic compounds} ([-proppants C09K 8/80-](#))}
- C09K 8/82
- • Oil-based compositions ([-C09K 8/64](#) takes precedence-)
- C09K 8/84
- • Compositions based on water or polar solvents ([-C09K 8/66](#) , [C09K 8/82](#) take precedence-)
- C09K 8/92
- • characterised by their form or by the form of their components, e.g. encapsulated material ([-C09K 8/70](#) takes precedence-)

C09K 9/00

Tenebrescent materials, i.e. materials for which the range of wavelength for energy absorption is changed as result of excitation by some form of energy ({ liquid crystal materials [C09K 19/00](#) ; photochromic glass [C03C 4/06](#) ; in thermometers [G01K 11/12](#) ; in photochromic filters [G02B 5/23](#) ; in optical modulation devices [G02F 1/00](#) } ; photosensitive materials for photographic purposes [G03C](#) ; { in cathodochromic screens [H01J 29/14](#) })

NOTE

When classifying in groups [C09K 9/02](#) the chemical nature of the tenebrescent material can be further indexed by using indexing codes chosen from [C09K 2211/00](#) to [C09K 2211/188](#)

U C09K 11/00**Luminescent, e.g. electroluminescent, chemiluminescent materials**

U C09K 11/08

- containing inorganic luminescent materials

NOTES

In groups [C09K 11/08](#) to [C09K 11/897](#) , in the absence of an indication to the contrary, classification of materials is made in the last appropriate place
{ In this group, magnesium is considered as an alkaline earth metal }

WARNING

Groups [C09K 11/0805](#) to [C09K 11/0894](#), with the exception of [C09K 11/0883](#) for classifying nitrides, are no longer used for classification of new documents. The backlog of this group is being continuously reclassified to subgroups [C09K 11/54](#) to [C09K 11/897](#)

C09K 11/0827

- • {Halogenides ([-C09K 11/0805](#) , [C09K 11/0838](#) to [C09K 11/0894](#) take precedence-)}

U C09K 11/61

- • containing fluorine, chlorine, bromine, iodine or unspecified halogen elements

C09K 11/615

- • • {Halogenides ([-C09K 11/617](#) and [C09K 11/618](#) take precedence-)}

U C09K 11/62

- • containing gallium, indium or thallium

- C09K 11/626 . . . {Halogenides (~~C09K 11/621~~ takes precedence-)}
- U C09K 11/63 . . containing boron
- C09K 11/632 . . . {Halogenides (~~C09K 11/636~~ and ~~C09K 11/638~~ take precedence-)}
- U C09K 11/64 . . containing aluminium
- C09K 11/644 . . . {Halogenides (~~C09K 11/641~~ , ~~C09K 11/646~~ to ~~C09K 11/648~~ take precedence-)}
- C09K 11/65 . . containing carbon (in organic compounds ~~C09K 11/06~~-)
- U C09K 11/66 . . containing germanium, tin or lead
- C09K 11/664 . . . {Halogenides (~~C09K 11/661~~ , ~~C09K 11/666~~ to ~~C09K 11/668~~ take precedence-)}
- U C09K 11/67 . . containing refractory metals
- C09K 11/674 . . . {Halogenides (~~C09K 11/671~~ , ~~C09K 11/676~~ to ~~C09K 11/679~~ take precedence-)}
- U C09K 11/70 . . containing phosphorus
- C09K 11/705 . . . Halogenides (~~C09K 11/701~~ , ~~C09K 11/706~~ and ~~C09K 11/708~~ take precedence-)
- U C09K 11/71 . . . also containing alkaline earth metals
- C09K 11/712 {Halogenides (~~C09K 11/717~~ takes precedence-)}
- U C09K 11/74 . . containing arsenic, antimony or bismuth
- C09K 11/7428 . . . {Halogenides (~~C09K 11/7407~~ , ~~C09K 11/7442~~ to ~~C09K 11/7492~~ take precedence-)}
- U C09K 11/75 . . . containing antimony
- C09K 11/755 {Halogenides (~~C09K 11/751~~ , ~~C09K 11/757~~ and ~~C09K 11/758~~ take precedence-)}
- U C09K 11/77 . . containing rare earth metals
- C09K 11/7704 . . . {Halogenides (~~C09K 11/7701~~ , ~~C09K 11/7706~~ to ~~C09K 11/7714~~ take precedence-)}
- U C09K 11/7715 . . . {containing cerium}
- C09K 11/7719 {Halogenides (~~C09K 11/7716~~ , ~~C09K 11/7721~~ to ~~C09K 11/7727~~ take precedence-)}
- U C09K 11/7743 . . . {containing terbium}
- C09K 11/7747 {Halogenides (~~C09K 11/7744~~ , ~~C09K 11/7749~~ to ~~C09K 11/7755~~ take precedence-)}
- U C09K 11/7756 . . . {containing neodymium}
- C09K 11/7757 {Halogenides (~~C09K 11/7758~~ takes precedence-)}
- U C09K 11/7759 . . . {containing samarium}
- C09K 11/7762 {Halogenides (~~C09K 11/776~~ , ~~C09K 11/7764~~ and ~~C09K 11/7765~~ take precedence-)}
- C09K 11/7766 . . . {containing two or more rare earth metals} (~~containing europium C09K 11/7783~~-)
- U C09K 11/7767 {Chalcogenides}
- C09K 11/7769 {Oxides (~~C09K 11/7768~~ takes precedence-)}
- C09K 11/7772 {Halogenides (~~C09K 11/7767~~ , ~~C09K 11/7774~~ to ~~C09K 11/7782~~ take precedence-)}
- U C09K 11/7783 . . . {containing two or more rare earth metals one of which being europium}
- U C09K 11/7784 {Chalcogenides}
- C09K 11/7787 {Oxides (~~C09K 11/7785~~ , ~~C09K 11/7786~~ take precedence-)}

- C09K 11/779 · · · · {Halogenides (~~C09K 11/7784~~, ~~C09K 11/7792 to C09K 11/7798~~
~~take precedence~~ C09K 11/7784, C09K 11/7792 to C09K 11/7798
~~take precedence~~)}
- U C09K 11/89 · · containing mercury
- C09K 11/895 · · · {Halogenides (~~C09K 11/892~~ takes precedence)}
- C09K 13/00** **Etching, surface-brightening or pickling compositions** (~~for glass~~
C03C 15/00, { C03C 25/66 ; for mortars, concrete, artificial or natural
stone or ceramics C04B 41/5338 } ; for metallic material C23F, C23G 1/00,
C25F 1/00 ; { for semi-conductors H01L })
- NOTE
In groups C09K 13/02 to C09K 13/12, in the absence of an indication to the
contrary, materials are classified in the last appropriate place.
- C09K 15/00** **Anti-oxidant composition; Compositions inhibiting chemical change** ({ for
use in well-specified applications, see the relevant places, e.g. in etching
or pickling compositions C09K 13/00, C23G }, in foodstuffs A21D
, A23, { in association with organic compounds C07C, C07D }, in
macromolecular compositions C08 ; in liquid fuels or lubricants C10 ; in
fats, fatty substances, fatty oils or waxes C11B 5/00 ; in detergents C11D ;
{ coating or impregnating carbon or graphite based bodies to protect them
from oxidation C04B 41/45 } ; corrosion inhibiting compositions for metallic
material C23F 11/00-)
- NOTE
In groups C09K 15/02 to C09K 15/34, in the absence of an indication to the
contrary, a composition is classified in the last appropriate place.
- U C09K 15/04 · containing organic compounds
- C09K 15/32 · · containing {two or more of} boron, silicon, phosphorus, selenium, tellurium or
a metal
- C09K 17/00** **Soil-conditioning materials or soil-stabilising materials** (~~specially adapted~~
~~for boreholes or wells~~ C09K 8/00 ; fertilisers C05 ; consolidating by placing
solidifying or pore-filling substances in the soil E02D 3/12-)
- NOTES
This group covers mixtures of soil-conditioning or soil-stabilising materials with
fertilisers characterised by their soil-conditioning or soil-stabilising activity.
This group does not cover mixtures of soil-conditioning or soil-stabilising
materials with fertilisers characterised by their fertilising activity which are
covered by subclass C05G .
For the purpose of classification in this group, the presence of fertilisers in the
composition is not taken into account.
In groups C09K 17/02 to C09K 17/50, in the absence of an indication to the
contrary, materials are classified in the last appropriate place.

U C09K 19/00

Liquid crystal materials

NOTES

In groups [C09K 19/02](#) to [C09K 19/60](#) , { with the exception of groups [C09K 19/0208](#) to [C09K 19/0283](#) } ,in the absence of an indication to the contrary, materials are classified in the last appropriate place.

Mixtures containing two or more liquid crystal compounds covered individually by the same one of groups [C09K 19/04](#) to [C09K 19/40](#) are classified only in that group.

If liquid crystal components of the mixtures classified in groups [C09K 19/42](#) to [C09K 19/50](#) are of importance as such, they should also be classified according to the compounds in groups [C09K 19/04](#) to [C09K 19/40](#) .

- U C09K 19/04
 - characterised by the chemical structure of the liquid crystal components,{e.g. by a specific unit}
- C09K 19/0422
 - • {Sugars (-polysaccharides [C09K 19/3819](#)-)}
- U C09K 19/06
 - • Non-steroidal liquid crystal compounds
- U C09K 19/08
 - • • containing at least two non-condensed rings
- U C09K 19/10
 - • • • containing at least two benzene rings
- U C09K 19/14
 - • • • • linked by a carbon chain
- U C09K 19/18
 - • • • • the chain containing carbon-to-carbon triple bonds, e.g. tolans
- C09K 2019/181
 - • • • • • {Ph-C?C-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 2019/183
 - • • • • • {Ph-Ph-C?C-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 2019/185
 - • • • • • {Ph-Ph-C?C-Ph-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 2019/186
 - • • • • • {Ph-C?C-C?C-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 2019/188
 - • • • • • {Ph-C?C-Ph-C?C-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 19/20
 - • • • • linked by a chain containing carbon and oxygen atoms as chain links, e.g. esters {or ethers}
- U C09K 19/2007
 - • • • • {the chain containing -COO- or -OCO- groups}
- C09K 2019/2092
 - • • • • • {Ph-C?C-Ph-COO-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- U C09K 19/30
 - • • • containing saturated or unsaturated non-aromatic rings, e.g. cyclohexane rings
- U C09K 19/3001
 - • • • • {Cyclohexane rings}
- C09K 19/3003
 - • • • • • {Compounds containing at least two rings in which the different rings are directly linked (*covalent bond*)}(~~covalent bond~~)
- U C09K 19/3059
 - • • • • {in which at least two rings are linked by a carbon chain containing carbon to carbon triple bonds}
- C09K 2019/306
 - • • • • • {Cy-C?C-Cy (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 2019/3062
 - • • • • • {Cy-C?C-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 2019/3063
 - • • • • • {Cy-Ph-C?C-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- C09K 2019/3065
 - • • • • • {Cy-Ph-Ph-C?C-Ph (*? is a triple bond*)}(~~? is a triple bond~~)
- U C09K 19/34
 - • • containing at least one heterocyclic ring
- C09K 19/3402
 - • • • {having oxygen as hetero atom (-sugars [C09K 19/0422](#)-)}
- C09K 19/42
 - • Mixtures of liquid crystal compounds covered by two or more of the preceding groups [C09K 19/06](#) to [C09K 19/40](#)
- C09K 19/52
 - characterised by components which are not liquid crystals, e.g. additives {with special physical aspect: solvents, solid particles}
- C09K 19/54
 - • Additives having no specific mesophase {characterised by their chemical composition}

C09K 21/00 Fireproofing materials (-for use in a particular application, see the relevant places, e.g. fireproofing of wood [B27K](#), of polymers [C08](#), of textiles [D06M](#), of paper [D21H](#); fireproof paints [C09D 5/18](#)-)

NOTE

In groups [C09K 21/02](#) to [C09K 21/14](#), in the absence of an indication to the contrary, materials are classified in the last appropriate place.

U C09K 2205/00 Aspects relating to compounds used in compression type refrigeration systems

U C09K 2205/10 · Components

U C09K 2205/12 · · Hydrocarbons

C09K 2205/128 · · · Perfluorinated hydrocarbons (-([C09K 2205/124](#) or [C09K 2205/126](#) take precedence-)

Project: N/A (C10B)

U C10B 33/00 Discharging devices; Coke guides

C10B 33/006 · {-Decoking tools, e.g. hydraulic coke removing tools with boring or cutting nozzles}

U C10B 41/00 Safety devices, e.g. signalling or controlling devices for use in the discharge of coke

C10B 41/005 · {-for charging coal}

U C10B 45/00 Other details

C10B 45/005 · {-Devices for recovering spilled coke, e.g. recovering the coke falling out the oven when opening doors or withdrawing the leveler bar}

U C10B 53/00 Destructive distillation, specially adapted for particular solid raw materials or solid raw materials in special form (wet carbonising of peat [C10F](#))

C10B 53/07 · {-of solid raw materials consisting} of synthetic polymeric materials, e.g. tyres {(waste in general, e.g. household waste [C10B 53/00](#))} (recovery or working-up of waste materials of organic macromolecular compounds or compositions based thereon by dry-heat treatment for obtaining partially depolymerised materials [C08J 11/10](#); production of liquid hydrocarbon mixtures from rubber or rubber waste [C10G 1/10](#))

U C10B 57/00 Other processes not covered before; Features of destructive distillation processes in general

U C10B 57/04 · Using charges of special composition

C10B 57/045 · · {-containing mineral oils, bitumen, tar or the like or mixtures thereof}

Project: N/A (C10C)

U C10C 3/00 Working-up pitch, asphalt, bitumen {compositions of asphalts and other bituminous materials [C08L 95/00](#)}

C10C 3/005 · {-by mixing several fractions (*also coaltar fractions with petroleum fractions*)}(~~also coaltar fractions with petroleum fractions~~)

Project: N/A (C10G)

C10G

CRACKING HYDROCARBON OILS; PRODUCTION OF LIQUID HYDROCARBON MIXTURES, e.g. BY DESTRUCTIVE HYDROGENATION, OLIGOMERISATION, POLYMERISATION (cracking to hydrogen or synthesis gas [C01B](#); cracking or pyrolysis of hydrocarbon gases to individual hydrocarbons or mixtures thereof of definite or specific constitution [C07C](#); cracking to cokes [C10B](#)); RECOVERY OF HYDROCARBON OILS FROM OIL-SHALE, OIL-SAND, OR GASES; REFINING MIXTURES MAINLY CONSISTING OF HYDROCARBONS; REFORMING OF NAPHTHA; MINERAL WAXES (inhibiting corrosion or incrustation in general [C23F](#))

NOTES

In this subclass,

- groups [C10G 9/00](#) to [C10G 49/00](#) are limited to one-step processes;
- combined or multi-step processes are covered by groups [C10G 51/00](#) to [C10G 69/00](#) ;
- refining or recovery of mineral waxes is covered by group [C10G 73/00](#) .

In this subclass, the following terms or expressions are used with the meanings indicated:

- "in the presence of hydrogen" or "in the absence of hydrogen" mean treatments in which hydrogen, in free form or as hydrogen generating compounds, is added, or not added, respectively;
- "hydrotreatment" is used for conversion processes as defined in group [C10G 45/00](#) or group [C10G 47/00](#) ;
- "hydrocarbon oils" covers mixtures of hydrocarbons such as tar oils or mineral oils.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C10G 73/23](#) covered by [C10G 73/06](#)
 Groups [C10G 2/30](#) to [C10G 2/50](#)
 do not correspond to former or current IPC groups. The concordance CPC : IPC is as follows: - [C10G 2/30](#)
 - [C10G 2/50](#) : [C10G 2/00](#)

C10G 1/00

Production of liquid hydrocarbon mixtures from oil-shale, oil-sand, or non-melting solid carbonaceous or similar materials, e.g. wood, coal (-mechanical winning of oil from oil-shales, oil-sand, or the like [B03B](#)-)

C10G 1/006

- {-Combinations of processes provided in groups [C10G 1/02](#) to [C10G 1/08](#)-}

C10G 1/008

- {Controlling or regulating of liquefaction processes (-controlling or regulation in general [G05](#)-)}

C10G 1/02

- by distillation (-destructive distillation of oil-shale [C10B 53/06](#)-)

C10G 3/00

Production of liquid hydrocarbon mixtures from oxygen-containing or organic materials, e.g. fatty oils, fatty acids (-production from non-melting solid oxygen-containing carbonaceous materials [C10G 1/00](#) ; preparation of individual hydrocarbons or mixtures thereof of definite or specified contribution [C07C](#)-)

WARNING

1. Groups [C10G 3/40](#) to [C10G 3/62](#) are not complete pending a reorganization. See also [C10G 3/00](#)
2. Groups [C10G 3/40](#) to [C10G 3/62](#) do not correspond to former or current IPC groups.
Concordance CPC : IPC for these groups is as follows: - [C10G 3/40](#) - [C10G 3/62](#) : [C10G 3/00](#)

- C10G 3/60 · {Controlling or regulating the process (controlling or regulating in general [G05](#))}
- C10G 3/62 · {Catalyst regeneration (-regeneration or reactivation of catalysts in general [B01J 38/00](#)-)}
- C10G 7/00 Distillation of hydrocarbon oils (-distillation in general [B01D](#)-)**
- C10G 7/08 · Azeotropic or extractive distillation (-refining of hydrocarbon oils, in the absence of hydrogen, by extraction with selective solvents [C10G 21/00](#)-)
- C10G 7/12 · Controlling or regulating (-controlling or regulating in general [G05](#))
- U C10G 9/00 Thermal non-catalytic cracking, in the absence of hydrogen, of hydrocarbon oils**
- C10G 9/005 · {Coking (*in order to produce liquid products mainly*)} (~~in order to produce liquid products mainly~~)
- C10G 11/00 Catalytic cracking, in the absence of hydrogen, of hydrocarbon oils (-cracking in direct contact with molten metals or salts [C10G 9/34](#)-)**
- U C10G 11/14 · with preheated moving solid catalysts
- U C10G 11/18 · · according to the "fluidised-bed" technique
- C10G 11/185 · · · {Energy recovery from regenerator effluent gases (-using steam turbines, see [F01K 23/064](#) ; using gas turbines, see [F01K 25/14](#) ; the combined use of gas and steam turbines, see [F01K 3/185](#)-)}
- C10G 11/187 · · · {Controlling or regulating (-controlling or regulating in general [G05](#)-)}
- U C10G 11/20 · by direct contact with inert heated gases or vapours
- C10G 11/22 · · produced by partial combustion of the material to be cracked
- U C10G 15/00 Cracking of hydrocarbon oils by electric means, electromagnetic or mechanical vibrations, by particle radiation or with gases superheated in electric arcs**
- C10G 15/12 · with gases superheated in an electric arc, e.g. plasma
- U C10G 17/00 Refining of hydrocarbon oils in the absence of hydrogen, with acids, acid-forming compounds or acid-containing liquids, e.g. acid sludge**
- U C10G 17/02 · with acids or acid-containing liquids, e.g. acid sludge
- U C10G 17/04 · · Liquid-liquid treatment forming two immiscible phases
- C10G 17/07 · · · using halogen acids or oxyacids of halogen (-acids generating halogen [C10G 27/02](#)-)
- C10G 17/08 · with acid-forming oxides (-refining with CO₂ or SO₂ as a selective solvent [C10G 21/06](#)-)
- C10G 21/00 Refining of hydrocarbon oils in the absence of hydrogen, by extraction with selective solvents (-[C10G 17/00](#) , [C10G 19/00](#) take precedence; dewaxing oils [C10G 73/02](#)-)**
- U C10G 21/06 · characterised by the solvent used
- U C10G 21/12 · · Organic compounds only
- C10G 21/27 · · · Organic compounds not provided for in a single one of groups [C10G 21/14](#) to [C10G 21/26](#)
- C10G 21/30 · Controlling or regulating (-controlling or regulating in general [G05](#)-)

- U C10G 25/00 Refining of hydrocarbon oils in the absence of hydrogen, with solid sorbents**
- NOTE
When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.
- C10G 25/003 · {-Specific sorbent material, not covered by [C10G 25/02](#) or [C10G 25/03](#)-}
- U C10G 27/00 Refining of hydrocarbon oils in the absence of hydrogen, by oxidation**
- U C10G 27/04 · with oxygen or compounds generating oxygen
- C10G 27/12 · · with oxygen-generating compounds, e.g. per-compounds, chromic acid, chromates (-plumbites or plumbates [C10G 19/06](#)-)
- C10G 31/00 Refining of hydrocarbon oils in the absence of hydrogen, by methods not otherwise provided for (-by distillation [C10G 7/00](#)-)**
- C10G 31/11 · by dialysis
- C10G 33/00 Dewatering or demulsification of hydrocarbon oils (-by distillation [C10G 7/04](#)-)**
- C10G 33/08 · Controlling or regulating (-controlling or regulating in general [G05](#)-)
- U C10G 35/00 Reforming naphtha**
- NOTE
By reforming is meant the treatment of naphtha, in order to improve the octane number or its aromatic content.
- U C10G 35/04 · Catalytic reforming
- U C10G 35/06 · · characterised by the catalyst used
- C10G 35/095 · · · containing crystalline alumino-silicates, e.g. molecular sieves{{(-[C10G 35/065](#) takes precedence-}}
- C10G 35/24 · Controlling or regulating of reforming operations (-controlling or regulating in general [G05](#))
- C10G 45/00 - C10G 50/00 Hydrotreatment processes (-reforming of naphtha [C10G 35/00](#)-)**
- C10G 45/58 · to change the structural skeleton of some of the hydrocarbon content without cracking the other hydrocarbons present, e.g. lowering pour point; Selective hydrocracking of normal paraffins (-[C10G 32/00](#) takes precedence; improving or increasing the octane number or aromatic content of naphtha [C10G 35/00](#)-)
- C10G 45/68 · · Aromatisation of hydrocarbon oil fractions (-of naphtha [C10G 35/00](#)-)
- C10G 45/72 · Controlling or regulating (-controlling or regulating in general [G05](#)-)
- C10G 47/00 Cracking of hydrocarbon oils in the presence of hydrogen or hydrogen generating compounds, to obtain lower boiling fractions,(-[C10G 15/00](#) takes precedence; destructive hydrogenation of non-melting solid carbonaceous or similar materials [C10G 1/06](#)-)**
- C10G 47/36 · Controlling or regulating (-controlling or regulating in general [G05](#)-)
- C10G 49/00 Treatment of hydrocarbon oils in the presence of hydrogen or hydrogen-generating compounds, not provided for in a single one of the groups [C10G 45/02](#) , [C10G 45/32](#) , [C10G 45/44](#) , [C10G 45/58](#) or [C10G 47/00](#)**
- C10G 49/26 · Controlling or regulating (-controlling or regulating in general [G05](#))

- C10G 50/00** Production of liquid hydrocarbon mixtures from lower carbon number hydrocarbons, e.g. by oligomerisation (-preparation of individual hydrocarbons or mixtures thereof of definite or specified constitution [C07C-](#))
- C10G 50/02 · of hydrocarbon oils for lubricating purposes
- U C10G 53/00** Treatment of hydrocarbon oils in the absence of hydrogen, by two or more refining processes
- U C10G 53/02 · plural serial stages only
- U C10G 53/04 · · including at least one extraction step
- C10G 53/06 · · · including only extraction steps, e.g. deasphalting by solvent treatment followed by extraction of aromatics (-refining in one step with two or more solvents which are introduced or withdrawn separately [C10G 21/02-](#))
- C10G 63/00** Treatment of naphtha by at least one reforming process and at least one other conversion process (-[C10G 59/00](#) , [C10G 61/00](#) take precedence-)
- C10G 69/00** Treatment of hydrocarbon oils by at least one hydrotreatment process and at least one other conversion process (-[C10G 67/00](#) takes precedence-)
- C10G 69/14 · plural parallel stages only
- C10G 70/00** Working-up undefined normally gaseous mixtures obtained by processes covered by groups [C10G 9/00](#) , [C10G 11/00](#) , [C10G 15/00](#) , [C10G 47/00](#) , [C10G 51/00](#)
- C10G 71/00** Treatment by methods not otherwise provided for of hydrocarbon oils or fatty oils for lubricating purposes (-by Fischer-Tropsch [C07C 1/00](#) ; lubricating compositions [C10M-](#))
- C10G 71/02 · Thickening by voltolising (-chemical modification of drying oils by voltolising [C09F 7/04-](#))
- C10G 73/00** Recovery or refining of mineral waxes, e.g. montan wax (-compositions essentially based on waxes [C08L 91/00-](#))
- U C10G 73/02 · Recovery of petroleum waxes from hydrocarbon oils; Dewaxing of hydrocarbon oils
- C10G 73/34 · · Controlling or regulating (-controlling or regulating in general [G05-](#))
- C10G 75/00** Inhibiting corrosion or fouling in apparatus for treatment or conversion of hydrocarbon oils, in general (-[C10G 7/10](#) , [C10G 9/16](#) take precedence; protection of pipes against corrosion or incrustation [F16L 58/00-](#))
- C10G 2300/00** Aspects relating to hydrocarbon processing covered by groups [C10G 1/00](#) - [C10G 99/00](#)
- C10G 2400/00** Products obtained by processes covered by groups [C10G 9/00](#) to [C10G 69/14](#)

Project: N/A (C10H)

- U C10H 9/00** Acetylene gas generators according to Dobereiner`s principle with fixed carbide bell
- C10H 9/02 · with water feed from below through porous materials (*by capillary feed*)(*by capillary feed*)

Project: N/A (C10J)

C10J	PRODUCTION OF PRODUCER GAS, WATER-GAS, SYNTHESIS GAS FROM SOLID CARBONACEOUS MATERIAL, OR MIXTURES CONTAINING THESE GASES (- synthesis gas from liquid or gaseous hydrocarbons C01B ; underground gasification of minerals E21B 43/295); CARBURETTING AIR OR OTHER GASES
C10J 1/00	Production of fuel gases by carburetting air or other gases without pyrolysis (-for internal-combustion engines F02-)
C10J 1/207	· Carburetting by pyrolysis of solid carbonaceous material in a fuel bed (- C10J 3/66 takes precedence-)
C10J 3/00	Production of combustible gases containing carbon monoxide from solid carbonaceous fuels (-destructive distillation processes C10B-)
C10J 3/57	· Gasification using molten salts or metals (- C10J 3/02 , C10J 3/46 take precedence-)
U C10J 2200/00	Details of gasification apparatus
C10J 2200/06	· Catalysts as integral part of gasifiers (-catalysts added to the feed C10J 2300/0986 -)
C10J 2200/36	· Moving parts inside the gasification reactor not otherwise provided for (-devices for distributing fuel evenly over a fixed bed C10J 3/32 -)
U C10J 2300/00	Details of gasification processes
U C10J 2300/16	· Integration of gasification processes with another plant or parts within the plant
C10J 2300/1603	· · with gas treatment (-gas cleaning C10K 1/00 -)
U C10J 2300/164	· · with conversion of synthesis gas
U C10J 2300/1643	· · · Conversion of synthesis gas to energy
C10J 2300/1646	· · · · integrated with a fuel cell (-gasification of solids in fuel cells H01M 8/0643 -)
C10J 2300/165	· · · · integrated with a gas turbine or gas motor (-gas turbine plants provided with a gas producer F02C 3/28 ; engines using solid fuels F02B 43/08 -)
C10J 2300/1653	· · · · integrated in an gasification combined cycle (IGCC)(-engines driven by heat coming from a gasification or pyrolysis unit F01K 23/067 -)
U C10J 2300/1656	· · · Conversion of synthesis gas to chemicals
C10J 2300/1659	· · · · to liquid hydrocarbons (Fischer-Tropsch process C10G 2/00 <i>Fischer-Tropsch process C10G 2/00</i>)
C10J 2300/1662	· · · · to methane (SNG)(-production of synthetic natural gas C10L 3/08 -)
C10J 2300/1665	· · · · to alcohols, e.g. methanol or ethanol (-preparation of alcohols in general C07C 29/00 -)
C10J 2300/1668	· · · · to urea (-preparation of urea C07C 273/00 -); to ammonia (-preparation of ammonia C01C 1/0405 -)
C10J 2300/1678	· · with air separation (-separating gases using rectification of air F25J 3/04521 -)
C10J 2300/169	· · with water treatments (treatment of water in general or water purification C02F)
U C10J 2300/18	· Details of the gasification process, e.g. loops, autothermal operation
C10J 2300/183	· · Non-continuous or semi-continuous processes (-cyclic processes in fixed bed gasification C10J 3/04 -)

Project: N/A (C10K)

- U C10K 1/00 Purifying combustible gases containing carbon monoxide (isolation of hydrogen from mixtures containing hydrogen and carbon monoxide C01B 3/50)**
- C10K 1/001 · ~~{~~working-up the condensates (recovering of NH₃ and NH₄ salts C01C 1/00; working-up or purifying tars and tar-oils C10C 1/00)}
- C10K 1/002 · ~~{~~Removal of contaminants}
- C10K 1/003 · · ~~{~~of acid contaminants, e.g. acid gas removal}
- C10K 1/004 · · · ~~{~~Sulfur containing contaminants, e.g. hydrogen sulfide}
- C10K 1/005 · · · ~~{~~Carbon dioxide}
- C10K 1/006 · · · ~~{~~Hydrogen cyanide}
- C10K 1/007 · · ~~{~~of metal compounds}
- C10K 1/008 · · · ~~{~~Alkali metal compounds}
- U C10K 1/02** · Dust removal
- C10K 1/026 · · ~~{~~by centrifugal forces (cyclones B04C)}
- C10K 1/028 · · ~~{~~by electrostatic precipitation (separating dispersed particles from gases or vapour by electrostatic effect in general B03C 3/00)}
- U C10K 1/04** · by cooling to condense non-gaseous materials ~~{~~(C10K 1/001 takes precedence)}
- C10K 1/046 · · ~~{~~Reducing the tar content}
- U C10K 1/08** · by washing with liquids; Reviving the used wash liquors (gas washers B01D)
- U C10K 1/10** · · with aqueous liquids {alkaline reacting aqueous liquids C10K 1/12}
- U C10K 1/12** · · · alkaline-reacting {including the revival of the used wash liquors}
- C10K 1/122 · · · · ~~{~~containing only carbonates, bicarbonates, hydroxides or oxides of alkali-metals *(including Mg)*~~(including Mg)~~}
- U C10K 1/20** · by treating with solids; Regenerating spent purifying masses ~~{~~(separation by adsorption B01D 53/02; separation by chemical reaction B01D 53/34 ; refining of hydrocarbon oils with acids C10G 17/02, C10G 27/02, C10G 29/12)}
- C10K 1/205 · · ~~{~~Methods and apparatus for treating the purifying masses without their regeneration (recovering of sulfur C01B 17/00; recovering of cyanide compounds C01C 3/00)}
- U C10K 3/00 Modifying the chemical composition of combustible gases containing carbon monoxide to produce an improved fuel, e.g. one of different calorific value, which may be free from carbon monoxide**
- C10K 3/001 · ~~{~~by thermal treatment}
- C10K 3/003 · · ~~{~~Reducing the tar content}
- C10K 3/005 · · · ~~{~~by partial oxidation}
- C10K 3/006 · · · ~~{~~by steam reforming}
- C10K 3/008 · · · ~~{~~by cracking}
- U C10K 3/02** · by catalytic treatment
- C10K 3/023 · · ~~{~~Reducing the tar content}
- C10K 3/026 · · ~~{~~Increasing the carbon monoxide content, e.g. reverse water-gas shift [RWGS]}
- C10K 3/04 · · reducing the carbon monoxide content { e.g. water-gas shift [WGS]}

Project: N/A (C10L)

C10L **FUELS NOT OTHERWISE PROVIDED FOR** (-fuels for generating pressure gas, e.g. for rockets [C06D 5/00](#) ; candles [C11C](#); nuclear fuel [G21C 3/00](#)); **NATURAL GAS; SYNTHETIC NATURAL GAS OBTAINED BY PROCESSES NOT COVERED BY SUBCLASSES [C10G](#), [C10K](#); LIQUEFIED PETROLEUM GAS; ADDING MATERIALS TO FUELS OR FIRES TO REDUCE SMOKE OR UNDESIRABLE DEPOSITS OR TO FACILITATE SOOT REMOVAL; FIRELIGHTERS**

NOTE

In subclass [C10L](#) it is desirable to give indexing codes for information about components of solid, liquid and gaseous fuels or firelighters, their additives and constituents and their preparation and use. The indexing codes are taken from [C10L 2200/00](#) to [C10L 2290/60](#)

- U C10L 1/00** **Liquid carbonaceous fuels**
- U C10L 1/10 . containing additives
 - U C10L 1/14 . . Organic compounds
 - U C10L 1/18 . . . Containing oxygen
 - C10L 1/182 containing hydroxy groups; Salts thereof{(-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) take precedence-)}
 - C10L 1/183 at least one hydroxy group bound to an aromatic carbon atom{(-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) , [C10L 1/1828](#) take precedence-)}
 - C10L 1/1832 {mono-hydroxy (-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) , [C10L 1/1828](#) take precedence-)}
 - C10L 1/1835 {having at least two hydroxy substituted non condensed benzene rings (-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) , [C10L 1/1828](#) take precedence-)}
 - C10L 1/1837 {hydroxy attached to a condensed aromatic ring system (-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) , [C10L 1/1828](#) take precedence-)}
 - C10L 1/185 Ethers; Acetals; Ketals; Aldehydes; Ketones{(-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) take precedence-)}
 - C10L 1/188 Carboxylic acids; {metal}salts thereof{(-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) take precedence-)}
 - C10L 1/189 having at least one carboxyl group bound to an aromatic carbon atom{(-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) , [C10L 1/1885](#) , [C10L 1/1886](#) , [C10L 1/1888](#) take precedence-)}
 - C10L 1/1895 {polycarboxylic acid (-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) , [C10L 1/1885](#) , [C10L 1/1886](#) , [C10L 1/1888](#) take precedence-)}
 - C10L 1/19 Esters {ester radical containing compounds; ester ethers; carbonic acid esters(-[C10L 1/1802](#) , [C10L 1/1805](#) , [C10L 1/1808](#) , [C10L 1/1811](#) , [C10L 1/1814](#) , [C10L 1/1817](#) take precedence-)}
 - C10L 1/192 {Macromolecular compounds} (-[C10L 1/1814](#) , [C10L 1/1817](#) take precedence-)

- C10L 1/198 obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds {homo- or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon to carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid}
- U C10L 1/22 containing nitrogen
- C10L 1/222 containing at least one carbon-to-nitrogen single bond{(-C10L 1/221 takes precedence-)}
- C10L 1/2222 {(cyclo)aliphatic amines; polyamines (no macromolecular substituent 30C); quaternair ammonium compounds; carbamates (-C10L 1/221 takes precedence-)}
- C10L 1/2225 {hydroxy containing (-C10L 1/221 takes precedence-)}
- C10L 1/2227 {urea; derivatives thereof; urethane (-C10L 1/221 takes precedence-)}
- C10L 1/223 having at least one amino group bound to an aromatic carbon atom{(-C10L 1/221 , C10L 1/2227 take precedence-)}
- C10L 1/2235 {hydroxy containing (-C10L 1/221 , C10L 1/2227 take precedence-)}
- C10L 1/224 Amides; Imides {carboxylic acid amides, imides(-C10L 1/221 , C10L 1/2227 take precedence-)}
- C10L 1/226 containing at least one nitrogen-to-nitrogen bond, e.g. azo compounds, azides, hydrazines{(-C10L 1/221 takes precedence-)}
- C10L 1/228 containing at least one carbon-to-nitrogen double bond, e.g. guanidines, hydrazones, semicarbazones, imines; containing at least one carbon-to-nitrogen triple bond, e.g. nitriles{(-C10L 1/221 , C10L 1/226 take precedence-)}
- C10L 1/2283 {containing one or more carbon to nitrogen double bonds, e.g. guanidine, hydrazone, semi-carbazone, azomethine (-C10L 1/221 , C10L 1/226 take precedence-)}
- C10L 1/2286 {containing one or more carbon to nitrogen triple bonds, e.g. nitriles (-C10L 1/221 , C10L 1/226 take precedence-)}
- C10L 1/23 containing at least one nitrogen-to-oxygen bond, e.g. nitro-compounds, nitrates, nitrites{(-C10L 1/221 takes precedence-)}
- C10L 1/231 {nitro compounds; nitrates; nitrites (-C10L 1/221 takes precedence-)}
- C10L 1/232 containing nitrogen in a heterocyclic ring{(-C10L 1/221 takes precedence-)}
- C10L 1/233 containing nitrogen and oxygen in the ring, e.g. oxazoles{(-C10L 1/221 takes precedence-)}
- C10L 1/2335 {morpholino, and derivatives thereof (-C10L 1/221 takes precedence-)}
- C10L 1/234 Macromolecular compounds{(-C10L 1/221 takes precedence-)}
- C10L 1/236 obtained by reactions involving only carbon-to-carbon unsaturated bonds {derivatives thereof(-C10L 1/221 takes precedence-)}
- C10L 1/2362 {homo- or copolymers derived from unsaturated compounds containing nitrile groups (-C10L 1/221 takes precedence-)}
- C10L 1/2364 {homo- or copolymers derived from unsaturated compounds containing amide and/or imide groups (-C10L 1/221 takes precedence-)}
- C10L 1/2366 {homo- or copolymers derived from unsaturated compounds containing amine groups (-C10L 1/221 takes precedence-)}
- C10L 1/2368 {homo- or copolymers derived from unsaturated compounds containing heterocyclic compounds containing nitrogen in the ring (-C10L 1/221 takes precedence-)}

- C10L 1/238 obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds{{(-C10L 1/221 takes precedence-)}}
- C10L 1/2381 {polyamides; polyamide-esters; polyurethane, polyureas (-C10L 1/221 takes precedence-)}
- C10L 1/2383 Polyamines or polyimines, or derivatives thereof{(poly)amines and imines; derivatives thereof (substituted by a macromolecular group containing 30C)(-C10L 1/221 takes precedence-)}
- C10L 1/2387 Polyoxyalkyleneamines{(poly)oxyalkylene amines and derivatives thereof (substituted by a macromolecular group containing 30C) (-C10L 1/221 takes precedence-)}
- U C10L 1/24 . . . containing sulfur, selenium and/or tellurium
- C10L 1/2493 {compounds of uncertain formula; ~~reactions of organic compounds(hydrocarbons, acids, esters)~~ *reactions of organic compounds (hydrocarbons, acids, esters)* with sulfur or sulfur containing compounds}
- U C10L 1/26 . . . containing phosphorus
- C10L 1/2633 {phosphorus bond to oxygen (*no P. C. bond*)}{~~no P. C. bond~~}
- C10L 1/2691 {Compounds of uncertain formula; ~~reaction of organic compounds(hydrocarbons acids, esters)~~ *reaction of organic compounds (hydrocarbons acids, esters)* with Px Sy, Px Sy Halz or sulfur and phosphorus containing compounds}
- U C10L 1/30 . . . compounds not mentioned before (complexes)
- C10L 1/305 {organo-metallic compounds (*containing a metal to carbon bond*)}{~~containing a metal to carbon bond~~}
- C10L 1/32 . . . consisting of coal-oil suspensions or aqueous emulsions {or oil emulsions}
- C10L 3/00 Gaseous fuels; Natural gas; -Synthetic natural gas obtained by processes not covered by subclass C10G , C10K-; Liquefied petroleum gas**
- C10L 3/06 . . . Natural gas; -Synthetic natural gas obtained by processes not covered by C10G , C10K 3/02 or C10K 3/04 {{(-liquefying by pressure and cold treatment F25J-)}}}
- C10L 3/12 . . . Liquefied petroleum gas{{(-liquefying by pressure and cold treatment F25J-)}}}
- C10L 5/00 Solid fuels (-produced by solidifying fluid fuels C10L 7/00-)**
- C10L 5/02 . {Solid fuels such as}briquettes consisting mainly of carbonaceous materials of mineral {or non-mineral}origin (peat briquettes C10F)
- C10L 5/04 . . Raw material {of mineral origin}to be used; Pretreatment thereof{{(-pretreatment of fuels of non-mineral origin C10L 5/40-)}}}
- C10L 5/06 . . Methods of {shaping, e.g. pelletizing or}briquetting {(-mechanical part of pressing briquettes B30B 11/00-)}
- C10L 5/08 . . . without the aid of extraneous binders (-briquetting peat C10F-)
- C10L 5/24 . . Combating dust during {shaping or}briquetting; Safety devices against explosion
- C10L 5/26 . . After-treatment of the {shaped fuels, e.g.}briquettes
- C10L 5/28 . . . Heating the {shaped fuels, e.g.}briquettes; Coking the binders
- C10L 5/30 . . . Cooling the {shaped fuels, e.g.}briquettes
- C10L 5/34 . . Other details of the {shaped fuels, e.g.}briquettes
- U C10L 5/40 . . essentially based on materials of non-mineral origin
- C10L 5/46 . . on sewage, house, or town refuse{{(-C10L 5/403 , C10L 5/406 take precedence-)}}
- C10L 5/48 . . on industrial residues and waste materials{{(-C10L 5/403 , C10L 5/406 take precedence-)}}

- U C10L 7/00 Fuels produced by solidifying fluid fuels**
 C10L 7/02 · liquid fuels (-lubricating compositions [C10M-](#))
- C10L 10/00 Use of additives to fuels or fires for particular purposes (-additives for liquid carbonaceous fuels characterised by their chemical nature [C10L 1/10](#) ; using binders for briquetting solid fuels [C10L 5/10](#) ; using additives to improve the combustion of solid fuels [C10L 9/10-](#))**
WARNINGS
 IPC8 subgroups [C10L 10/00](#) , introduced in the CPC scheme in June 2006, might be temporarily incomplete as a number of documents presently classified under the main group needs reclassification to these IPC subgroups
- C10L 10/18 · use of detergents or dispersants for purposes not provided for in groups [C10L 10/02](#) - [C10L 10/16](#)
- U C10L 11/00 Manufacture of firelighters**
 C10L 11/04 · consisting of combustible material (-matches [C06F-](#))
- C10L 2200/00 Components of fuel compositions**
NOTE
 Additives in liquid fuels present in concentrations lower than 5% get a class taken from [C10L 1/10](#) -[C10L 1/308](#) and corresponding [C10L 1/10](#) -[C10L 1/308](#). In groups [C10L 1/32](#) to [C10L 11/08](#) is such distinction between the terms additive and component not made.
- C10L 2300/00 Mixture of two or more additives covered by the same group of [C10L 1/00](#) - [C10L 1/308](#)**
NOTE
 After the code and separated therefrom by a + sign, the codes [C10L 2300/20](#) to [C10L 2300/40](#) are added according to the number of components in the mixture. Example: [C10L 1/16](#) A+ [C10L 2300/20](#) corresponds to a mixture of two well defined hydrocarbons, e.g. mixture of hexane and benzene

Project: N/A (C10M)

C10M

LUBRICATING COMPOSITIONS (-well drilling compositions [C09K 8/02-](#)); USE OF CHEMICAL SUBSTANCES EITHER ALONE OR AS LUBRICATING INGREDIENTS IN A LUBRICATING COMPOSITION ({lubricants for medical use [A61](#) } ; mould release, i.e. separating, agents for metals [B22C 3/00](#) , for plastics or substances in a plastic state, in general [B29C 33/56](#) , for glass [C03B 40/02](#) ; use of particular substances in particular apparatus or conditions, see [F16N](#) or the relevant groups for the application, e.g. [A21D 8/08](#) , [B21C 9/00](#) , [H01B 3/18](#) ; immersion oils for microscopy [G02B 21/33-](#))

NOTES

In this subclass, the following terms are used with the meanings indicated:

- "lubricant" or "lubricating composition" includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
- "aliphatic" includes "cycloaliphatic".

In respect of the classification of mixtures, attention is drawn to Note (4) (e) below.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place. Thus, a compound having an aromatic ring is classified as aromatic regardless of whether

the substituent(s) of interest are on the ring or on an aliphatic part of the molecule.

In this subclass:

metal or ammonium salts of a compound are classified as that compound;

salts or adducts formed between two or more organic compounds are classified according to all compounds forming the salt or adduct, if of interest;

a specified compound, e.g. phenols, acids, substituted by a macromolecular hydrocarbon radical is classified as that compound; base-materials or thickeners or additives consisting of a mixture for which no specific main group is provided are classified in the most indented group covering all essential constituents of the mixture, for example,

- a base-material mixture of ketone and amide - group [C10M 105/00](#)

- a base-material mixture of ketone and ether - group [C10M 105/08](#)

- an additive mixture of long and short chain esters - group [C10M 129/00](#)

- an additive mixture of short chain aliphatic and aromatic carboxylic acids

- group [C10M 129/26](#) ;

except for aqueous lubricating compositions containing more than 10% water, which are classified separately, classification is made according to the type of ingredient or mixture of types of ingredient (base-material, thickener or additive) which characterises the composition. Attention is drawn to the fact that a mixture of essential ingredients characterised by only one of its components, rather than by the mixture as a whole, is not classified as a mixture, e.g. a lubricating composition consisting of:

- a known base-material and a new additive is classified only in the "additive"

part of the classification scheme;

- a known base-material with both a thickener and a further additive as essential ingredients, which may be individually classified as a mixture of thickener and additive;

- known base-material with a combination of additives as essential ingredients, which may be individually known or not, is classified in the appropriate place for the additive mixture.

In this subclass, it is desirable to add the indexing codes of:

- subclass **M10M**, relating to the chemical constitution of individual compounds of the lubricating compositions;

- subclass **M10N**, relating to physico-chemical aspects of the lubricating compositions or of their compounding ingredients.

For more information about the way of allocating these indexing codes, see the notes after the titles of the respective subclasses.

In this subclass, until May 2003, indexing codes were added, relating to:

- each of the essential ingredients of a mixture. However, in the case of an aqueous lubricating composition covered by group [C10M 173/00](#), the presence of water is not indicated;

- each of the essential reactants of a reaction product covered by groups [C10M 109/02](#), [C10M 121/04](#) or [C10M 159/12](#)

The indexing codes, which are chosen from groups [C10M 101/00](#) to [C10M 109/00](#), [C10M 113/00](#) to [C10M 121/00](#), [C10M 125/00](#) to [C10M 139/00](#),

[C10M 143/00](#) to [C10M 155/00](#) , [C10M 159/00](#) or [C10M 163/00](#) to [C10M 167/00](#) , were given using Combination Sets.

In this subclass, until May 2003, the indexing codes of subclass [C10N](#) were added.

Documents classified with Combination Sets according to internal Notes 2), 3) and 5) are in the state of being reclassified according to Note 1).

WARNING

The following groups are no longer used for the classification of new documents from January, 1978:

- [C10M 1/00](#) to [C10M 7/00](#)

The backlog of these groups is continuously being reclassified in groups [C10M 101/00](#) to [C10M 177/00](#) .

- C10M 3/00** **Liquid compositions essentially based on lubricating components other than mineral lubricating oils or fatty oils and their use as lubricants; Use as lubricants of single liquid substances (compositions in general essentially based on macromolecular compounds [C08L](#))**
- C10M 7/00** **Solid or semi-solid compositions essentially based on lubricating components other than mineral lubricating oils or fatty oils and their use as lubricants; Use as lubricants of single solid or semi-solid substances (compositions in general essentially based on macromolecular compounds [C08L](#))**
- C10M 101/00** **Lubricating compositions characterised by the base-material being a mineral or fatty oil (-containing more than 10% water [C10M 173/00](#))**
- C10M 103/00** **Lubricating compositions characterised by the base-material being an inorganic material (-containing more than 10% water [C10M 173/00](#))**
- U C10M 105/00** **Lubricating compositions characterised by the base-material being a non-macromolecular organic compound**
- C10M 105/02 · Well-defined hydrocarbons (-petroleum fractions [C10M 101/02](#)-)
- U C10M 105/56** · containing nitrogen
- C10M 105/58 · · Amines, e.g. polyalkylene polyamines, quaternary amines (-polyalkylene polyamines with eleven or more monomer units [C10M 107/44](#)-)
- C10M 105/80 · containing atoms of elements not provided for in groups [C10M 105/02](#) to [C10M 105/78](#)
- U C10M 107/00** **Lubricating compositions characterised by the base-material being a macromolecular compound**
- C10M 107/20 · containing oxygen (-[C10M 107/18](#) takes precedence-)
- C10M 107/54 · containing atoms of elements not provided for in groups [C10M 107/02](#) to [C10M 107/52](#)
- C10M 109/00** **Lubricating compositions characterised by the base-material being a compound of unknown or incompletely defined constitution (-[C10M 101/00](#) takes precedence-)**
- C10M 111/00** **Lubrication compositions characterised by the base-material being a mixture of two or more compounds covered by more than one of the main groups [C10M 101/00](#) to [C10M 109/00](#) , each of these compounds being essential**
- C10M 111/06 · at least one of them being a compound of the type covered by group [C10M 109/00](#)

- U C10M 115/00** Lubricating compositions characterised by the thickener being a non-macromolecular organic compound other than a carboxylic acid or salt thereof
- C10M 115/02 · Hydrocarbons (-petroleum fractions [C10M 121/02](#)-)
- U C10M 119/00** Lubricating compositions characterised by the thickener being a macromolecular compound
- C10M 119/04 · containing oxygen (-hydrocarbon polymers modified by oxidation [C10M 119/02](#)-)
- C10M 119/30 · containing atoms of elements not provided for in groups [C10M 119/02](#) to [C10M 119/28](#)
- C10M 123/00** Lubricating compositions characterised by the thickener being a mixture of two or more compounds covered by more than one of the main groups [C10M 113/00](#) to [C10M 121/00](#), each of these compounds being essential (-inorganic materials coated with organic compounds [C10M 113/16](#)-)
- C10M 123/06 · at least one of them being a compound of the type covered by group [C10M 121/00](#)
- U C10M 125/00** Lubricating compositions characterised by the additive being an inorganic material
- C10M 125/14 · Water (-aqueous lubricating compositions containing more than 10% water [C10M 173/00](#)-)
- C10M 127/00** Lubricating compositions characterised by the additive being a non-macromolecular hydrocarbon (-petroleum fractions [C10M 159/04](#)-)
- U C10M 129/00** Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing oxygen
- U C10M 129/02 · having a carbon chain of less than 30 atoms
- C10M 129/68 · · Esters (-epoxidised [C10M 129/66](#)-)
- U C10M 133/00** Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing nitrogen
- U C10M 133/02 · having a carbon chain of less than 30 atoms
- C10M 133/04 · · Amines, e.g. polyalkylene polyamines; Quaternary amines (-polyalkylene polyamines with eleven or more monomer units [C10M 149/22](#)-)
- U C10M 135/00** Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing sulfur, selenium or tellurium
- U C10M 135/12 · Thio-acids; Thiocyanates; Derivatives thereof
- U C10M 135/14 · · having a carbon-to-sulfur double bond
- C10M 135/16 · · · thiourea type, i.e. containing the group
- $$\begin{array}{c} \text{S} \\ || \\ >\text{N}-\text{C}-\text{NK} \end{array}$$
- C10M 135/18 · · · thiocarbamic type, e.g. containing the groups
- $$\begin{array}{c} \text{S} \\ || \\ >\text{N}-\text{C}-\text{S}- \end{array} \quad \text{or} \quad \begin{array}{c} \text{S} \\ || \\ >\text{N}-\text{C}-\text{O}- \end{array}$$
- C10M 139/00** Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing atoms of elements not provided for in groups [C10M 127/00](#) to [C10M 137/00](#)
- C10M 139/06 · having a metal-to-carbon bond (-metal complexes of unknown constitution [C10M 159/18](#)-)

C10M 141/00	Lubricating compositions characterised by the additive being a mixture of two or more compounds covered by more than one of the main groups C10M 125/00 to C10M 139/00 , each of these compounds being essential
C10M 141/12	· at least one of them being an organic compound containing atoms of elements not provided for in groups C10M 141/02 to C10M 141/10
C10M 145/00	Lubricating compositions characterised by the additive being a macromolecular compound containing oxygen (-oxidised hydrocarbons C10M 143/18-)
C10M 155/00	Lubricating compositions characterised by the additive being a macromolecular compound containing atoms of elements not provided for in groups C10M 143/00 to C10M 153/00
C10M 157/00	Lubricating compositions characterised by the additive being a mixture of two or more macromolecular compounds covered by more than one of the main groups C10M 143/00 to C10M 155/00 , each of these compounds being essential
C10M 157/10	· at least one of them being a compound containing atoms of elements not provided for in groups C10M 157/02 to C10M 157/08
C10M 159/00	Lubricating compositions characterised by the additive being of unknown or incompletely defined constitution (-carboxylic acids with less than 30 carbon atoms in the chain, of unknown or incompletely defined constitution C10M 129/56-)
U C10M 169/00	Lubricating compositions characterised by containing as components a mixture of at least two types of ingredient selected from base-materials, thickeners or additives, covered by the preceding groups, each of these compounds being essential
C10M 169/06	· Mixtures of thickeners and additives
C10M 171/00	Lubricating compositions characterised by purely physical criteria, e.g. containing as base-material, thickener or additive, ingredients which are characterised exclusively by their numerically specified physical properties, i.e. containing ingredients which are physically well-defined but for which the chemical nature is either unspecified or only very vaguely indicated (-chemically defined ingredients C10M 101/00 to C10M 169/00 ; petroleum fractions C10M 101/02 , C10M 121/02 , C10M 159/04-)
C10M 171/06	· Particles of special shape or size
C10M 175/00	Working-up used lubricants to recover useful products((-destructive distillation C10B; extraction and elimination of PCBs C10G 7/006 , C10G 21/006 , C10G 25/006 ; combustion processes F23G; Filtration, filters in general B01D-); Cleaning(in a mechanical way B08B; integrated processes C23; solid waste B09B)}
C10M 175/0091	· {Treatment of oils in a continuous lubricating circuit (<i>e.g. motor oil system</i>)}(<i>e.g. motor oil system</i>)}
U C10M 2201/00	Inorganic compounds or elements as ingredients in lubricant compositions
C10M 2201/06	· Metal compounds (-of chromium C10M 2201/086 -)
C10M 2201/08	· Inorganic acids or salts thereof (-of phosphorus C10M 2201/085 , of chromium C10M 2201/086 , of boron C10M 2201/087 ; metal carbonates or bicarbonates C10M 2201/062 -)
C10M 2201/082	· containing nitrogen (-nitrides C10M 2201/061 -)
C10M 2201/084	· containing sulfur, selenium or tellurium (-sulfides, tellurides, selenides C10M 2201/065 -)

C10M 2205/00	Organic <u>macromolecular</u> hydrocarbon compounds or fractions, whether or not modified by oxidation as ingredients in lubricant compositions
	<u>NOTE</u> Copolymers are indexed with the symbol for the main monomer always being present, (e.g. C10M 2205/026 , C10M 2205/022) according to the last place rule, followed by the symbol of the other monomers, (e.g. C10M 2205/022 , C10M 2205/00)
C10M 2207/00	Organic <u>non-macromolecular</u> hydrocarbon compounds containing hydrogen, carbon and oxygen as ingredients in lubricant compositions
	<u>NOTE</u> In this group compounds, (e.g. phenols, succinic acid) substituted by an alkyl group derived from a polymerised olefin are not considered as macromolecular compounds
C10M 2207/28	• Esters (-epoxidised esters C10M 2207/24-)
C10M 2209/00	Organic <u>macromolecular</u> compounds containing oxygen as ingredients in lubricant compositions (-oxidised hydrocarbons C10M 2205/12-)
U C10M 2209/10	• Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
U C10M 2209/103	• • Polyethers, i.e. containing di- or higher polyoxyalkylene groups
C10M 2209/107	• • • of two or more specified different alkylene oxides covered by groups C10M 2209/104 to C10M 2209/106
C10M 2211/00	Organic <u>non-macromolecular</u> compounds containing halogen as ingredients in lubricant compositions
C10M 2213/00	Organic <u>macromolecular</u> compounds containing halogen as ingredients in lubricant compositions
C10M 2215/00	Organic <u>non-macromolecular</u> compounds containing nitrogen as ingredients in lubricant compositions
C10M 2215/02	• Amines, e.g. polyalkylene polyamines; Quaternary amines (-polyalkylene polyamines with eleven or more monomer units C10M 2217/046-)
C10M 2215/24	• having hydrocarbon substituents containing <u>thirty or more carbon atoms</u> , e.g. nitrogen derivatives of substituted succinic acid
C10M 2219/00	Organic <u>non-macromolecular</u> compounds containing sulfur, selenium or tellurium as ingredients in lubricant compositions
U C10M 2219/04	• containing sulfur-to-oxygen bonds, i.e. sulfones, sulfoxides
C10M 2219/046	• • <u>Overbased</u> sulfonic acid salts
C10M 2221/00	Organic <u>macromolecular</u> compounds containing sulfur, selenium or tellurium as ingredients in lubricant compositions
C10M 2221/02	• Macromolecular compounds obtained by reactions of monomers involving only carbon-to-carbon unsaturated bonds (-sulfurised polyolefins C10M 2219/022-)
C10M 2223/00	Organic <u>non-macromolecular</u> compounds containing phosphorus as ingredients in lubricant compositions
C10M 2225/00	Organic <u>macromolecular</u> compounds containing phosphorus as ingredients in lubricant compositions

C10M 2227/00 Organic non-macromolecular compounds containing atoms of elements not provided for in groups [C10M 2203/00](#) , [C10M 2207/00](#) , [C10M 2211/00](#) , [C10M 2215/00](#) , [C10M 2219/00](#) or [C10M 2223/00](#) as ingredients in lubricant compositions

C10M 2227/08 · having metal-to-carbon bonds (metal complexes of unknown constitution [C10M 2227/09](#))

C10M 2229/00 Organic macromolecular compounds containing atoms of elements not provided for in groups [C10M 2205/00](#) , [C10M 2209/00](#) , [C10M 2213/00](#) , [C10M 2217/00](#) , [C10M 2221/00](#) or [C10M 2225/00](#) as ingredients in lubricant compositions

C10M 2290/00 Mixtures of base materials or thickeners or additives (not used, see subgroups)

Project: N/A (C11B)

C11B **PRODUCING (pressing, extraction), REFINING AND PRESERVING FATS, FATTY SUBSTANCES (e.g. lanolin) PRODUCING (pressing, extraction), REFINING AND PRESERVING FATS, FATTY SUBSTANCES (e.g. lanolin), FATTY OILS AND WAXES, INCLUDING EXTRACTION FROM WASTE MATERIALS; ESSENTIAL OILS; PERFUMES (drying-oils [C09F](#))**

NOTE

In this subclass, boron and silicon are considered as metals

U C11B 1/00 **Production of fats or fatty oils from raw materials**

U C11B 1/02 · Pretreatment

C11B 1/04 · · of vegetable raw material ([C11B 1/025](#) takes precedence-)

U C11B 3/00 **Refining fats or fatty oils**

C11B 3/008 · {by filtration, e.g. including ultra filtration, dialysis ([C11B 3/005](#) takes precedence-)}

C11B 3/02 · by chemical reaction ([C11B 3/003](#) takes precedence-)

U C11B 5/00 **Preserving by using additives, e.g. anti-oxidants**

NOTE

In groups [C11B 5/0007](#) to [C11B 5/0092](#) , in the absence of an indication to the contrary, a composition is classified in the last appropriate place

U C11B 5/0042 · {containing nitrogen}

C11B 5/005 · · {Amines or imines ([C11B 5/0035](#) takes precedence-)}

C11B 5/0071 · {containing halogens, sulfur or phosphorus (halogenated phenols [C11B 5/0035](#)-)}

U C11B 7/00 **Separation of mixtures of fats or fatty oils into their constituents, e.g. saturated oils from unsaturated oils**

NOTE

In groups [C11B 7/0008](#) to [C11B 7/0091](#) , in the absence of an indication to the contrary an invention is classified in the last appropriate place

C11B 7/0008 · {by differences of solubilities, e.g. by extraction, by separation from a solution by means of anti-solvents (addition of a minor amount of solvent intended to lower the melting point [C11B 7/0083](#) , [C11B 7/0091](#)-)}

C11B 7/0016 · · {in hydrocarbons or halogenated hydrocarbons (in pressure liquefied gases [C11B 7/005](#)-)}

- C11B 7/0041 · · {in mixtures of individualized solvents (*water is not taken into account*)}~~{water is not taken into account}~~
- C11B 7/0083 · {with addition of auxiliary substances, e.g. crystallisation promoters, filter aids, melting point depressors,(-if a characterised solution is formed [C11B 7/0008](#)-)}
- C11B 9/00 Essential oils; Perfumes (-synthesis of chemical substances [C07](#)-)**
- C11B 11/00 Recovery or refining of other fatty substances, e.g. lanolin, waxes (-synthetic waxes [C07](#) , [C08](#) ; mineral waxes [C10G](#)-)**
- C11B 13/00 Recovery of fats, fatty oils, or fatty acids from waste materials (-mechanical separation from waste water [C02F](#) , [E03F](#)-)**

Project: N/A (C11D)

- U C11D 1/00 Detergent compositions based essentially on surface-active compounds; Use of these compounds as a detergent**
- NOTE
In groups [C11D 1/02](#) to [C11D 1/94](#), in the absence of an indication to the contrary, a compound is classified in the last appropriate place.
- U C11D 1/66 · Non-ionic compounds {([C11D 1/002](#), [C11D 1/004](#), [C11D 1/008](#) take precedence)}
- U C11D 1/72 · Ethers of polyoxyalkylene glycols
- WARNING
Until September 2008, when classification was made, group [C11D 3/075](#) took precedence over group [C11D 1/72](#)
- C11D 1/721 · · · {-End blocked ethers}
- U C11D 3/00 Other compounding ingredients of detergent compositions covered in group [C11D 1/00](#)**
- NOTE
Documents classified in group [C11D 3/0005](#) are also classified in other groups of subclass [C11D](#) according to the chemical nature of the compounds as such
- U C11D 3/0005 · {Other compounding ingredients characterised by their effect}
- C11D 3/0021 · · {-Dye-stain or dye-transfer inhibiting compositions}
- C11D 3/0036 · · {-Soil deposition preventing compositions; Antiredeposition agents}
- C11D 3/0078 · · {-Compositions for cleaning contact lenses, spectacles, lenses (disinfecting contact lenses [A61L 2/00](#); mechanical cleaning [G02C 13/00](#))}
- NOTE
In groups [C11D 3/02](#) to [C11D 3/39](#), in the absence of an indication to the contrary, a compound is classified in the last appropriate place.
- C11D 3/0084 · · {-Antioxidants; Free-radical scavengers}
- C11D 3/0089 · · {-Pearlescent compositions; Opacifying agents}
- C11D 3/0094 · · {-High foaming compositions}
- U C11D 3/02 · Inorganic compounds; {Elemental compounds}
- U C11D 3/04 · · Water-soluble compounds
- C11D 3/042 · · · {-Acids}
- C11D 3/044 · · · {-Hydroxides, bases}
- C11D 3/046 · · · {-Salts}
- C11D 3/048 · · · · {-Nitrates, nitrites}

- U C11D 3/06 . . . Phosphates, including polyphosphates
- WARNING
From October 2008 onwards, the following subgroups of [C11D 3/06](#) are no longer used for the classification of new documents Groups [C11D 3/065](#), [C11D 3/066](#), [C11D 3/07](#) and [C11D 3/075](#)
- C11D 3/062 {-Special methods concerning phosphates}
- U C11D 3/12 . . Water-insoluble compounds
- U C11D 3/124 . . . {Silicon containing, e.g. silica, silex, quartz, glass beads}
- U C11D 3/1246 {Silicates, e.g. diatomaceous earth}
- U C11D 3/1253 {Layer silicates, e.g. talcum, kaolin, clay, bentonite, smectite, montmorillonite, hectorite, attapulgite}
- C11D 3/1273 {-Crystalline layered silicates of type $\text{NaMeSixO}_{2x+1}\text{YH}_2\text{O}$ }
- U C11D 3/16 . Organic compounds
- U C11D 3/20 . . containing oxygen {([C11D 3/162](#), [C11D 3/164](#), [C11D 3/166](#), [C11D 3/168](#) take precedence)}
- U C11D 3/2003 . . . {Alcohols; Phenols}
- NOTES
In this group glucerol is not taken into account for applying the last place rule, when present in a mixture of alcohols or as an alternative from a series of alcohols
In case of mixtures of alcohols or of a list of alternatives, documents are classified in [C11D 3/2003](#), [C11D 3/2006](#) or [C11D 3/2041](#) and indexed for the individual alternatives using codes chosen from [C11D 3/2006](#) to [C11D 3/2065](#)
- U C11D 3/2006 {Monohydric alcohols}
- U C11D 3/201 {linear}
- C11D 3/2013 {-fatty or with at least 8 carbon atoms in the alkyl chain}
- U C11D 3/2017 {branched}
- C11D 3/202 {-fatty or with at least 8 carbon atoms in the alkyl chain}
- U C11D 3/2027 {unsaturated}
- C11D 3/2031 {-fatty or with at least 8 carbon atoms in the alkenyl chain}
- U C11D 3/2075 . . . {Carboxylic acids-salts thereof}
- C11D 3/2079 {-Monocarboxylic acids-salts thereof (soaps [C11D10/06](#) to [C11D 10/04](#))}
- U C11D 3/26 . . containing nitrogen {([C11D 3/162](#), [C11D 3/164](#), [C11D 3/166](#), [C11D 3/168](#) take precedence)}
- U C11D 3/32 . . . Amides; Substituted amides
- C11D 2003/326 {-granulated, coated or protected}
- U C11D 3/37 . . Polymers {(polymeric surface-active agents [C11D 1/008](#); carbohydrates [C11D 3/22](#))}
- U C11D 3/3703 . . . {Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds}
- C11D 3/3726 {-Polyurethanes}
- C11D 3/373 {-containing silicones}
- C11D 3/3738 {-Alkoxyated silicones}
- C11D 3/3742 {-Nitrogen containing silicones}
- U C11D 3/3746 . . . {Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds}

- C11D 3/378 {-(Co)polymerised monomers containing sulfur, e.g. sulfonate}
- C11D 3/3796 . . . {Amphoteric polymers; Zwitterionic polymers}
- U C11D 3/38 . . Products with no well-defined composition, {e.g. natural products}
- U C11D 3/386 . . . Preparations containing enzymes, {e.g. protease, amylase}
- C11D 3/38681 {Chemically modified or immobilised enzymes}
- C11D 3/3869 {Enzyme enhancers or mediators}
- U C11D 3/39 . Organic or inorganic per-compounds
- U C11D 3/3902 . . {combined with specific additives}
- U C11D 3/3905 . . . {Bleach activators; Bleach catalysts}

NOTES

In the absence of an indication to the contrary activators or catalysts are classified in the last appropriate place

In case of mixtures or a list of alternatives documents are classified in [C11D 3/3905](#) or [C11D 3/3907](#) only and indexed for the individual alternatives using codes chosen from [C11D 3/3907](#) to [C11D 3/3932](#)

- C11D 3/3935 {granulated, coated or protected}
- U C11D 3/48 . Medical, disinfecting agents, disinfecting, antibacterial, germicidal or antimicrobial compositions
- C11D 3/485 . . {Halophors, e.g. iodophors}

U C11D 7/00 Compositions of detergents based essentially on non-surface-active compounds

NOTE

In the absence of an indication to the contrary, in groups [C11D 7/02](#) to [C11D 7/46](#) a compound is classified in the last appropriate place.

- U C11D 7/22 . Organic compounds
- U C11D 7/26 . . containing oxygen
- U C11D 7/261 . . . {Alcohols; Phenols}
- C11D 7/262 {fatty or with at least 8 carbon atoms in the alkyl or alkenyl chain}
- U C11D 7/32 . . containing nitrogen
- C11D 7/3209 . . . {Amines or imines with one to four nitrogen atoms; Quaternized amines}

U C11D 11/00 Special methods for preparing compositions containing mixtures of detergents {(in the form of blocks, bars, tablets [C11D 17/0047](#)); Methods for using cleaning compositions}

- U C11D 11/0005 . {Special cleaning and washing methods}
- U C11D 11/0011 . . {characterised by the objects to be cleaned}
- C11D 11/0017 . . . {"Soft" surfaces, e.g. textiles}

U C11D 17/00 Detergent materials characterised by their shape or physical properties {(soaps [C11D 9/00](#), shaping soap [C11D 13/00](#))}

- C11D 17/0008 . {aqueous liquid non soap compositions ([C11D 3/0015](#), [C11D 3/3947](#), [C11D 3/3956](#) take precedence)}

WARNING

This subgroup is not longer used for the classification of new documents from 01 November 2011

- C11D 17/0047 . {Detergents in the form of bars or tablets}
- U C11D 17/04 . combined with or containing other objects

- U C11D 17/041
 - • {Compositions releasably affixed on a substrate or incorporated into a dispensing means}
- C11D 17/042
 - • • {-Water soluble or water disintegrable containers or substrates containing cleaning compositions or additives for cleaning compositions (packaging of disintegrable, dissolvable or edible materials [B65D 65/46](#))}
- C11D 17/045
 - • • • {-Multi-compartment}
- C11D 17/046
 - • • {-Insoluble free body dispenser}
- C11D 17/047
 - • • {-Arrangements specially adapted for dry cleaning or laundry dryer related applications}
- C11D 17/049
 - • {-Cleaning or scouring pads; Wipes}

Project: N/A (C12C)**C12C**

BREWING OF BEER (-cleaning of raw materials [A23N](#); pitching and depitching machines, cellar tools [C12L](#); propagating yeasts [C12N 1/14](#) ; non-beverage ethanolic fermentation [C12P 7/06](#)-)

WARNING

Some of the groups [C12C 3/00](#) to [C12C 7/28](#) might be incomplete. See Warning after [C12C 9/00](#) .

U C12C 1/00**Preparation of malt**

- U C12C 1/027
 - Germinating
- U C12C 1/047
 - • Influencing the germination by chemical or physical means
- C12C 1/053
 - • • by irradiation or electric {or wave energy}treatment
- C12C 1/18
 - Preparation of malt extract or of special kinds of malt, e.g. caramel, black malt (-malt products for use as foodstuffs [A23L](#)-)

C12C 7/00**Preparation of wort** (-malt extract [C12C 1/18](#)-)

- U C12C 7/04
 - Preparation or treatment of the mash
- C12C 7/044
 - • {Cooling the mash (-[C12C 7/067](#) takes precedence-)}
- C12C 7/20
 - Boiling the beerwort (-brew kettles [C12C 13/02](#)-)
- C12C 7/28
 - After-treatment, {e.g. sterilisation} (-[C12C 11/00](#) takes precedence-)}
- C12C 7/287
 - • {Treating beerwort with hopextract (-[C12C 7/205](#) takes precedence-)}

U C12C 9/00**Methods specially adapted for the making of beerwort**WARNING

From 1st August 2003 onwards, the IPC5-based groups [C12C 9/00](#) to [C12C 9/025](#) are no longer used for classification of new documents. Patent documents classified in these groups are being continuously reclassified to the corresponding groups [C12C 3/00](#) to [C12C 7/00](#)

- U C12C 9/02
 - Beerwort treatment; Boiling with hops; Hop extraction
- C12C 9/025
 - • {Preparation of hop extracts (-extraction with beerwort [C12C 9/02](#)-); Isomerisation of these extracts; Treatment of beerwort with these extracts; Surrogates of the hop}

C12C 11/00**Fermentation processes for beer** (-preparation of wine [C12G 1/00](#)-)

- C12C 11/11
 - Post fermentation treatments, e.g. carbonation, concentration (-[C12H](#) takes precedence; containers with means specially adapted for effervescing potable liquids [B65D 85/73](#)-)

U C12C 12/00**Processes specially adapted for making special kinds of beer**

- U C12C 12/002
 - {using special micro-organisms}

- C12C 12/006 · · {Yeasts (-processes for seeding [C12C 11/02](#)-)}
- C12C 12/02 · Beer with low calorie content (~~-C12C 12/04 takes precedence-~~)
- C12C 12/04 · Beer with low alcohol content{(~~-removal of alcohol after fermentation~~
[C12G 3/08](#)-)}
- C12C 13/00** **Brewing devices, not covered by a single group of [C12C 1/00](#) to [C12C 12/04](#)**
- C12C 13/02 · Brew kettles{(~~-C12C 11/075 takes precedence-~~)}

Project: N/A (C12H)

- C12H 1/00** **Pasteurisation, sterilisation, preservation, purification, clarification, or ageing of alcoholic beverages (~~-simulating ageing by flavouring [C12G 3/06](#)~~)**

Project: N/A (C12M)

- C12M** **APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY; {~~-APPARATUS FOR CULTURING MICROORGANISMS FOR PRODUCING BIOMASS, FOR GROWING CELLS OR FOR OBTAINING FERMENTATION OR METABOLIC PRODUCTS, i.e. BIOREACTORS OR FERMENTERS~~}**

NOTE

In this subclass the term microorganism includes prokaryotic and eukaryotic cells. Viruses, human, animal or plant cells, protozoa, tissues and unicellular algae are considered microorganisms.

When classifying an apparatus according to its use in group [C12M 21/00](#), classification should also be given in at least one of the groups [C12M 23/00-C12M 99/00](#).

This subclass covers apparatus or devices for the fermentation or for growing microorganisms or animal tissues of both laboratory and industrial scale, i.e. bioreactors.

This subclass covers also apparatus or devices for the pre-treatment or after-treatment of the biomass or microorganisms to be cultured or that have been cultured.

This subclass does not cover the methods or processes taking place in the bioreactors that are not based on the use of the parts of the apparatus.

This subclass does not cover:

apparatus for culturing plant tissue, which are covered by [A01H 4/001](#);

apparatus for preservation of living parts of bodies of humans or animals, which are covered by [A01N 1/0242](#);

apparatus or devices for testing sterility conditions not linked to a bioreactor or fermenter growing biomass, which are covered by [A61L 2/00](#), [G01N 31/226](#);

apparatus for biological treatment of water, waste water, sewage or sludge, which are covered by [C02F 3/00](#), [C02F 11/00](#);

apparatus for brewing of beer, which are covered by [C12C](#);

apparatus for production of wine or vinegar, which are covered by [C12G](#), [C12J 1/10](#);

apparatus or devices for DNA and RNA technology, which are covered by [B01L 7/52](#), [B01J 19/0046](#), [C12N 15/1003](#);

fermentation processes, which are covered by [C12P](#);

apparatus for bioleaching of ores, which are covered by [C22B 3/18](#);

removing cellulose from cellulosic substances, which is covered by [D21C](#);

apparatus or devices for sampling, detection, investigation or analysis of microorganisms or biosensors, which are covered by [G01N 33/48](#);

apparatus for automatic analysis not linked to a bioreactor or fermenter growing biomass, which are covered by [G01N 35/00](#);

testing or evaluating the effect of a chemical or biological compound involving human or animal cells, which are covered by [G01N 33/5005](#);
apparatus for immunological test processes, which are covered by [G01N 33/5302](#).

WARNING

Groups [C12M 21/00](#) to [C12M 99/00](#) do not correspond to former or current IPC groups.

Concordance CPC : IPC for these groups is as follows:

- [C12M 21/00](#) : [C12M 1/00](#) - [C12M 21/02](#) : [C12M 1/00](#) - [C12M 21/04](#)
- : [C12M 1/107](#) - [C12M 21/06](#) : [C12M 3/00](#) - [C12M 21/08](#) : [C12M 3/00](#)
- [C12M 21/10](#) : [C12M 3/10](#) - [C12M 21/12](#) : [C12M 1/00](#) - [C12M 21/14](#)
- : [C12M 1/00](#) - [C12M 21/16](#) : [C12M 1/16](#) - [C12M 21/18](#) : [C12M 1/40](#)
- [C12M 23/00](#) : [C12M 1/00](#) - [C12M 23/02](#) : [C12M 1/00](#) - [C12M 23/04](#)
- : [C12M 1/12](#) - [C12M 23/06](#) : [C12M 1/12](#) - [C12M 23/08](#) : [C12M 1/24](#)
- [C12M 23/10](#) : [C12M 1/22](#) - [C12M 23/12](#) : [C12M 1/32](#) - [C12M 23/14](#)
- : [C12M 1/00](#) - [C12M 23/16](#) : [C12M 3/06](#) - [C12M 23/18](#) : [C12M 1/00](#)
- [C12M 23/20](#) : [C12M 1/00](#) - [C12M 23/22](#) : [C12M 1/00](#) - [C12M 23/24](#)
- : [C12M 1/04](#) - [C12M 23/26](#) : [C12M 1/00](#) - [C12M 23/28](#) : [C12M 1/00](#)
- [C12M 23/30](#) : [C12M 1/00](#) - [C12M 23/32](#) : [C12M 1/00](#) - [C12M 23/34](#)
- : [C12M 1/00](#) - [C12M 23/36](#) : [C12M 1/107](#) - [C12M 23/38](#) : [C12M 1/00](#)
- [C12M 23/40](#) : [C12M 1/00](#) - [C12M 23/42](#) : [C12M 3/00](#) - [C12M 23/44](#)
- : [C12M 3/00](#) - [C12M 23/46](#) : [C12M 3/00](#) - [C12M 23/48](#) : [C12M 3/00](#)
- [C12M 23/50](#) : [C12M 1/00](#) - [C12M 23/52](#) : [C12M 1/00](#) - [C12M 23/54](#)
- : [C12M 3/00](#) - [C12M 23/56](#) : [C12M 1/09](#) - [C12M 23/58](#) : [C12M 1/00](#)
- [C12M 25/00](#) : [C12M 1/12](#) - [C12M 25/02](#) : [C12M 1/12](#) - [C12M 25/04](#)
- : [C12M 1/12](#) - [C12M 25/06](#) : [C12M 1/12](#) - [C12M 25/08](#) : [C12M 1/12](#)
- [C12M 25/10](#) : [C12M 1/12](#) - [C12M 25/12](#) : [C12M 1/12](#) - [C12M 25/14](#)
- : [C12M 1/12](#) - [C12M 25/16](#) : [C12M 1/12](#) - [C12M 25/18](#) : [C12M 1/12](#)
- [C12M 25/20](#) : [C12M 1/12](#) - [C12M 27/00](#) : [C12M 1/02](#) - [C12M 27/02](#)
- : [C12M 1/06](#) - [C12M 27/04](#) : [C12M 1/04](#) - [C12M 27/06](#) : [C12M 1/06](#)
- [C12M 27/08](#) : [C12M 1/06](#) - [C12M 27/10](#) : [C12M 3/04](#) - [C12M 27/12](#)
- : [C12M 3/04](#) - [C12M 27/14](#) : [C12M 3/06](#) - [C12M 27/16](#) : [C12M 3/06](#)
- [C12M 27/18](#) : [C12M 1/00](#) - [C12M 27/20](#) : [C12M 1/00](#) - [C12M 27/22](#)
- : [C12M 1/00](#) - [C12M 27/24](#) : [C12M 1/08](#) - [C12M 29/00](#) : [C12M 1/00](#)
- [C12M 29/02](#) : [C12M 1/00](#) - [C12M 29/04](#) : [C12M 1/00](#) - [C12M 29/06](#)
- : [C12M 1/00](#) - [C12M 29/08](#) : [C12M 1/00](#) - [C12M 29/10](#) : [C12M 1/00](#)
- [C12M 29/12](#) : [C12M 1/00](#) - [C12M 29/14](#) : [C12M 1/00](#) - [C12M 29/16](#)
- : [C12M 1/00](#) - [C12M 29/18](#) : [C12M 1/00](#) - [C12M 29/20](#) : [C12M 1/00](#)
- [C12M 29/22](#) : [C12M 1/00](#) - [C12M 29/24](#) : [C12M 1/00](#) - [C12M 29/26](#)
- : [C12M 1/00](#) - [C12M 31/00](#) : [C12M 1/00](#) - [C12M 31/02](#) : [C12M 1/00](#)
- [C12M 31/04](#) : [C12M 1/00](#) - [C12M 31/06](#) : [C12M 1/00](#) - [C12M 31/08](#)
- : [C12M 1/00](#) - [C12M 31/10](#) : [C12M 1/00](#) - [C12M 31/12](#) : [C12M 1/00](#)
- [C12M 33/00](#) : [C12M 1/26](#) - [C12M 33/02](#) : [C12M 1/30](#) - [C12M 33/04](#)
- : [C12M 1/26](#) - [C12M 33/06](#) : [C12M 1/32](#) - [C12M 33/08](#) : [C12M 1/26](#)
- [C12M 33/10](#) : [C12M 1/26](#) - [C12M 33/12](#) : [C12M 1/26](#) - [C12M 33/14](#)
- : [C12M 1/26](#) - [C12M 33/16](#) : [C12M 1/26](#) - [C12M 33/18](#) : [C12M 1/26](#)
- [C12M 33/20](#) : [C12M 1/26](#) - [C12M 35/00](#) : [C12M 1/42](#) - [C12M 35/02](#)
- : [C12M 1/42](#) - [C12M 35/04](#) : [C12M 1/42](#) - [C12M 35/06](#) : [C12M 1/42](#)
- [C12M 35/08](#) : [C12M 1/42](#) - [C12M 37/00](#) : [C12M 1/12](#) - [C12M 37/02](#)
- : [C12M 1/12](#) - [C12M 37/04](#) : [C12M 1/12](#) - [C12M 37/06](#) : [C12M 1/12](#)
- [C12M 39/00](#) : [C12M 1/00](#) - [C12M 41/00](#) : [C12M 1/34](#) - [C12M 41/02](#)
- : [C12M 1/21](#) - [C12M 41/04](#) : [C12M 1/34](#) - [C12M 41/06](#) : [C12M 1/00](#)
- [C12M 41/08](#) : [C12M 1/00](#) - [C12M 41/10](#) : [C12M 1/00](#) - [C12M 41/12](#)
- : [C12M 1/34](#) - [C12M 41/14](#) : [C12M 1/00](#) - [C12M 41/16](#) : [C12M 1/34](#)
- [C12M 41/18](#) : [C12M 1/02](#) - [C12M 41/20](#) : [C12M 1/02](#) - [C12M 41/22](#)
- : [C12M 1/02](#) - [C12M 41/24](#) : [C12M 1/02](#) - [C12M 41/26](#) : [C12M 1/34](#)
- [C12M 41/28](#) : [C12M 1/34](#) - [C12M 41/30](#) : [C12M 1/34](#) - [C12M 41/32](#)

: [C12M 1/34](#) - [C12M 41/34](#) : [C12M 1/34](#) - [C12M 41/36](#) : [C12M 1/34](#)
- [C12M 41/38](#) : [C12M 1/34](#) - [C12M 41/40](#) : [C12M 1/34](#) - [C12M 41/42](#)
: [C12M 1/34](#) - [C12M 41/44](#) : [C12M 1/34](#) - [C12M 41/46](#) : [C12M 1/34](#)
- [C12M 41/48](#) : [C12M 1/36](#) - [C12M 43/00](#) : [C12M 1/00](#) - [C12M 43/02](#)
: [C12M 1/00](#) - [C12M 43/04](#) : [C12M 1/00](#) - [C12M 43/06](#) : [C12M 1/00](#)
- [C12M 43/08](#) : [C12M 1/00](#) - [C12M 45/00](#) : [C12M 1/00](#) - [C12M 45/02](#)
: [C12M 1/33](#) - [C12M 45/04](#) : [C12M 1/00](#) - [C12M 45/06](#) : [C12M 1/00](#)
- [C12M 45/06](#) : [C12M 3/08](#) - [C12M 45/09](#) : [C12M 3/08](#) - [C12M 45/20](#)
: [C12M 3/08](#) - [C12M 45/06](#) : [C12M 3/08](#) - [C12M 45/09](#) : [C12M 3/08](#)
- [C12M 45/20](#) : [C12M 1/00](#) - [C12M 45/20](#) : [C12M 1/00](#) - [C12M 45/22](#)
: [C12M 1/00](#) - [C12M 47/00](#) : [C12M 1/00](#) - [C12M 47/00](#) : [C12M 1/00](#)
- [C12M 47/02](#) : [C12M 1/00](#) - [C12M 47/04](#) : [C12M 1/00](#) - [C12M 47/06](#)
: [C12M 1/00](#) - [C12M 47/08](#) : [C12M 1/00](#) - [C12M 47/10](#) : [C12M 1/00](#) -
[C12M 47/12](#) : [C12M 1/00](#) - [C12M 47/14](#) : [C12M 1/00](#) - [C12M 47/16](#) :
[C12M 1/00](#) - [C12M 47/18](#) : [C12M 1/00](#) - [C12M 47/20](#) : [C12M 1/00](#)

C12M 21/00

{Bioreactors or fermenters specially adapted for specific uses (digesters for manure [A01C 3/023](#); apparatus for PCR [B01L 7/52](#); destroying or transforming solid waste [B09B 3/00](#); methods for genetic engineering [C12N 15/00](#), [C12Q 1/68](#); nucleic acid amplification reactions [C12Q 1/6844](#))}

C12M 21/02

• {-Photobioreactors (culturing algae [A01G 33/00](#), [A01H 4/001](#), [C12N 1/12](#))}

C12M 21/04

• {-for producing gas, e.g. biogas (digesters for manure with production of biogas [A01C 3/028](#), biological treatment of water, waste water or sewage [C02F 3/00](#), [C02F 11/02](#), preparation of natural gas or syngas [C10L 3/06](#), [C10L 3/10](#))}

C12M 21/06

• {-for in vitro fertilization}

C12M 21/08

• {-for producing artificial tissue or for ex-vivo cultivation of tissue (prostheses [A61F 2/00](#), grafts [A61L 27/00](#))}

C12M 21/10

• {-adapted for the cultivation of avian eggs or in avian eggs, e.g. for vaccine production}

C12M 21/12

• {-for producing fuels or solvents ([C12M 21/04](#) takes precedence; liquid carbonaceous fuels [C10L 1/00](#), solid fuels [C10L 5/00](#))}

C12M 21/14

• {-for producing enzymes}

C12M 21/16

• {-Solid state fermenters, e.g. for koji production}

C12M 21/18

• {-Apparatus specially designed for the use of free, immobilized or carrier-bound enzymes}

C12M 23/00

{Constructional details, e.g. recesses, hinges (flow directing inserts in [C12M 27/18-C12M 27/24](#); apparatus for chemical or physical processes in general [B01J](#), chemical or physical laboratory apparatus in general [B01L](#))}

C12M 23/02

• {-Form or structure of the vessel (large containers [B65D 88/00](#))}

C12M 23/04

• • {-Flat or tray type, drawers ([C12M 23/10](#), [C12M 23/12](#), [C12M 23/16](#) take precedence)}

C12M 23/06

• • {-Tubular ([C12M 23/08](#), [C12M 23/16](#) take precedence)}

C12M 23/08

• • {-Flask, bottle or test tube}

C12M 23/10

• • {-Petri dish (crystallising dishes [B01L 3/06](#))}

C12M 23/12

• • {-Well or multiwell plates ([C12M 25/04](#) takes precedence)}

C12M 23/14

• • {-Bags}

C12M 23/16

• • {-Microfluidic devices; Capillary tubes (integrated microfluidic structures [B01L 3/5027](#); microreactors [B01J 19/0093](#))}

C12M 23/18

• • {-Open ponds; Greenhouse type or underground installations}

C12M 23/20

• {-Material Coatings (Immunocoatings [C12M 25/00](#))}

C12M 23/22

• {-Transparent or translucent parts (glassware for laboratory use [B01L 3/00](#))}

- C12M 23/24
 - C12M 23/26
 - C12M 23/28
 - C12M 23/30
 - C12M 23/32
 - C12M 23/34
 - C12M 23/36
 - C12M 23/38
 - C12M 23/40
 - C12M 23/42
 - C12M 23/44
 - C12M 23/46
 - C12M 23/48
 - C12M 23/50
 - C12M 23/52
 - C12M 23/54
 - C12M 23/56
 - C12M 23/58

 - C12M 25/00**
 - C12M 25/01
 - C12M 25/02
 - C12M 25/04
 - C12M 25/06
 - C12M 25/08
 - C12M 25/10
 - C12M 25/12
 - C12M 25/14
 - C12M 25/16
 - C12M 25/18
 - C12M 25/20

 - C12M 27/00**
 - C12M 27/02
 - C12M 27/04
 - C12M 27/06
 - C12M 27/08
 - C12M 27/10
 - C12M 27/12
 - C12M 27/14
- {-Gas permeable parts}
 - {-flexible (flexible containers for laboratory use [B01L 3/505](#))}
 - {-disposable or single use}
 - {-biodegradable}
 - {-Frangible parts}
 - {-Internal compartments or partitions}
 - {-Means for collection or storage of gas; Gas holders}
 - {-Caps; Covers; Plugs; Pouring means}
 - {-Manifolds; Distribution pieces (fluid transfer means [B01L 3/563](#))}
 - {-Integrated assemblies, e.g. cassettes or cartridges}
 - {-Multiple separable units; Modules}
 - {-Means for fastening}
 - {-Holding appliances; Racks; Supports (holding devices for laboratory apparatus [B01L 9/00](#))}
 - {-Means for positioning or orientating the apparatus ([C12M 41/08](#) takes precedence)}
 - {-Mobile; Means for transporting the apparatus (transportable laboratories [B01L 99/00](#))}
 - {-hand portable}
 - {-Floating elements}
 - {-Reaction vessels connected in series or in parallel (combinations of bioreactors with other apparatus, [C12M 43/00](#))}

 - {-Means for supporting, enclosing or fixing the microorganisms, e.g. immunocoatings}**
 - {-Drops}
 - {-Membranes; Filters (filters or filtration in general [B01D 24/00-B01D 41/00](#))}
 - · {-in combination with well or multiwell plates, i.e. culture inserts}
 - {-Plates; Walls; Drawers; Multilayer plates}
 - · {-electrically charged}
 - {-Hollow fibers or tubes (hollow fiber modules in general [B01D 63/02](#))}
 - · {-the culture medium flowing outside the fiber or tube}
 - {-Scaffolds; Matrices (in general [C12N 5/0068](#))}
 - {-Particles; Beads; Granular material; Encapsulation (chemical or physical processes conducted in the presence of fluids and solid particles [B01J 8/00](#))}
 - · {-Fixed or packed bed}
 - · {-Fluidized bed (in chemical or physical processes [B01J 8/18](#))}

 - {-Means for mixing, agitating or circulating fluids in the vessel (by introduction of gas [C12M 29/06](#), [C12M 29/14](#), mixing in general or mixers per se [B01F](#); mixing in apparatus for chemical or physical processes [B01J](#))}**
 - {-Stirrer or mobile mixing elements}
 - · {-with introduction of gas through the stirrer or mixing element}
 - · {-with horizontal or inclined stirrer shaft or axis}
 - · {-with different stirrer shapes in one shaft or axis}
 - {-Rotating vessel}
 - · {-Roller bottles; Roller tubes}
 - {-Rotation or movement of the cells support, e.g. rotated hollow fibers}

- C12M 27/16 · {-Vibrating; Shaking; Tilting}
- C12M 27/18 · {-Flow directing inserts}
- C12M 27/20 · · {-Baffles; Ribs; Ribbons; Auger vanes}
- C12M 27/22 · · {-Perforated plates, discs or walls}
- C12M 27/24 · · {-Draft tube ([C12M 29/08](#) takes precedence)}
- C12M 29/00** **{-Means for introduction, extraction or recirculation of materials, e.g. pumps (pumps per se [F04B](#))}**
- C12M 29/02 · {-Percolation}
- C12M 29/04 · {-Filters; Permeable or porous membranes or plates, e.g. dialysis}
- C12M 29/06 · {-Nozzles; Sprayers; Spargers; Diffusers (per se [B01F 3/04106](#), [B01J 19/26](#))}
- C12M 29/08 · · {-Air lift}
- C12M 29/10 · {-Perfusion}
- C12M 29/12 · {-Pulsatile flow}
- C12M 29/14 · {-Pressurized fluid}
- C12M 29/16 · {-Hollow fibers (hollow fiber modules in general [B01D 63/02](#))}
- C12M 29/18 · {-External loop; Means for reintroduction of fermented biomass or liquid percolate (loop type reactors for chemical or physical processes [B01J 19/2435](#))}
- C12M 29/20 · {-Degassing; Venting; Bubble traps (means for collection or storage of gas [C12M 23/36](#); gas collection apparatus for laboratory use [B01L 5/02](#))}
- C12M 29/22 · · {-Oxygen discharge}
- C12M 29/24 · {-Recirculation of gas}
- C12M 29/26 · {-Conditioning fluids entering or exiting the reaction vessel}
- C12M 31/00** **{-Means for providing, directing, scattering or concentrating light ([C12M 41/06](#) takes precedence)}**
- C12M 31/02 · {-located outside the reactor}
- C12M 31/04 · · {-Mirrors}
- C12M 31/06 · · {-Lenses}
- C12M 31/08 · {-by conducting or reflecting elements located inside the reactor or in its structure}
- C12M 31/10 · {-by light emitting elements located inside the reactor, e.g. LED or OLED}
- C12M 31/12 · {-Rotating light emitting elements}
- C12M 33/00** **{-Means for introduction, transport, positioning, extraction, harvesting, peeling or sampling of biological material in or from the apparatus (chemical or physical laboratory apparatus in general [B01L](#), devices for taking cell samples [A61B 10/0045](#), withdrawing or distributing predetermined quantities of fluid [B01L 99/00](#))}**
- C12M 33/02 · {-by impregnation, e.g. using swabs or loops (fluid transport using swabs [B01L 3/5029](#))}
- C12M 33/04 · {-by injection or suction, e.g. using pipettes, syringes, needles (pipettes in general [B01L 3/02](#))}
- C12M 33/06 · · {-for multiple inoculation or multiple collection of samples}
- C12M 33/07 · · {-Dosage or metering devices therefore}
- C12M 33/08 · {-by vibration}
- C12M 33/10 · {-by centrifugation (centrifuges in general [B04B](#)); Cyclones (cyclones in general [B04C](#))}

- C12M 33/12 · {-by pressure}
- C12M 33/14 · {-with filters, sieves or membranes}
- C12M 33/16 · {-Screw conveyor}
- C12M 33/18 · {-Rollers}
- C12M 33/20 · {-Ribbons}
- C12M 33/22 · {-Settling tanks; Sedimentation by gravity (settling tanks per se [B01D 21/02](#))}

- C12M 35/00** **{-Means for application of stress for stimulating the growth of microorganisms or the generation of fermentation or metabolic products; Means for electroporation or cell fusion (machines for extracting juice from animal or plant tissue by electroplasmolysis [A23N 1/006](#), processes employing electric or wave energy [B01J 19/08](#); treatment of microorganisms or enzymes with electrical or wave energy [C12N 13/00](#); methods for cell fusion [C12N 15/02](#); introduction of foreign genetic material [C12N 15/87](#))}**
- C12M 35/02 · {-Electrical or electromagnetic means, e.g. for electroporation or for cell fusion}
- C12M 35/04 · {-Mechanical means, e.g. sonic waves, stretching forces, pressure or shear stimuli}
- C12M 35/06 · {-Magnetic means ([C12M 35/02](#) takes precedence)}
- C12M 35/08 · {-Chemical, biochemical or biological means, e.g. plasma jet, co-culture}

- C12M 37/00** **{-Means for sterilizing, maintaining sterile conditions or avoiding chemical or biological contamination ([C12M 23/38](#) takes precedence; filtration in general and filters per se [B01D 24/00](#)-[B01D 41/00](#); autoclaves [B01J 3/04](#); treatment of microorganisms with electrical or wave energy [C12N 13/00](#))}**
- C12M 37/02 · {-Filters}
- C12M 37/04 · {-Seals}
- C12M 37/06 · {-Means for testing the completeness of the sterilization (testing for sterility conditions [C12Q 1/22](#))}

- C12M 39/00** **{-Means for cleaning the apparatus or avoiding unwanted deposits of microorganisms (apparatus for cleaning laboratory receptacles or instruments [B01L 99/00](#); cleaning in general [B08B](#))}**

- C12M 41/00** **{-Means for regulation, monitoring, measurement or control, e.g. flow regulation (controlling or regulating chemical, physical or physicochemical processes [B01J 19/0006](#); heating or cooling apparatus for laboratory use [B01L 7/00](#); electro optical investigation of individual particles, flow cytometers [G01N 15/14](#); automatic analysis [G01N 35/00](#); controlling or regulating in general [G05N](#))}**
- C12M 41/02 · {-of foam (foam prevention during gasification of liquids [B01D 19/02](#))}
- C12M 41/04 · · {-Means for foam enhancement (making foam by mixing [B01F 3/04446](#))}
- C12M 41/06 · {-of illumination}
- C12M 41/08 · · {-Means for changing the orientation}
- C12M 41/10 · · {-Filtering the incident radiation}
- C12M 41/12 · {-of temperature (controlling the temperature of chemical or physical processes [B01J 19/0013](#), heating or cooling apparatus for laboratory use [B01L 7/00](#))}
- C12M 41/14 · · {-Incubators; Climatic chambers (per se [B01L 1/00](#))}
- C12M 41/16 · · {-by recirculation of culture medium at controlled temperature}
- C12M 41/18 · · {-Heat exchange systems, e.g. heat jackets or outer envelopes}
- C12M 41/20 · · · {-the heat transfer medium being a gas}
- C12M 41/22 · · · {-in contact with the bioreactor walls}
- C12M 41/24 · · · {-inside the vessel}

- C12M 41/26 · {-of pH}
- C12M 41/28 · {-of redox potential}
- C12M 41/30 · {-of concentration}
- C12M 41/32 · · {-of substances in solution}
- C12M 41/34 · · {-of gas}
- C12M 41/36 · · {-of biomass, e.g. colony counters or by turbidity measurements
(electrooptical investigation of individual particles [G01N 15/14](#), flow
cytometers [G01N 15/1404](#))}
- C12M 41/38 · · {-of metabolites or enzymes in the cells}
- C12M 41/40 · {-of pressure}
- C12M 41/42 · {-of agitation speed}
- C12M 41/44 · {-of volume or liquid level}
- C12M 41/46 · {-of cellular or enzymatic activity or functionality, e.g. cell viability}
- C12M 41/48 · {-Automatic or computerized control (automatic analysis [G01N 35/00](#))}

- C12M 43/00** **{-Combinations of bioreactors or fermenters with other apparatus}**
- C12M 43/02 · {-Bioreactors or fermenters combined with devices for liquid fuel extraction;
Biorefineries}
- C12M 43/04 · {-Bioreactors or fermenters combined with combustion devices or plants, e.g.
for carbon dioxide removal ([C12M 43/06](#) takes precedence; recovery of carbon
dioxide [C12F 3/02](#))}
- C12M 43/06 · {-Photobioreactors combined with devices or plants for gas production different
from a bioreactor or fermenter}
- C12M 43/08 · {-Bioreactors or fermenters combined with devices or plants for production of
electricity}

- C12M 45/00** **{-Means for pre-treatment of biological substances}**
- C12M 45/02 · {-by mechanical forces; Stirring; Trituration; Comminuting (crushing, pulverizing,
disintegrating in general [B02C](#))}
- C12M 45/03 · {-by control of the humidity or content of liquids; Drying}
- C12M 45/04 · {-Phase separators; Separation of non fermentable material; Fractionation}
- C12M 45/05 · {-by centrifugation (centrifuges in general [B04B](#))}
- C12M 45/06 · {-by chemical means or hydrolysis}
- C12M 45/07 · {-by electrical or electromagnetic forces}
- C12M 45/09 · {-by enzymatic treatment}
- C12M 45/20 · [Heating; -Cooling (heating or cooling apparatus for laboratory uses [B01L 7/00](#))]
- C12M 45/22 · {-Means for packing or storing viable microorganisms (casings for storing cell
samples [A61B 10/0096](#), preservation of living parts of the human or animal
body [A01N 1/02](#))}

- C12M 47/00** **{-Means for after-treatment of the produced biomass or of the fermentation
or metabolic products, e.g. storage of biomass (filters in general
[B01D 23/00-B01D 41/00](#))}**
- C12M 47/02 · {-Separating microorganisms from the culture medium; Concentration of
biomass (separating microorganisms from their culture media [C12N 1/02](#))}
- C12M 47/04 · {-Cell isolation or sorting (purging biological preparations of unwanted cells
[C12N 5/0081](#), determining the presence or kind of microorganism [C12Q 1/04](#))}
- C12M 47/06 · {-Hydrolysis; Cell lysis; Extraction of intracellular or cell wall material (lysis
of microorganisms [C12N 1/06](#); extracting or separating nucleic acids from
biological samples [C12N 15/1003](#))}

- C12M 47/08 · {-Homogenizing}
- C12M 47/10 · {-Separation or concentration of fermentation products (bioreactors combined with means for distillation or extraction of liquid fuel [C12M 43/02](#))}
- C12M 47/12 · {-Purification ([C12M 47/04](#) takes precedence)}
- C12M 47/14 · {-Drying}
- C12M 47/16 · {-Sterilization (autoclaves in general [B01J 3/04](#))}
- C12M 47/18 · {-Gas cleaning, e.g. scrubbers; Separation of different gases (separating dispersed particles from gases or vapours [B01D 45/00](#); separation of gases or vapours [B01D 53/00](#); gas washing apparatus for laboratory uses [B01L 5/04](#))}
- C12M 47/20 · {-Heating or cooling (heating or cooling apparatus for laboratory uses [B01L 7/00](#))}

- C12M 99/00** **{-Subject matter not otherwise provided for in other groups of this subclass}**
- C12M 99/02 · {-Disc dispensing devices}

Project: N/A (C12N)**C12N**

MICRO-ORGANISMS OR ENZYMES; COMPOSITIONS THEREOF (-biocides, pest repellants or attractants, or plant growth regulators, containing micro-organisms, viruses, microbial fungi, enzymes, fermentates or substances produced by or extracted from micro-organisms or animal material [A01N 63/00](#) ; food compositions [A21](#) , [A23](#) ; medicinal preparations [A61K](#) ; chemical aspects of, or use of materials for, bandages, dressings, absorbent pads or surgical articles [A61L](#) ; fertilisers [C05](#)); **PROPAGATING, PRESERVING OR MAINTAINING MICRO-ORGANISMS** (-preservation of living parts of humans or animals [A01N 1/02](#)); **MUTATION OR GENETIC ENGINEERING; CULTURE MEDIA** (-micro-biological testing media [C12Q](#)-)

NOTES

Documents relating to the use of vectors or hosts for the preparation of specific peptides, e.g. enzymes, are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes.

Attention is drawn to Notes (1) to (3) following the title of Class [C12](#) . When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [C12N 1/11](#) covered by [C12N 15/79](#)
- [C12N 1/13](#) covered by [C12N 15/79](#)
- [C12N 1/15](#) covered by [C12N 15/80](#)
- [C12N 1/19](#) covered by [C12N 15/81](#)
- [C12N 1/21](#) covered by [C12N 15/74](#)
- [C12N 5/02](#) covered by [C12N 5/00](#), [C12N 5/04](#) to [C12N 5/166](#)
- [C12N 5/07](#) - [C12N 5/095](#) covered by [C12N 5/06](#) and subgroups
- [C12N 5/18](#) - [C12N 5/28](#) covered by [C12N 5/16](#) and subgroups
- [C12N 5/08](#) covered by [C12N 5/06](#) to **C12N5/06R**
- [C12N 5/18](#) covered by [C12N 5/16](#)
- [C12N 5/20](#) covered by [C12N 5/163](#)
- [C12N 5/22](#) covered by [C12N 5/16](#)

C12N 5/24 covered by [C12N 5/163](#)
C12N 5/26 covered by [C12N 5/166](#)
C12N 5/28 covered by [C12N 5/166](#)
C12N 7/01 covered by [C12N 7/00](#)
C12N 9/26 covered by [C12N 9/2408](#)
C12N 9/38 covered by [C12N 9/2468](#)
C12N 9/42 covered by [C12N 9/2434](#)
C12N 9/44 covered by [C12N 9/2451](#)
C12N 9/70 covered by [C07K 14/3153](#)
~~C12N 9/26 covered by C12N 9/2408~~
~~C12N 9/38 covered by C12N 9/2468~~
~~C12N 9/42 covered by C12N 9/2434~~
~~C12N 9/44 covered by C12N 9/2451~~
C12N 15/05 covered by [C12N 5/14](#)

C12N 15/06 covered by [C12N 5/16](#)

C12N 15/07 covered by [C12N 5/16](#)

C12N 15/08 covered by [C12N 5/166](#)

C12N 15/12 covered by [C07K 14/435](#)

C12N 15/13 covered by [C07K 16/00](#)

C12N 15/14 covered by [C07K 14/765](#)

C12N 15/15 covered by [C07K 14/81](#)

C12N 15/16 covered by [C07K 14/575](#)

C12N 15/17 covered by [C07K 14/62](#)

C12N 15/18 covered by [C07K 14/61](#)

C12N 15/19 covered by [C07K 14/52](#)

C12N 15/20 covered by [C07K 14/555](#)

C12N 15/21 covered by [C07K 14/56](#)

C12N 15/22 covered by [C07K 14/565](#)

C12N 15/23 covered by [C07K 14/57](#)

C12N 15/24 covered by [C07K 14/54](#)

C12N 15/25 covered by [C07K 14/545](#)

C12N 15/26 covered by [C07K 14/55](#)

C12N 15/27 covered by [C07K 14/53](#)

C12N 15/28 covered by [C07K 14/525](#)

C12N 15/29 covered by [C07K 14/415](#)

C12N 15/30 covered by [C07K 14/44](#)

C12N 15/31 covered by [C07K 14/195](#), [C07K 14/005](#)

C12N 15/32 covered by [C07K 14/325](#)
C12N 15/33 covered by [C07K 14/005](#)
C12N 15/34 covered by [C07K 14/01](#)
C12N 15/35 covered by [C07K 14/015](#)
C12N 15/36 covered by [C07K 14/02](#)
C12N 15/37 covered by [C07K 14/025](#)
C12N 15/38 covered by [C07K 14/03](#)
C12N 15/39 covered by [C07K 14/065](#)
C12N 15/40 covered by [C07K 14/08](#)
C12N 15/41 covered by [C07K 14/085](#)
C12N 15/42 covered by [C07K 14/09](#)
C12N 15/43 covered by [C07K 14/105](#)
C12N 15/44 covered by [C07K 14/11](#)
C12N 15/45 covered by [C07K 14/115](#)
C12N 15/46 covered by [C07K 14/14](#)
C12N 15/47 covered by [C07K 14/145](#)
C12N 15/48 covered by [C07K 14/15](#)
C12N 15/49 covered by [C07K 14/155](#)
C12N 15/50 covered by [C07K 14/165](#)
C12N 15/51 covered by [C07K 14/02](#), [C07K 14/10](#), [C07K 14/18](#)
C12N 15/53 covered by [C12N 9/02](#)
C12N 15/54 covered by [C12N 9/10](#)
C12N 15/55 covered by [C12N 9/14](#)
C12N 15/56 covered by [C12N 9/24](#)
C12N 15/57 covered by [C12N 9/48](#)
C12N 15/58 covered by [C12N 9/6456](#)
C12N 15/59 covered by [C12N 9/6483](#)
C12N 15/60 covered by [C12N 9/88](#)
C12N 15/61 covered by [C12N 9/90](#)
C12N 15/83 covered by [C12N 15/82](#)
C12N 15/84 covered by [C12N 15/82](#)

- C12N 1/00** **Micro-organisms, e.g. protozoa; Compositions thereof** (-medicinal preparations containing material from micro-organisms [A61K 35/66](#) ; preparing medicinal bacterial antigen or antibody compositions, e.g. bacterial vaccines [A61K 39/00](#)); Processes of propagating, maintaining or preserving micro-organisms or compositions thereof; Processes of preparing or isolating a composition containing a micro-organism; Culture media therefor
- C12N 1/005 · {-after treatment of microbial biomass not covered by [C12N 1/02](#) to [C12N 1/08](#)-}
- C12N 1/04 · Preserving or maintaining viable micro-organisms (-immobilised micro-organisms [C12N 11/00](#)-)
- C12N 1/12 · Unicellular algae; Culture media therefor (-culture of multi-cellular plants [A01G](#) ; as new plants [A01H 13/00](#)-)
- C12N 1/14 · Fungi (-culture of mushrooms [A01G 1/04](#) ; as new plants per se [A01H 15/00](#) ; { fungi per se [C12R 1/645](#) to [C12R 1/885](#) }) Culture media therefor
- C12N 1/20 · Bacteria{-bacteria per se [C12R 1/01](#) to [C12R 1/64](#)-}); Culture media therefor
- C12N 1/26 · Processes using, or culture media containing, hydrocarbons (-refining of hydrocarbon oils by using micro-organisms [C10G 32/00](#)-)
- C12N 1/38 · Chemical stimulation of growth or activity by addition of chemical compounds which are not essential growth factors; Stimulation of growth by removal of a chemical compound (-[C12N 1/34](#) takes precedence-)
- C12N 5/00** **Undifferentiated human, animal or plant cells, e.g. cell lines; Tissues; Cultivation or maintenance thereof; Culture media therefor; (-plant reproduction by tissue culture techniques [A01H 4/00](#)-)**

NOTE

In this group, the following words are used with the meanings indicated: - a "totipotent" cell can differentiate into all somatic lineages (ectoderm, mesoderm, endoderm), the germ line and extra-embryonic tissues such as the placenta; - a "pluripotent" cell is a somatic stem cell which can differentiate into cells of at least two of the three somatic lineages (ectoderm, mesoderm, endoderm); - a "multipotent" cell is restricted to one lineage; - "progenitor" and "precursor" cells are further restricted within the lineage. If not explicitly forseen, totipotent cells are classified with pluripotent cells. Multipotent cells should not be classified with pluripotent cells. Unless provided for otherwise, committed progenitors are classified with their progeny.

- C12N 5/0018 · {Culture media for cell or tissue culture (-media for specific animal cell type [C12N 5/06](#)-)}
- C12N 5/0068 · {General culture methods using substrates (-for specific animal cell type [C12N 5/06](#)-)}
- C12N 5/04 · Plant cells or tissues{-culture media [C12N 5/0025](#)-}
- C12N 5/06 · Animal cells or tissues; {Human cells or tissues (-preservation of living cells or tissues [A01N 1/02](#)-); Not used, see subgroups}

NOTE

In this group, the following words are used with the meanings indicated:
 - a "totipotent" cell can differentiate into all somatic lineages (ectoderm, mesoderm, endoderm), the germ line and extra-embryonic tissues such as the placenta;
 - a "pluripotent" cell is a somatic stem cell which can differentiate into cells of at least two of the three somatic lineages (ectoderm, mesoderm, endoderm);
 - a "multipotent" cell is restricted to one lineage.

"Progenitor" and "precursor" cells are further restricted within the lineage.
If not explicitly foreseen, totipotent cells are classified with pluripotent cells.
Multipotent cells should not be classified with pluripotent cells

- U C12N 5/0602
 - • {Vertebrate cells}
- NOTE
Three-dimensional culture, tissue culture or organ culture are classified with the corresponding cells, if not specially provided for
- C12N 5/0603
 - • • {Embryonic cells (-production of embryos, nuclear transfer [A01K 67/027](#)); Embryoid bodies}
- C12N 5/0606
 - • • • {Pluripotent embryonic cells, e.g. embryonic stem cells [ES](-embryonic germ cells [C12N 5/0611](#) , induced pluripotent stem cells [C12N 5/0696](#)-)}
- C12N 5/0607
 - • • {Non-embryonic pluripotent stem cells, e.g. MASC} (-induced pluripotent stem cells [C12N 5/0696](#)-)}
- C12N 5/0608
 - • • {Germ cells (-production of embryos, nuclear transfer [A01K 67/027](#)); Not used, see subgroups}
- C12N 5/0609
 - • • • {Oocytes, oogonia (-fertilised oocytes [C12N 5/0604](#)-)}
- C12N 5/0613
 - • • {Cells from endocrine organs (-pancreas [C12N 5/0676](#) , gonads [C12N 5/0681](#)-)}
- U C12N 5/0618
 - • • {Cells of the nervous system}
- C12N 5/0621
 - • • • {Eye cells, e.g. cornea, iris pigmented cells (-photoreceptors [C12N 5/062](#)-)}
- U C12N 5/0625
 - • • {Epidermal cells, skin cells; Cells of the oral mucosa}
- U C12N 5/0627
 - • • • {Hair cells}
- C12N 5/0628
 - • • • • {Hair stem cells; Hair progenitors (-mesenchymal stem cells from hair follicles [C12N 5/0666](#)-)}
- U C12N 5/0652
 - • • {Cells of skeletal and connective tissues; Mesenchyme}
- C12N 5/0669
 - • • • {Bone marrow stromal cells; Whole bone marrow (-isolated stem cells from bone marrow [C12N 5/0647](#) , [C12N 5/0663](#)-)}
- U C12N 5/0681
 - • • {Cells of the genital tract; Non-germinal cells from gonads; Not used, see subgroups}
- C12N 5/0682
 - • • • {Cells of the female genital tract, e.g. endometrium; Non-germinal cells from ovaries, e.g. ovarian follicle cells (-oocytes [C12N 5/0609](#)-)}
- C12N 5/0683
 - • • • {Cells of the male genital tract, e.g. prostate, epididymis; Non-germinal cells from testis, e.g. Leydig cells, Sertoli cells (-spermatogonia [C12N 5/061](#)-)}
- C12N 5/0697
 - • {Artificial constructs associating cells of different lineages, e.g. tissue equivalents (-blood vessels [C12N 5/0691](#)-)}
- C12N 5/10
 - Cells modified by introduction of foreign genetic material {Not used, see subgroups}
- C12N 7/00**
 - Viruses; Bacteriophages; Compositions thereof; Preparation or purification thereof (-preparing medicinal viral antigen or antibody composition, e.g. virus vaccines, [A61K 39/00](#)-)**

WARNING

From March 15, 2012 groups [C12N 7/02](#) - [C12N 7/08](#) and subgroups thereof are no longer used for the classification of new documents. The documents in these (sub)groups are being reclassified to the corresponding codes in the range [C12N 2710/00-C12N 2795/00](#).

C12N 9/00 Enzymes; Proenzymes; Compositions thereof (~~preparations containing enzymes for cleaning teeth [A61K 8/66](#) , [A61Q 11/00](#) ; medicinal preparations containing enzymes or pro-enzymes [A61K 38/43](#) ; enzyme containing detergent compositions [C11D](#) ; { enzymes with nucleic acid structure, e.g. ribozymes, [C12N 15/113](#) }); Processes for preparing, activating, inhibiting, separating or purifying enzymes (~~preparation of malt [C12C 1/00](#)~~)~~

NOTE

Enzymes are generally categorized below according to the "Nomenclature and Classification of Enzymes" of the International Commission on Enzymes. Where appropriate, this designation appears in the groups below in parenthesis.

- U C12N 9/14 · Hydrolases (3)
- U C12N 9/16 · · acting on ester bonds (3.1)
- C12N 9/22 · · · Ribonucleases {RNAses, DNAses(~~catalytic nucleic acids [C12N 15/113](#)~~)}
- U C12N 9/48 · · acting on peptide bonds (3.4)
- C12N 9/50 · · · Proteinases {Endopeptidases (3.4.21-3.4.25)}
- C12N 9/98 · Preparation of granular or free-flowing enzyme compositions (~~[C12N 9/96](#) takes precedence~~)

C12N 15/00 Mutation or genetic engineering; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification; Use of hosts therefor (~~mutants or genetically engineered micro-organisms, per se [C12N 1/00](#) , [C12N 5/00](#) , [C12N 7/00](#) ; new plants per se [A01H](#) ; plant reproduction by tissue culture techniques [A01H 4/00](#) ; new animals per se [A01K 67/00](#) ; use of medicinal preparations containing genetic material which is inserted into cells of the living body to treat genetic diseases, gene therapy [A61K 48/00](#)~~)

- C12N 15/02 · Preparation of hybrid cells by fusion of two or more cells, e.g. protoplast fusion(~~monoclonal antibodies [C07K 16/00](#) ; apparatus for cell fusion [C12M](#)~~)
- U C12N 15/09 · Recombinant DNA-technology
- C12N 15/10 · · Processes for the isolation, preparation or purification of DNA or RNA (~~chemical preparation of DNA or RNA [C07H 21/00](#) ; preparation of non-structural polynucleotides from micro-organisms or with enzymes [C12P 19/34](#)~~)

NOTE

After the symbol [C12N 15/10](#) to [C12N 15/1096](#), and separated therefrom by a + sign, it is desirable to add the indexing codes selected from groups [C12Q 2500/00](#) to [C12Q599/00](#) , relating to relevant technical features of the invention. When more than one indexing code is selected, the different codes are separated by a + sign. Example : [C12N 15/1037](#) + [C12Q537/125](#) + [C12Q521/537](#)

- U C12N 15/1034 · · · {Isolating an individual clone by screening libraries}
- C12N 15/1068 · · · · ~~Template(nucleic acid)~~{*Template (nucleic acid)* mediated chemical library synthesis, e.g. chemical and enzymatical DNA-templated organic molecule synthesis, libraries prepared by non ribosomal polypeptide synthesis (NRPS), DNA/RNA-polymerase mediated polypeptide synthesis}
- C12N 15/1079 · · · · {Screening libraries by altering the phenotype or phenotypic trait of the host (~~reporter assays [C12N 15/1086](#)~~)}

- C12N 15/11
- DNA or RNA fragments; Modified forms thereof (~~DNA or RNA not used in recombinant technology, C07H 21/00~~ *DNA or RNA not used in recombinant technology, C07H 21/00*); {Non-coding nucleic acids having a biological activity}
- NOTE
Documents relating to DNA or its corresponding RNA and their use in recombinant DNA technology or the preparation of specific peptides, e.g. enzymes, are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in recombinant technology. Groups [C12N 15/11](#) to [C12N 15/117](#) cover also the use of non-coding nucleic acids as active ingredients in medicinal preparations. The **C12N2300/00** ICO scheme has to be applied to these groups. When documents classifiable in one or more subgroups disclose general principles of the technology applicable to the whole field, classification is also made in group [C12N 15/111](#)
- C12N 15/113
- Non-coding nucleic acids modulating the expression of genes, e.g. antisense oligonucleotides; {Antisense DNA or RNA; Triplex- forming oligonucleotides; Catalytic nucleic acids, e.g. ribozymes; Nucleic acids used in co-suppression or gene silencing(~~when used in plants C12N 15/8218~~)}
- C12N 15/1137
- {against enzymes (~~viral enzymes C12N 15/1131~~ ; receptors [C12N 15/1138](#))}
- U C12N 15/63
- Introduction of foreign genetic material using vectors; Vectors; Use of hosts therefor; Regulation of expression
- C12N 15/65
- using markers (~~enzymes used as markers C12N 15/52~~)
- U C12N 15/74
- Vectors or expression systems specially adapted for prokaryotic hosts other than E. coli, e.g. Lactobacillus, Micromonospora
- NOTE
This group covers the use of prokaryotes as hosts.
- C12N 15/746
- {for lactic acid bacteria (~~Streptococcus~~ (~~Streptococcus~~; ~~Lactococcus~~; ~~Lactobacillus~~; ~~Pediococcus~~; ~~Enterococcus~~; ~~Leuconostoc~~; ~~Propionibacterium~~; ~~Bifidobacterium~~; ~~Sporolactobacillus~~); *Lactococcus*; *Lactobacillus*; *Pediococcus*; *Enterococcus*; *Leuconostoc*; *Propionibacterium*; *Bifidobacterium*; *Sporolactobacillus*)}
- U C12N 15/79
- Vectors or expression systems specially adapted for eukaryotic hosts
- NOTE
This group covers the use of eukaryotes as hosts.
- U C12N 15/82
- for plant cells, {e.g. plant artificial chromosomes (PACs)}
- NOTE
Documents are being continuously reclassified into this new classification scheme. See Warning notes below
- U C12N 15/8241
- {Phenotypically and genetically modified plants via recombinant DNA technology}
- U C12N 15/8261
- {with agronomic (input) traits, e.g. crop yield}
- C12N 15/8262
- {involving plant development (not used)}
- U C12N 15/87
- Introduction of foreign genetic material using processes not otherwise provided for, e.g. co-transformation
- C12N 15/88
- using micro-encapsulation, e.g. using {amphiphile}liposome vesicle
- U C12N 2310/00 Structure or type of the nucleic acid**

- U C12N 2310/10 · Type of nucleic acid
 C12N 2310/18 · · acting by a non-sequence specific mechanism (other than [C12N 2310/16](#) or [C12N 2310/17](#))

U C12N 2500/00 Specific components of cell culture medium

- U C12N 2500/05 · Inorganic components
 C12N 2500/10 · · Metals; Metal chelators (-cobalamine [C12N 2500/38](#)-)
 U C12N 2500/20 · · · Transition metals
 C12N 2500/22 · · · · Zinc; Zn chelators (-insulin-zinc complexes [C12N 2501/33](#)-)
 C12N 2500/30 · Organic components (-metal chelators [C12N 2500/10](#) ; calcitonin [C12N 2500/14](#) ; transferrin [C12N 2500/24](#)-)
 C12N 2500/40 · · Nucleotides, nucleosides, bases (-cyclic nucleotides [C12N 2501/01](#) , anti-neoplastic drugs [C12N 2501/06](#)-)
 C12N 2500/70 · Undefined extracts (-conditioned medium [C12N 2502/00](#)-)

U C12N 2501/00 Active agents used in cell culture processes, e.g. differentiation

NOTE

Whenever possible, indexation is done by signalling pathway and not by chemical structure, e.g. the group of a protein covers not only peptide analogs of it and the corresponding nucleic acids, as in [C07K 14/00](#), but also antibodies, anti-idiotypic antibodies, non-peptide ligands of the receptor, the receptor itself, antibodies against the receptor or inhibitors of the conversion enzyme which processes the protein precursor. Unless otherwise provided for, ligands and substrates take precedence over receptors and enzymes.

- U C12N 2501/05 · Adjuvants
 C12N 2501/051 · · Lipid A ([MPA](#), [MPL](#))(~~MPA~~, ~~MPL~~)
 U C12N 2501/10 · Growth factors
 C12N 2501/185 · · Osteoprotegerin; Osteoclast differentiation factor ([ODF](#), [RANKL](#))(~~ODF~~, ~~RANKL~~)
 C12N 2501/30 · Hormones (-derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [C12N 2501/85](#)-)
 C12N 2501/33 · · Insulin (-together with transferrin [C12N 2500/25](#) ; Insulin-like growth factors [C12N 2501/105](#)-)
 U C12N 2501/70 · Enzymes
 C12N 2501/72 · · Transferases (EC 2.)(-acetylation of histones [C12N 2501/065](#)-)

U C12N 2533/00 Supports or coatings for cell culture, characterised by material

- C12N 2533/30 · Synthetic polymers (-thermoreactive polymers, e.g. PNIPAm, [C12N 2539/10](#)-)
 C12N 2533/40 · · Polyhydroxyacids, e.g. polymers of glycolic or lactic acid ([PGA](#), [PLA](#), [PLGA](#))(~~PGA~~, ~~PLA~~, ~~PLGA~~); Bioresorbable polymers

C12N 2710/00 dsDNA Viruses (not used)

C12N 2720/00 dsRNA Viruses (not used)

C12N 2730/00 Reverse Transcribing DNA Viruses (not used)

C12N 2740/00 Reverse Transcribing RNA Viruses (not used)

C12N 2750/00 ssDNA Viruses (not used)

C12N 2760/00 ssRNA Viruses negative-sense (not used)

C12N 2770/00 ssRNA Viruses positive-sense (not used)

- C12N 2780/00 Naked RNA Viruses (not used)
- C12N 2790/00 Viroids and subviral agents (not used)
- C12N 2792/00 Archaeabacteria viruses (not used)
- C12N 2795/00 Bacteriophages (not used)

Project: N/A (C12P)

C12P

FERMENTATION OR ENZYME-USING PROCESSES TO SYNTHESISE A DESIRED CHEMICAL COMPOUND OR COMPOSITION OR TO SEPARATE OPTICAL ISOMERS FROM A RACEMIC MIXTURE (-brewing of beer [C12C](#) ; producing vinegar [C12J](#) ; producing specific peptides or proteins [C07K](#) ; producing enzymes [C12N 9/00](#) ; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification [C12N 15/00](#) ; measuring or testing processes involving enzymes or micro-organisms [C12Q](#) ; measuring or testing processes involving nucleic acid amplification reactions [C12Q 1/6844](#) ; fermentation processes to form a food composition, [A21](#) or [A23](#) ; compounds in general, see the relevant compound class, e.g. [C01](#) , [C07-](#))]

NOTE

This subclass covers the production of compounds or compositions by biochemical transformation of matter performed by using enzymes or micro-organisms, wherein micro-organisms are defined as any single-celled organisms, including bacteria, fungi, yeast or microalgae, or plant or mammalian cells in the form of cell cultures.

In this subclass, documents are primarily classified according to the compounds produced. In addition, if appropriate, classification according to the method or biocatalyst used to produce the compound is made.

Classification in groups [C12P 19/14](#) - [C12P 19/24](#) , [C12P 39/00](#) , [C12P 41/00](#) - [C12P 41/009](#) should only be made together with the corresponding product groups

WARNING

The following IPC groups are not used in the CPC scheme. Subject-matter covered by these groups is classified in the following CPC groups: - [C12P 21/04](#) covered by [C07K 7/50](#) -
[C12P 21/08](#) covered by [C07K 16/00](#)

C12P 1/00

Preparation of compounds or compositions, not provided for in groups [C12P 3/00](#) to [C12P 39/00](#) , by using micro-organisms or enzymes

NOTE

1. This group is used for the classification of documents relating to the production of compounds of unknown structure 2. When classifying in this group, classification should be made also in [C12R](#)

C12P 3/00

Preparation of elements or inorganic compounds except carbon dioxide{(-Recovery of carbon dioxides as by-products [C12F 3/02](#)-)}

C12P 5/00

Preparation of hydrocarbons {or halogenated hydrocarbons}

C12P 5/002

• {cyclic (-compounds containing at least three condensed carbocyclic rings [C12P 15/00](#)-)}

C12P 5/005

• • {aromatic (-naphthacene [C12P 29/00](#)-)}

C12P 5/007

• {containing one or more isoprene units, i.e. terpenes (-carotenes [C12P 23/00](#)-)}

C12P 5/02

• acyclic{(-[C12P 5/007](#) takes precedence-)}

- U C12P 7/00** **Preparation of oxygen-containing organic compounds**
- C12P 7/40 • containing a carboxyl group {including Peroxycarboxylic acids (~~Fatty acids C12P 7/6409~~ Fatty acids C12P 7/6409)}
- C12P 7/54 • • Acetic acid (-vinegar C12J-)
- C12P 7/58 • • Aldonic, keto-almonic or saccharic acids (-uronic acids C12P 19/00-)
- C12P 7/62 • Carboxylic acid esters({-fatty acid esters C12P 7/6436-})
- U C12P 7/64 • Fats; Fatty oils; Ester-type waxes; Higher fatty acids, i.e. having at least seven carbon atoms in an unbroken chain bound to a carboxyl group; Oxidised oils or fats
- U C12P 7/6436 • • {Fatty acid esters}
- U C12P 7/6445 • • • {Glycerides}
- C12P 7/6481 • • • • {Phosphoglycerides (-phosphoglycerides having carboxylic acids with less than 7 carbon atoms, C12P 7/62-)}
- C12P 9/00** **Preparation of organic compounds containing a metal or atom other than H, N, C, O, S or halogen({-phosphoglycerides, C12P 7/6481-})**
- U C12P 13/00** **Preparation of nitrogen-containing organic compounds**
- C12P 13/02 • Amides, e.g. chloramphenicol, {or polyamides; Imides or polyimides; Urethanes, i.e. compounds comprising N-C=O structural element or polyurethanes (-peptides C12P 21/00 or C07K-)}
- C12P 13/04 • Alpha- or beta- amino acids({-other amino acids C12P 13/005-})
- C12P 15/00** **Preparation of compounds containing at least three condensed carbocyclic rings{ Gibbanes C12P 27/00 ; naphthacenes C12P 29/00 }**
- C12P 17/00** **Preparation of heterocyclic carbon compounds with only O, N, S, Se or Te as ring hetero atoms (-C12P 13/04 to C12P 13/24 take precedence-)**
- C12P 17/16 • containing two or more hetero rings{ Thiamine open chain analogs C12P 17/167 ; i.e. not condensed among themselves or through a common carbocyclic ring system-}
- C12P 17/18 • containing at least two hetero rings condensed among themselves or condensed with a common carbocyclic ring system, e.g. rifamycin, { e.g. Rifamycin C12P 17/189-}
- C12P 17/182 • • {Heterocyclic compounds containing nitrogen atoms as the only ring heteroatoms in the condensed system (~~Alloxazine or isoalloxazine, e.g. riboflavine C12P 25/00~~ Alloxazine or isoalloxazine, e.g. riboflavine C12P 25/00)}
- C12P 17/185 • • {Heterocyclic compounds containing sulfur atoms as ring hetero atoms in the condensed system}{ cepam nucleus C12P 35/00 ; penam nucleus C12P 37/00-}
- C12P 17/188 • • {Heterocyclic compound containing in the condensed system at least one hetero ring having nitrogen atoms and oxygen atoms as the only ring heteroatoms (-ergot-alcaloids C12P 17/183-)}
- C12P 19/00** **Preparation of compounds containing saccharide radicals (-keto-almonic acids C12P 7/58-)**
- NOTE**
- Attention is drawn to the term "saccharide radical" in the first Note following the title of subclass C07H .
- C12P 19/02 • Monosaccharides (-2-ketogulonic acid C12P 7/60-)
- C12P 19/16 • produced by the action of an alpha-1, 6-glucosidase, e.g. amylose, debranched amylopectin (-non-biological hydrolysis of starch C08B 30/00-)

- C12P 19/44 · Preparation of O-glycosides, e.g. glucosides{ Polysaccharides and not substituted disaccharides [C12P 19/04](#) , [C12P 19/12](#)-}
- U C12P 19/46 · · having an oxygen atom of the saccharide radical bound to a cyclohexyl radical, e.g. kasugamycin
- U C12P 19/48 · · · the cyclohexyl radical being substituted by two or more nitrogen atoms, e.g. destomycin, neamin
- C12P 19/485 · · · · {Having two saccharide radicals bound through only oxygen to non-adjacent ring carbons of the cyclohexyl radical, e.g. gentamycin, kanamycin, sisomycin, verdamycin, mutamycin, tobramycin, nebramycin, antibiotics 66-40B, 66-40D, XK-62-2, 66-40, G-418, G-52 (-see also [C12P 19/54](#)-)}
- C12P 19/54 · · · the cyclohexyl radical being bound directly to a nitrogen atom of two or more $\begin{array}{c} >N-C-N< \\ | \\ N \end{array}$ radicals, e.g. streptomycin
- C12P 19/60 · · having an oxygen of the saccharide radical directly bound to a non-saccharide heterocyclic ring or a condensed ring system containing a non-saccharide heterocyclic ring, e.g. coumermycin, novobiocin{ [C12P 19/605](#)-}
- C12P 19/605 · · · {to a 1-benzopyran-2-on (*or the chalcones and hydrogenated chalcones thereof, e.g. coumermycin, novobiocin, novenamin*)}(*or the chalcones and hydrogenated chalcones thereof, e.g. coumermycin, novobiocin, novenamin*)}
- C12P 21/00 Preparation of peptides or proteins (-single cell protein [C12N 1/00](#)-)**
- C12P 21/06 · produced by the hydrolysis of a peptide bond, e.g. hydrolysate products (-preparing foodstuffs by protein hydrolysis [A23J 3/00](#)-)
- C12P 23/00 Preparation of compounds containing a cyclohexene ring having an unsaturated side chain containing at least ten carbon atoms bound by conjugated double bonds, e.g. carotenes (-containing heterorings [C12P 17/00](#)-)**
- C12P 29/00 Preparation of compounds containing a naphthacene ring system, e.g. tetracycline (-[C12P 19/00](#) takes precedence-)**
- U **C12P 33/00 Preparation of steroids**
- NOTES
- Attention is drawn to the definition of steroids in the note following the title of subclass [C07J](#) .
- In groups [C12P 33/02](#) to [C12P 33/20](#) , the terms "acting", "forming", "hydroxylating", "dehydroxylating" and "dehydrogenating" refer to the action of a micro-organism or enzyme rather than other chemical action.
- C12P 33/12 · Acting on D ring{ carbons 13 and 14 belong to the C ring; degradation of lateral chains [C12P 33/005](#)-}
- C12P 33/20 · containing heterocyclic rings{ reactions are also classified in groups [C12P 33/00](#) to [C12P 33/18](#)-}
- U **C12P 37/00 Preparation of compounds having a 4-thia-1-azabicyclo [3.2.0] heptane ring system, e.g. penicillin**
- C12P 37/02 · in presence of phenylacetic acid or phenylacetamide or their derivatives {not to be used}
- C12P 2203/00 Fermentation products obtained from optionally pretreated or hydrolyzed cellulosic or lignocellulosic material as the carbon source (-ethanol [C12P 7/10](#)-)**

Project: N/A (C12Q)

C12Q

MEASURING OR TESTING PROCESSES INVOLVING ENZYMES OR MICRO-ORGANISMS (-immunoassay [G01N 33/53](#)); COMPOSITIONS OR TEST PAPERS THEREFOR; PROCESSES OF PREPARING SUCH COMPOSITIONS; CONDITION RESPONSIVE CONTROL IN MICROBIOLOGICAL OR ENZYMOLOGICAL PROCESSES

NOTES

This subclass does not cover the observation of the progress or of the result of processes specified in this subclass by any of the methods specified in groups [G01N 3/00](#) to [G01N 29/00](#), which is covered by subclass [G01N](#).

In this subclass, the following expression is used with the meaning indicated: "involving", when used in relation to a substance, includes the testing for the substance as well as employing the substance as a determinant or reactant in a test for a different substance.

Attention is drawn to Notes (1) to (3) following the title of class [C12](#).

In this subclass, test media are classified in the appropriate group for the relevant test process.

Documents describing the use of an electrode for analysis of a specific analyte are classified in [C12Q 1/001](#) or subgroups and not according to the last place rule

Documents relating to new peptides, e.g. enzymes, or new DNA or its corresponding mRNA, encoding for the peptides, and their use in measuring or testing processes are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in diagnostics. However where the new nucleic acids are principally used in diagnostic processes, e.g. PCR, hybridisation reactions, the documents are also classified in group [C12Q 1/68](#)

When classifying in groups [C12Q 1/68](#) to [C12Q 1/70](#) it is desirable to classify with symbols from groups [C12Q 2500/00](#) to [C12Q599/00](#), relating to relevant technical features of the invention, using Combination Sets.

In groups [C12Q 1/6876](#) - [C12Q 1/6895](#) and [C12Q 1/70](#) - [C12Q 1/708](#) it is desirable to add the indexing codes [C12Q 2600/00](#) to [C12Q 2600/178](#) which reflect the use of the product in combination with the virus groups only if the application refers to products.

C12Q 1/00

Measuring or testing processes involving enzymes, {nucleic acids} or micro-organisms (-measuring or testing apparatus with condition measuring or sensing means, e.g. colony counters [C12M 1/34](#)); Compositions therefor; Processes of preparing such compositions

- U C12Q 1/001 • {Enzyme electrodes}
- C12Q 1/005 • • {involving specific analytes or enzymes (-including groups of enzymes, e.g. oxydases; [C12Q 1/004](#) takes precedence-)}
- C12Q 1/007 • {involving isoenzyme profiles (-for detection of an individual isoenzyme [C12Q 1/25](#) to [C12Q 1/66](#)-)}
- U C12Q 1/02 • involving viable micro-organisms
- C12Q 1/025 • • {for testing or evaluating the effect of chemical or biological compounds, e.g. drugs, cosmetics (-antimicrobial activity [C12Q 1/18](#)-)}
- C12Q 1/04 • • Determining presence or kind of micro-organism; Use of selective media for testing antibiotics or bacteriocides; Compositions containing a chemical indicator therefor((-[C12Q 1/6897](#) takes precedence-)}
- C12Q 1/25 • involving enzymes not classifiable in groups [C12Q 1/26](#) { to [C12Q 1/66](#)-}

- U C12Q 1/68
- involving nucleic acids
- NOTE**
In subgroups of [C12Q 1/68](#) , classification is made according to the most relevant feature rather than according to the last-place-rule
- C12Q 1/6802
- · {General aspects (not used, see subgroups)}
- C12Q 1/6806
- · · {Preparing nucleic acids for analysis, e.g. for PCR assay (~~C12Q 1/6804~~ takes precedence)}
- U C12Q 1/6813
- · {Hybridisation assays}
- C12Q 1/6816
- · · {characterised by the means of detection (~~C12Q 1/6804~~ takes precedence)}
- U C12Q 1/6834
- · · {Nucleic acid analysis involving immobilisation; Immobilisation characterised by the carrier or coupling agent}
- C12Q 1/6837
- · · · {characterised by the use of probe arrays or probe chips (~~C12Q 1/6874~~ takes precedence)}
- C12Q 3/00** **Condition responsive control processes** (~~apparatus therefor C12M 1/36 ; controlling or regulating in general G05~~)
- C12Q 2304/00** **Chemical means of detecting micro-organisms** (~~hydrolase substrates C12Q 2334/00 , peptidase substrates C12Q 2337/00~~)
- C12Q 2500/00** **Analytical methods involving nucleic acids** (not used)
- C12Q 2520/00** **Reactions involving nucleic acids** (not used)
- C12Q 2521/00** **Reaction characterised by the enzymatic activity** (not used)
- C12Q 2521/10
- Nucleotidyl transferring (not used)
- C12Q 2521/107
- · RNA dependent DNA polymerase, (*i.e. reverse transcriptase*) (~~i.e. reverse transcriptase~~)
- C12Q 2521/30
- Phosphoric diester hydrolysing, i.e. nuclease (Not used)
- C12Q 2521/50
- Other enzymatic activities (Not used)
- C12Q 2521/525
- · Phosphatase (~~Not used with code C12Q 2565/301~~)
- C12Q 2522/00** **Reaction characterised by the use of non-enzymatic proteins** (not used)
- C12Q 2522/10
- Nucleic acid binding proteins (not used)
- C12Q 2523/00** **Reactions characterised by treatment of reaction samples** (not used)
- C12Q 2523/10
- Characterised by chemical treatment (Not used)
- C12Q 2523/30
- Characterised by physical treatment (Not used)
- U **C12Q 2525/00** **Reactions involving modified oligonucleotides, nucleic acids, or nucleotides**
- U C12Q 2525/10
- Modifications characterised by
- C12Q 2525/143
- · incorporating a promoter sequence (~~Not used with code C12Q 2531/143~~)
- C12Q 2525/186
- · incorporating a non-extendable or blocking moiety (~~not used with C12Q 2535/101~~)
- C12Q 2527/00** **Reactions demanding special reaction conditions** (not used)
- C12Q 2527/10
- Reaction conditions characterised by (~~metal/ion C12Q 2563/137~~) (not used)
- C12Q 2527/125
- · Specific component of sample, medium or buffer (~~for metal/ion use C12Q 2563/137~~)
- U **C12Q 2531/00** **Reactions of nucleic acids characterised by**

C12Q 2531/10	· the purpose being amplify/increase the copy number of target nucleic acid (Not used)
U C12Q 2533/00	{Reactions characterised by the enzymatic reaction principle used}
C12Q 2533/10	· the purpose being to increase the length of an oligonucleotide strand (-ligase detection reaction, LDR C12Q 2561/125 -)
C12Q 2533/101	· · Primer extension (-see also codes C12Q 2535/125 , C12Q 2565/537 -)
C12Q 2533/107	· · Probe/oligonucleotide ligation (-Not used with code C12Q 2531/137 , C12Q 2561/125 -)
U C12Q 2535/00	{Reactions characterised by the assay type for determining the identity of a nucleotide base}
C12Q 2535/10	· the purpose being to determine the identity or sequence oligonucleotides characterised by (Not used)
C12Q 2535/139	· · Random amplification polymorphism detection (RAPD)(-not to be used with C12Q 2525/179 -)
U C12Q 2537/00	{Reactions characterised by the reaction format or use of a specific feature}
U C12Q 2537/10	· the purpose or use of
C12Q 2537/137	· · a displacement step (Not used with code(C12Q 2531/119 -))
C12Q 2537/149	· · Sequential reactions (Not used with reactions implicitly known to be sequential, e.g. amplification reactions)
C12Q 2537/155	· · Cyclic reactions (-Not used with codes C12Q 2531/101 to C12Q 2531/149 -)
C12Q 2537/161	· · A competitive reaction step (-Not used with code C12Q 2545/107 -)
C12Q 2537/163	· · blocking probe (-not used in combination with C12Q 2527/127 or C12Q 2525/186 -)
U C12Q 2541/00	{Reactions characterised by directed evolution}
C12Q 2541/10	· the purpose being the selection/design of target specific nucleic acid binding sequences (not used)
U C12Q 2545/00	{Reactions characterised by their quantitative nature}
C12Q 2545/10	· the purpose being quantitative analysis (Not used)
C12Q 2545/114	· · involving a quantitation step (-not to be used with C12Q 2545/101 , C12Q 2545/107 , C12Q 2545/113 -)
U C12Q 2547/00	{Reactions characterised by the features used to prevent contamination}
C12Q 2547/10	· the purpose being preventing contamination (Not used)
U C12Q 2549/00	{Reactions characterised by the features used to influence the efficiency or specificity}
C12Q 2549/10	· the purpose being that of reducing false positive/negative signals (Not used)
C12Q 2549/126	· · using oligonucleotides as clamps (-not to be used with C12Q 2525/107 -)
C12Q 2560/00	Nucleic acid detection (not used)
C12Q 2561/00	Nucleic acid detection characterised by assay method (not used)
C12Q 2561/10	· Characterised by assay method (Not used)
C12Q 2563/00	Nucleic acid detection characterised by the use of (not used)
U C12Q 2565/00	Nucleic acid analysis characterised by mode or means of detection
C12Q 2565/10	· Detection mode being characterised by (Not used)
C12Q 2565/20	· Detection means characterised by being a gene reporter based analysis (Not used)

- C12Q 2565/30 · Detection characterised by liberation/release of label (Not used)
- C12Q 2565/40 · Detection characterised by signal amplification of label (not used)
- U C12Q 2565/50 · Detection characterised by immobilisation to a surface
- C12Q 2565/543 · · characterised by the use of two or more capture oligonucleotide primers in concert, e.g. bridge amplification (-Not used with code [C12Q 2537/149](#)-)
- C12Q 2565/60 · Detection means characterised by use of a special device (Not used)
- C12Q 2565/627 · · being a mass spectrometer (-not to be used with [C12Q 2563/167](#)-)
- C12Q 2600/00 Oligonucleotides characterized by their use (not used, see subgroups)**

Project: N/A (C12R)

- U C12R 1/00 Processes using micro-organisms**
- U C12R 1/01 · using bacteria or actinomycetales
- U C12R 1/07 · · Bacillus
- C12R 1/075 · · · {-Bacillus thuringiensis}

Project: N/A (C12Y)

- U C12Y 101/00 Oxidoreductases acting on the CH-OH group of donors (1.1)**
- U C12Y 101/01 · with NAD+ or NADP+ as acceptor (1.1.1)
- C12Y 101/01005 · · Acetoin dehydrogenase (1.1.1.5)(-[C12Y 101/01303](#) , [C12Y 101/01304](#) takes precedence-)
- C12Y 101/01182 · · Fenchol dehydrogenase (1.1.1.182)(-[C12Y 101/01198](#) , [C12Y 101/01227](#) , [C12Y 101/01228](#) take precedence-)
- U C12Y 101/02 · with a cytochrome as acceptor (1.1.2)
- C12Y 101/02007 · · ~~Methanol dehydrogenase(cytochrome c)~~*Methanol dehydrogenase (cytochrome c)*(1.1.2.7)
- C12Y 101/02008 · · ~~Alcohol dehydrogenase(cytochrome c)~~*Alcohol dehydrogenase (cytochrome c)* (1.1.2.8)
- U C12Y 101/99 · with other acceptors (1.1.99)
- C12Y 101/99008 · · Alcohol dehydrogenase (acceptor) (1.1.99.8)(-[C12Y 101/02007](#) , [C12Y 101/02008](#) take precedence-)
- U C12Y 102/00 Oxidoreductases acting on the aldehyde or oxo group of donors (1.2)**
- U C12Y 102/01 · with NAD+ or NADP+ as acceptor (1.2.1)
- C12Y 102/01001 · · Formaldehyde dehydrogenase (glutathione) (1.2.1.1)(-[C12Y 101/01284](#) , [C12Y 404/01022](#) take precedence-)
- U C12Y 104/00 Oxidoreductases acting on the CH-NH₂ group of donors (1.4)**
- U C12Y 104/03 · with oxygen as acceptor (1.4.3)
- C12Y 104/03006 · · Amine oxidase (copper-containing)(1.4.3.6)(-[C12Y 104/03021](#) or [C12Y 104/03022](#) takes precedence-)
- U C12Y 105/00 Oxidoreductases acting on the CH-NH group of donors (1.5)**
- U C12Y 105/03 · with oxygen as acceptor (1.5.3)
- C12Y 105/03011 · · Polyamine oxidase (1.5.3.11)(-[C12Y 105/03013](#) - [C12Y 105/03017](#) take precedence-)
- U C12Y 107/00 Oxidoreductases acting on other nitrogenous compounds as donors (1.7)**
- U C12Y 107/02 · with a cytochrome as acceptor (1.7.2)
- C12Y 107/02003 · · Trimethylamine-N-oxide reductase (*cytochrome c*)(1.7.2.3)(~~cytochrome c~~ (1.7.2.3))

- C12Y 107/02005 · Nitric-oxide reductase (*cytochrome c*)(1.7.2.5)(~~cytochrome c~~(1.7.2.5))
- U C12Y 108/00 Oxidoreductases acting on sulfur groups as donors (1.8)**
- U C12Y 108/02 · with a cytochrome as acceptor (1.8.2)
- C12Y 108/02003 · Sulfide-cytochrome-c reductase (*flavocytochrome c*)(1.8.2.3)(~~flavocytochrome c~~(1.8.2.3))
- U C12Y 108/04 · with a disulfide as acceptor (1.8.4)
- C12Y 108/04005 · Methionine-S-oxide reductase (1.8.4.5)(-C12Y 108/04013 or C12Y 108/04014 takes precedence-)
- U C12Y 112/00 Oxidoreductases acting on hydrogen as donor (1.12)**
- U C12Y 112/01 · with NAD+ or NADP+ as acceptor (1.12.1)
- C12Y 112/01004 · Hydrogenase(NAD+, ferredoxin)Hydrogenase (NAD+, ferredoxin)(1.12.1.4)
- U C12Y 113/00 Oxidoreductases acting on single donors with incorporation of molecular oxygen (oxygenases) (1.13)**
- U C12Y 113/11 · with incorporation of two atoms of oxygen (1.13.11)
- C12Y 113/11044 · Linoleate diol synthase (1.13.11.44)(-C12Y 113/1106 , C12Y 504/04006 take precedence-)
- C12Y 113/12 · with incorporation of one atom of oxygen (*internal monooxygenases or internal mixed function oxidases*)(1.13.12)(~~internal monooxygenases or internal mixed function oxidases~~(1.13.12))
- U C12Y 114/00 Oxidoreductases acting on paired donors, with incorporation or reduction of molecular oxygen (1.14)**
- U C12Y 114/12 · with NADH or NADPH as one donor, and incorporation of two atoms of oxygen into one donor (1.14.12)
- C12Y 114/12001 · Anthranilate 1,2-dioxygenase (*deaminating, decarboxylating*)(1.14.12.1)(~~deaminating, decarboxylating~~(1.14.12.1))
- U C12Y 120/00 Oxidoreductases acting on phosphorus or arsenic in donors (1.20)**
- U C12Y 120/02 · with a cytochrome as acceptor (1.20.2)
- C12Y 120/02001 · Arsenate reductase(~~cytochrome c~~)Arsenate reductase (*cytochrome c*)(1.20.2.1)
- U C12Y 201/00 Transferases transferring one-carbon groups (2.1)**
- U C12Y 201/01 · Methyltransferases (2.1.1)
- C12Y 201/01023 · Protein-arginine N-methyltransferase (2.1.1.23)(-C12Y 201/01124 - C12Y 201/01126 take precedence-)
- C12Y 201/01024 · Protein-gamma-glutamate O-methyltransferase (2.1.1.24)(-C12Y 201/01077 , C12Y 201/0108 , C12Y 201/011 take precedence-)
- C12Y 201/01029 · tRNA (cytosine-5-)-methyltransferase (2.1.1.29)(-C12Y 201/01202 - C12Y 201/01204 take precedence-)
- C12Y 201/01031 · tRNA (guanine-N1-)-methyltransferase (2.1.1.31)(-C12Y 201/01221 , C12Y 201/01228 take precedence-)
- C12Y 201/01032 · tRNA (guanine-N2-)-methyltransferase (2.1.1.32)(-C12Y 201/01213 - C12Y 201/01216 take precedence-)
- C12Y 201/01036 · tRNA (adenine-N1-)-methyltransferase (2.1.1.36)(-C12Y 201/01217 - C12Y 201/0122 take precedence-)
- C12Y 201/01048 · rRNA (adenine-N6-)-methyltransferase (2.1.1.48)(-C12Y 201/01181 - C12Y 201/01184 take precedence-)
- C12Y 201/01051 · rRNA (guanine-N1-)-methyltransferase (2.1.1.51)(-C12Y 201/01187 , C12Y 201/01188 take precedence-)

- C12Y 201/01052 · · rRNA (guanine-N2-)-methyltransferase (2.1.1.52)([-C12Y 201/01171](#) - [C12Y 201/01174](#) take precedence-)
- C12Y 201/01194 · · 23S rRNA (adenine2503-C2,C8)-dimethyltransferase (2.1.1.194) ([-C12Y 201/01192](#) , [C12Y 201/01224](#) take precedence-)
- U C12Y 204/00 Glycosyltransferases (2.4)**
- U C12Y 204/01 · Hexosyltransferases (2.4.1)
- C12Y 204/01051 · · UDP-N-acetylglucosamine-glycoprotein N-acetylglucosaminyltransferase (2.4.1.51)([-C12Y 204/01101](#) , [C12Y 204/01143](#) - [C12Y 204/01145](#) take precedence-)
- C12Y 204/0113 · · Dolichyl-phosphate-mannose-glycolipid alpha-mannosyltransferase (2.4.1.130)([-C12Y 204/01258](#) - [C12Y 204/01261](#) take precedence-)
- U C12Y 205/00 Transferases transferring alkyl or aryl groups, other than methyl groups (2.5)**
- U C12Y 205/01 · transferring alkyl or aryl groups, other than methyl groups (2.5.1)
- C12Y 205/01011 · · Trans-octaprenyltranstransferase (2.5.1.11)([-C12Y 205/01084](#) , [C12Y 205/01085](#) take precedence-)
- C12Y 205/01033 · · Trans-pentaprenyltranstransferase (2.5.1.33)([-C12Y 205/01082](#) , [C12Y 205/01083](#) take precedence-)
- C12Y 205/01064 · · 2-Succinyl-6-hydroxy-2,4-cyclohexadiene-1-carboxylate synthase (2.5.1.64) ([-C12Y 202/01009](#) , [C12Y 402/9902](#) take precedence-)
- U C12Y 207/00 Transferases transferring phosphorus-containing groups (2.7)**
- U C12Y 207/01 · Phosphotransferases with an alcohol group as acceptor (2.7.1)
- C12Y 207/01037 · · Protein kinase (2.7.1.37)([-C12Y 207/11001](#) , [C12Y 207/11008](#) - [C12Y 207/11013](#) , [C12Y 207/11021](#) , [C12Y 207/11022](#) , [C12Y 207/11024](#) , [C12Y 207/11025](#) , [C12Y 207/1103](#) or [C12Y 207/12001](#) takes precedence-)
- C12Y 207/01112 · · Protein-tyrosine kinase (2.7.1.112)([-C12Y 207/10001](#) , [C12Y 207/10002](#) take precedence-)
- U C12Y 301/00 Hydrolases acting on ester bonds (3.1)**
- U C12Y 301/01 · Carboxylic ester hydrolases (3.1.1)
- C12Y 301/01016 · · 4-Carboxymethyl-4-hydroxyisocrotonolactonase (3.1.1.16)([-C12Y 301/01024](#) , [C12Y 503/03004](#) take precedence-)
- C12Y 301/01021 · · Retinyl-palmitate esterase (3.1.1.21)([-C12Y 301/01001](#) , [C12Y 301/01003](#) take precedence-)
- U C12Y 301/25 · Site-specific endodeoxyribonucleases specific for altered bases (3.1.25)
- C12Y 301/25001 · · **Deoxyribonuclease(pyrimidine dimer)** *Deoxyribonuclease (pyrimidine dimer)* (3.1.25.1)
- U C12Y 302/00 Hydrolases acting on glycosyl compounds, i.e. glycosylases (3.2)**
- U C12Y 302/01 · Glycosidases, i.e. enzymes hydrolysing O- and S-glycosyl compounds (3.2.1)
- C12Y 302/01176 · · Cellulose 1,4-beta-cellobiosidase *(reducing end)*(3.2.1.176)*(reducing end)* (3.2.1.176)
- U C12Y 303/00 Hydrolases acting on ether bonds (3.3)**
- U C12Y 303/02 · Ether hydrolases (3.3.2)
- C12Y 303/02003 · · Epoxide hydrolase (3.3.2.3)([-C12Y 303/02009](#) or [C12Y 303/0201](#) takes precedence-)
- U C12Y 304/00 Hydrolases acting on peptide bonds i.e. peptidases (3.4)**
- U C12Y 304/13 · Dipeptidases (3.4.13)

- C12Y 304/13003 · · Xaa-His dipeptidase (3.4.13.3)(-[C12Y 304/13018](#) , [C12Y 304/1302](#) take precedence-)
- C12Y 304/13011 · · Dipeptidase (3.4.13.11)(-[C12Y 304/13018](#) or [C12Y 304/13019](#) takes precedence-)
- U C12Y 304/14 · Dipeptidyl-peptidases and tripeptidyl-peptidases (3.4.14)
- C12Y 304/14008 · · Tripeptidyl peptidase (3.4.14.8)(-[C12Y 304/14009](#) , [C12Y 304/1401](#) take precedence-)
- U C12Y 304/16 · Serine-type carboxypeptidases (3.4.16)
- C12Y 304/16001 · · Serine carboxypeptidase (3.4.16.1)(-[C12Y 304/16005](#) , [C12Y 304/16006](#) take precedence-)
- U C12Y 304/21 · Serine endopeptidases (3.4.21)
- C12Y 304/21008 · · Kallikrein (3.4.21.8)(-[C12Y 304/21034](#) , [C12Y 304/21035](#) take precedence-)
- C12Y 304/21011 · · Elastase (3.4.21.11)(-[C12Y 304/21036](#) or [C12Y 304/21037](#) takes precedence-)
- C12Y 304/21014 · · Microbial serine proteases (3.4.21.14)(-[C12Y 304/21062](#) - **C12Y304/67** takes precedence-)
- C12Y 304/21031 · · Urokinase (3.4.21.31)(-[C12Y 304/21068](#) or [C12Y 304/21073](#) takes precedence-)
- U C12Y 304/22 · Cysteine endopeptidases (3.4.22)
- C12Y 304/22004 · · Bromelain (3.4.22.4)(-[C12Y 304/22032](#) or [C12Y 304/22033](#) takes precedence-)
- C12Y 304/22017 · · Calpain (3.4.22.17)(-[C12Y 304/22052](#) , [C12Y 304/22053](#) take precedence-)
- U C12Y 304/23 · Aspartic endopeptidases (3.4.23)
- C12Y 304/23006 · · Microbial carboxyl proteinases (3.4.23.6)(-[C12Y 304/23018](#) - [C12Y 304/23028](#) or [C12Y 304/2303](#) takes precedence-)
- U C12Y 304/24 · Metalloendopeptidases (3.4.24)
- C12Y 304/24004 · · Microbial metalloproteinases (3.4.24.4)(-[C12Y 304/24025](#) - [C12Y 304/24032](#) , [C12Y 304/24039](#) or [C12Y 304/2404](#) takes precedence-)
- C12Y 304/24005 · · Lens neutral proteinase (3.4.24.5)(-[C12Y 304/22052](#) , [C12Y 304/22053](#) ,, [C12Y 304/25001](#) take precedence-)
- U C12Y 401/00 Carbon-carbon lyases (4.1)**
- U C12Y 401/02 · Aldehyde-lyases (4.1.2)
- C12Y 401/02037 · · Hydroxynitrilase (4.1.2.37)(-[C12Y 401/02046](#) , [C12Y 401/02047](#) take precedence-)
- U C12Y 402/00 Carbon-oxygen lyases (4.2)**
- U C12Y 402/02 · acting on polysaccharides (4.2.2)
- C12Y 402/02004 · · Chondroitin ABC lyase (4.2.2.4), i.e. chondroitinase (-[C12Y 402/0202](#) or [C12Y 402/02021](#) takes precedence-)
- U C12Y 402/99 · Other carbon-oxygen lyases (4.2.99)
- C12Y 402/99006 · · Chondroitin sulfate lyase (4.2.99.6)(-[C12Y 402/02005](#) , [C12Y 402/0202](#) , [C12Y 402/02021](#) take precedence-)
- C12Y 402/99018 · · **DNA-(apurinic or apyrimidinic site)**DNA-(apurinic or apyrimidinic site)lyase (4.2.99.18)
- U C12Y 403/00 Carbon-nitrogen lyases (4.3)**
- U C12Y 403/01 · Ammonia-lyases (4.3.1)
- C12Y 403/01005 · · Phenylalanine ammonia-lyase (4.3.1.5)(-[C12Y 403/01023](#) - [C12Y 403/01025](#) takes precedence-)

- U C12Y 403/03 · Amine-lyases (4.3.3)
- C12Y 403/03006 · · Pyridoxal 5'-phosphate synthase (*glutamine hydrolyzing*)(4.3.3.6)(*glutamine hydrolyzing*)(4.3.3.6)
- U C12Y 502/00 Cis-trans-isomerases (5.2)**
- U C12Y 502/01 · Cis-trans-Isomerases (5.2.1)
- C12Y 502/01003 · · Retinal isomerase (5.2.1.3)(-[C12Y 101/013](#) , [C12Y 101/01315](#) , [C12Y 203/01135](#) , [C12Y 301/01064](#) take precedence)
- U C12Y 601/00 Ligases forming carbon-oxygen bonds (6.1)**
- C12Y 601/02 · Acid--alcohol ligases (*ester synthases*)(6.1.2)(*ester synthases*)(6.1.2)
- U C12Y 603/00 Ligases forming carbon-nitrogen bonds (6.3)**
- C12Y 603/01 · Acid-ammonia (*or amine*)ligases (*amide synthases*)(6.3.1)(*or amine*)ligases(*amide synthases*)(6.3.1)
- C12Y 603/02 · Acid—amino-acid ligases (*peptide synthases*)(6.3.2)(*peptide synthases*)(6.3.2)

Project: N/A (C13B)

- U C13B 10/00 Production of sugar juices (tapping of tree-juices [A01G 23/10](#); tapping-spouts, receptacles for juices [A01G 23/14](#))**
- C13B 10/003 · {-using chemicals other than extracting agents}
- C13B 10/006 · {-Conservation of sugar juices}
- U C13B 10/02 · Expressing juice from sugar cane or similar material, e.g. sorghum saccharatum
- C13B 10/025 · · {-Treatment of sugar cane before extraction ([C13B 5/00](#) takes precedence)}
- U C13B 10/08 · Extraction of sugar from sugar beet with water
- C13B 10/083 · · {-Treatment of sugar beet before extraction ([C13B 5/00](#) takes precedence)}
- C13B 10/086 · · {-Processes or apparatus with discontinuous loading}
- U C13B 10/10 · · Continuous processes
- C13B 10/102 · · · {-having rotatable means for agitation or transportation}
- C13B 10/105 · · · · {-Rotating apparatus}
- C13B 10/107 · · · {-with transportation in the form of thin layers, e.g. by endless chains}
- U C13B 20/00 Purification of sugar juices**
- NOTE
- When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned
- C13B 20/002 · {-using micro-organisms or enzymes}
- C13B 20/005 · {-using chemicals not provided for in groups [C13B 20/02](#) to [C13B 20/14](#)}
- C13B 20/007 · · {-Saturation with gases or fumes, e.g. carbon dioxide}
- U C13B 20/12 · using adsorption agents, e.g. active carbon
- C13B 20/123 · · {-Inorganic agents, e.g. active carbon}
- C13B 20/126 · · {-Organic agents, e.g. polyelectrolytes}
- U C13B 20/14 · using ion-exchange materials
- C13B 20/142 · · {-Mixed bed ([C13B 20/148](#) takes precedence)}
- C13B 20/144 · · {-using only cationic ion-exchange material ([C13B 20/148](#) takes precedence)}
- C13B 20/146 · · {-using only anionic ion-exchange material ([C13B 20/148](#) takes precedence)}

- C13B 20/148
- • {for fractionating, adsorption or ion exclusion processes combined with elution or desorption of a sugar fraction}
- U C13B 20/16
- by physical means, e.g. osmosis or filtration
- C13B 20/165
- • {using membranes, e.g. osmosis, ultrafiltration (electrodialysis [C13B 20/18](#))}
- U C13B 25/00** **Evaporators or boiling pans specially adapted for sugar juices; Evaporating or boiling sugar juices**
- C13B 25/001
- {with heating tubes or plates}
- C13B 25/003
- {with heating plates}
- C13B 25/005
- {with heating coils}
- C13B 25/006
- {rotating apparatus}
- C13B 25/008
- {with direct contact between heating medium and sugar solution}
- U C13B 30/00** **Crystallisation; Crystallising apparatus; Separating crystals from mother liquors; { Evaporating or boiling sugar juice}**
- C13B 30/002
- {Evaporating or boiling sugar juice}
- C13B 30/005
- • {using chemicals}
- C13B 30/007
- • {Multiple effect evaporation}
- U C13B 30/02
- Crystallisation; Crystallising apparatus
- C13B 30/021
- • {using chemicals}
- C13B 30/022
- • {Continuous processes, apparatus therefor ([C13B 30/028](#) takes precedence)}
- C13B 30/023
- • • {having rotatable means for agitation or transportation}
- C13B 30/025
- • • {combined with measuring instruments for effecting control of the process}
- C13B 30/026
- • {Discontinuous processes or apparatus therefor ([C13B 30/028](#) takes precedence)}
- C13B 30/027
- • • {combined with measuring instruments for effecting control of the process}
- C13B 30/028
- • {obtaining sugar crystals by drying sugar syrup or sugar juice, e.g. spray-crystallisation}
- U C13B 35/00** **Extraction of sucrose from molasses**
- C13B 35/005
- {using micro-organisms or enzymes}
- U C13B 40/00** **Drying sugar**
- C13B 40/002
- {Drying sugar or syrup in bulk}
- C13B 40/005
- • {combined with agglomeration}
- C13B 40/007
- {Drying sugar in compacted form, e.g. cubes}
- U C13B 50/00** **Sugar products, e.g. powdered, lump or liquid sugar; Working-up of sugar ([C13B 40/00](#), [C13B 45/00](#) take precedence; confectionery [A23G 3/00](#))**
- C13B 50/002
- {Addition of chemicals or other foodstuffs}
- C13B 50/004
- {Agglomerated sugar products; Agglomeration}
- C13B 50/006
- {Molasses; Treatment of molasses (extraction of sucrose [C13B 35/00](#))}
- C13B 50/008
- • {Drying}

Project: N/A (C13K)

- U C13K 13/00** **Sugars not otherwise provided for in class [C12](#)**
- C13K 13/007
- {Separation of sugars provided for in subclass [C13K](#)-([C13K 3/00](#) takes precedence)}

Project: N/A (C14B)

- U C14B 15/00** **Mechanical treatment of furs**
 C14B 15/005 · {-Tumbling furs or pelts in a rotating drum}
- U C14B 17/00** **Details of apparatus or machines for manufacturing or treating skins, hides, leather, or furs**
 C14B 17/005 · {-Inspecting hides or furs}

Project: N/A (C14C)

- C14C 7/00** **Pasting processes (*chemical part*)(~~chemical part~~)**
- U C14C 11/00** **Surface finishing of leather**
 U C14C 11/003 · {using macromolecular compounds}
 C14C 11/006 · · {using polymeric products of isocyanates (*or isothiocyanates*) with *compounds having active hydrogen*}(~~or isothiocyanates~~-with-compounds having active hydrogen)}

Project: N/A (C21B)

- U C21B 13/00** **Making spongy iron or liquid steel, by direct processes**
 C21B 13/0066 · {-Preliminary conditioning of the solid carbonaceous reductant}

Project: N/A (C21D)

- C21D** **MODIFYING THE PHYSICAL STRUCTURE OF FERROUS METALS; GENERAL DEVICES FOR HEAT TREATMENT OF FERROUS OR NON-FERROUS METALS OR ALLOYS; MAKING METAL MALLEABLE BY DECARBURISATION, TEMPERING OR OTHER TREATMENTS (-cementation by diffusion processes [C23C](#); surface treatment of metallic material involving at least one process provided for in class [C23](#) and at least one process covered by this subclass, [C23F 17/00](#) ; unidirectional solidification of eutectic materials or unidirectional demixing of eutectoid materials [C30B](#)-)**
- C21D 1/00** **General methods or devices for heat treatments, e.g. annealing, hardening, quenching, tempering (-furnaces in general [F27](#) ; electric heating per se [H05B](#)-)**
- C21D 1/18 · Hardening (~~-C21D 1/02 takes precedence-~~); Quenching with or without subsequent tempering (~~-quenching devices [C21D 1/62](#)-~~)
- C21D 1/34 · Methods of heating (~~-C21D 1/06 takes precedence-~~)
- C21D 1/55 · Hardenability tests, e.g. end-quench tests (~~-investigating chemical or physical properties of materials in general [G01N](#)-~~)
- U C21D 1/62** · Quenching devices
- U C21D 1/63** · · for bath quenching
- C21D 1/64 · · · with circulating liquids (~~-in general [F28D](#)-~~)
- C21D 1/74 · Methods of treatment in inert gas, controlled atmosphere, vacuum, or pulverulent material (~~-production of gases [C01](#) , [C10](#)-~~)
- C21D 1/82 · Descaling by thermal stresses (~~-mechanically [B21](#) , [B23](#) ; chemically [C23](#) ; electrolytically [C25F](#)-~~)
- C21D 1/84 · Controlled slow cooling (~~-cooling-beds for metal rolling [B21B 43/00](#)-~~)
- C21D 3/00** **Diffusion processes for extraction of non-metals; Furnaces therefor (-local protective coatings [C21D 1/72](#) ; furnaces in general [F27](#)-)**
- U C21D 6/00** **Heat treatment of ferrous alloys**

- C21D 6/001 · {containing Ni (-C21D 6/004 takes precedence-)}
 C21D 6/002 · {containing Cr (-C21D 6/004 takes precedence-)}
- C21D 7/00 Modifying the physical properties of iron or steel by deformation (-apparatus for mechanical working of metal B21 , B23 , B24-)**
- C21D 8/00 Modifying the physical properties by deformation combined with, or followed by, heat treatment (-hardening articles or materials formed by forging or rolling with no further heating beyond that required for the formation C21D 1/02-)**
- C21D 8/005 · {of ferrous alloys (-C21D 8/02 to C21D 8/12 take precedence-)}
 C21D 8/02 · during manufacturing of plates or strips (-C21D 8/12 takes precedence-)
- NOTE**
 In this group classification is made according to the most important feature in one subgroup only; for other features indexing codes of **M21D** are added
- C21D 8/0278 · · {involving a particular surface treatment (-C21D 8/0294 takes precedence-)}
 U C21D 8/04 · · to produce plates or strips for deep-drawing
- NOTE**
 In this group classification is made according to the most important feature in one subgroup only; for other features indexing codes of **M21D** are added
- C21D 8/0478 · · · {involving a particular surface treatment (-C21D 8/0494 takes precedence-)}
 U C21D 8/12 · during manufacturing of articles with special electromagnetic properties
- NOTE**
 In this group classification is made according to the most important feature in one subgroup only; for other features indexing codes of **M21D** are added
- C21D 8/1277 · · {involving a particular surface treatment (-C21D 8/1294 takes precedence-)}
- C21D 9/00 Heat treatment, e.g. annealing, hardening, quenching, tempering, adapted for particular articles; Furnaces therefor (-furnaces in general F27-)**
- C21D 9/0006 · {Details, accessories not peculiar to any of the following furnaces (-control devices C21D 11/00-)}
 C21D 9/005 · {Furnaces in which the charge is moving up or down (-for wire, strip C21D 9/54-)}
 C21D 9/0056 · {Furnaces through which the charge is moved in a horizontal straight path (-C21D 9/0043 takes precedence-)}
 C21D 9/0075 · {for rods of limited length (-of unlimited length C21D 9/52-)}
 C21D 9/04 · for rails (-apparatus for heat treatment of railway rails on the spot E01B 31/18-)
 U C21D 9/52 · for wires; for strips;{for rods of unlimited length}
 C21D 9/525 · · {for wire, for rods (-C21D 9/54 takes precedence-)}
 U C21D 9/54 · · Furnaces for treating strips or wire
 C21D 9/68 · · · Furnace coilers; hot coilers (-cold coilers B21C-)
- C21D 11/00 Process control or regulation for heat treatments (-controlling or regulating in general G05-)**
- U C21D 2221/00 Treating localised areas of an article**
 C21D 2221/01 · End parts (e.g. leading, trailing end)(e.g. ~~leading, trailing end~~)
- U C21D 2241/00 Treatments in a special environment**
 C21D 2241/03 · in zero gravity (e.g. in spce)(e.g. ~~in spce~~)

Project: N/A (C22B)**C22B****PRODUCTION AND REFINING OF METALS (electrolytic [C25](#));
PRETREATMENT OF RAW MATERIALS****NOTE**

In this subclass, groups for obtaining metals include obtaining the metals by non-metallurgical processes, and obtaining metal compounds by metallurgical processes, {as far as specifically indicated in the relevant groups} . Thus, for example, group [C22B 11/00](#) covers the production of silver by reduction of ammoniacal silver oxide in solution, and group [C22B 17/00](#) includes the production of cadmium oxide by a metallurgical process. Furthermore, although compounds of arsenic and antimony are classified in [C01G](#), production of the elements themselves is included in [C22B](#), as well as the production of their compounds by metallurgical processes.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C22B 3/26](#) to [C22B 3/40](#) covered by
[C22B 3/0005](#)

C22B 1/00**Preliminary treatment of ores or scrap (-furnaces, sintering apparatus [F27B](#)-)**

C22B 1/005

- {Preliminary treatment of scrap (-[C22B 1/02](#) up to [C22B 1/26](#) take precedence-)}

C22B 1/02

- Roasting processes (-[C22B 1/16](#) takes precedence-)

U C22B 3/00**Extraction of metal compounds from ores or concentrates by wet processes****NOTE**

This group covers methods directed to the extraction of three or more metals. For the recovery of one or two metals, see the other groups of this subclass concerning these metals

C22B 3/0004

- {Treatment or purification of solutions, e.g. obtained by leaching (-[C22B 3/04](#) takes precedence-)}

WARNING

Not used, see subgroups

C22B 3/0005

- {by liquid-liquid extraction using organic compounds, e.g. acyclic or carbocyclic compounds, heterocyclic compounds, organo-metallic compounds, alcohols, ethers, or the like (-[C22B 3/205](#) takes precedence-)}

U C22B 3/0006

- • {using acyclic or carbocyclic compounds}

U C22B 3/0008

- • • {using acyclic or carbocyclic compounds of a single type}

C22B 3/001

- • • • {using amines (-amino acids [C22B 3/0024](#)-)}

C22B 3/0022

- • • • {using organic acids (-[C22B 3/0031](#) or [C22B 3/0035](#) or [C22B 3/004](#) takes precedence-)}

C22B 3/0029

- • • • {using cyanic acids or derivatives thereof (-[C22B 3/0031](#) or [C22B 3/0035](#) or [C22B 3/004](#) takes precedence-)}

C22B 3/0031

- • • • {using organic compounds containing sulfur atom(s), e.g. sulfonium (-[C22B 3/004](#) takes precedence-)}

C22B 3/0032

- • • • {using mixtures of acyclic or carbocyclic compounds of different types (-[C22B 3/0035](#) or [C22B 3/004](#) takes precedence-)}

- C22B 3/0035 . . . {using heterocyclic compounds (~~C22B 3/0018~~ , ~~C22B 3/002~~ and ~~C22B 3/0031~~ take precedence-)}
- C22B 3/0039 {using a mixture of organic agents wherein one agent at least is a heterocyclic compound (~~C22B 3/004~~ takes precedence-)}
- C22B 3/0098 . {by ion exchange extraction or by adsorption on solid substances, e.g. by extraction with solid resins (~~C22B 3/0097~~ takes precedence-)}
- WARNING**
Group [C22B 3/0098](#) is no longer used for the classification of new documents from May 1st, 2005. The backlog of this group is being continuously transferred to the relevant groups of [C22B](#)
- C22B 3/04 . by leaching (~~C22B 3/18~~ takes precedence-)
- U C22B 3/16 . in organic solutions
- U C22B 3/1608 . . . {Leaching with acyclic or carbocyclic agents}
- U C22B 3/1616 {Leaching with acyclic or carbocyclic agents of a single type}
- C22B 3/1625 {with amines (-amino acids [C22B 3/165](#)-)}
- U C22B 3/1666 . . . {Leaching with heterocyclic compounds}
- C22B 3/1675 {Leaching with a mixture of organic agents wherein one agent at least is a heterocyclic compounds (~~C22B 3/1683~~ takes precedence-)}
- C22B 3/20 . Treatment or purification of solutions, e.g. obtained by leaching (~~C22B 3/18~~ takes precedence-)
- C22B 3/22 . . by physical processes, e.g. by filtration, by magnetic means, {by thermal decomposition} (~~C22B 3/26~~ takes precedence-)
- C22B 3/44 . . by chemical processes (~~C22B 3/0005~~ to ~~C22B 3/0097~~ take precedence-)
- C22B 4/00 Electrothermal treatment of ores or metallurgical products for obtaining metals or alloys (-obtaining iron or steel [C21B](#) , [C21C](#)-)**
- C22B 4/005 . {using plasma jets (-smelting, remelting, refining of metals using a plasma as heat source [C22B 9/22](#) ; Generating or handling plasma in general [H05H 1/00](#) ; Gas-filled discharge tubes for processing materials in general [H01J 37/32](#)-)}
- C22B 4/02 . Light metals(~~C22B 4/005~~ takes precedence-)}
- C22B 4/04 . Heavy metals(~~C22B 4/005~~ takes precedence-)}
- C22B 4/06 . Alloys(~~C22B 4/005~~ takes precedence-)}
- C22B 4/08 . Apparatus ({ [C22B 4/005](#) takes precedence; }electric heating elements [H05B](#))
- U **C22B 5/00 General methods of reducing to metals**
- C22B 5/02 . Dry methods {smelting of sulfides or formation of mattes}
- C22B 7/00 Working up raw materials other than ores, e.g. scrap, to produce non-ferrous metals and compounds thereof; {Methods of a general interest or applied to the winning of more than two metals (-briquetting of scrap [C22B 1/248](#) ; preliminary treatment of scrap [C22B 1/005](#)-)}**
- U C22B 7/001 . {Dry processes}
- C22B 7/004 . . {separating two or more metals by melting out (liquation) i.e. heating above the temperature of the lower melting metal component(s); by fractional crystallisation (*controlled freezing*)}(~~controlled freezing~~)}
- C22B 7/009 . {General processes for recovering metals or metallic compounds from spent catalysts (-for recovering specific metals [C22B 11/00](#) to [C22B 61/00](#)-)}
- U **C22B 9/00 General processes of refining or remelting of metals; Apparatus for electroslag or arc remelting of metals**

- C22B 9/02
- Refining by liquating, filtering, centrifuging, distilling, or supersonic wave action {including acoustic waves; (-C22B 9/003 , C22B 9/006 , C22B 9/05 , C22B 9/22 take precedence-)}
- C22B 9/023
- {By filtering (-filtration of aluminium C22B 21/066-)}
- C22B 9/05
- Refining by treating with gases, e.g. gas flushing {also refining by means of a material generating gas in situ}
- C22B 9/10
- with refining or fluxing agents; use of materials therefor, {e.g. slagging or scorifying agents} (-C22B 9/18 takes precedence-){(-C22B 9/006 takes precedence-)}
- C22B 9/16
- Remelting metals (-liquating C22B 9/02-)
- C22B 9/18
- Electroslag remelting(-electroslag casting B22D 23/10-)}
- C22B 9/22
- With heating by wave energy or particle radiation ({ by acoustic waves C22B 9/026 })
- U C22B 9/221
- {by electromagnetic waves, e.g. by gas discharge lamps}
- C22B 9/223
- {by laser beams (-working by laser beam B23K 26/00-)}
- C22B 9/226
- {by electric discharge, e.g. plasma (-C22B 9/20 takes precedence; apparatus therefor H01J , H05B , H05H ; chemical reactions with metals in a plasma C22B 4/005-)}
- U C22B 11/00**
- Obtaining noble metals**
- C22B 11/04
- by wet processes(-C22B 3/16 takes precedence; treatment or purification of solutions by liquid-liquid extraction C22B 3/0005 , by ion exchange or by adsorption C22B 3/00 , C01G; C22B 3/16 , C22B 3/0005-)}
- U C22B 15/00**
- Obtaining copper**
- U C22B 15/0002
- {Preliminary treatment}
- U C22B 15/0004
- {without modification of the copper constituent}
- C22B 15/0008
- {by wet processes (-by flotation B03D-)}
- U C22B 15/001
- {with modification of the copper constituent}
- U C22B 15/0013
- {by roasting}
- C22B 15/0019
- {Chloridizing roasting (-segregation C22B 15/0023-)}
- C22B 15/0021
- {by reducing in gaseous or solid state (-slag reduction C22B 15/0054-)}
- U C22B 15/0063
- {Hydrometallurgy}
- C22B 15/0065
- {Leaching or slurring (-with organic compounds C22B 3/16-)}
- C22B 15/0084
- {Treating solutions (-with organic compounds C22B 3/0004-)}
- U C22B 19/00**
- Obtaining zinc or zinc oxide**
- U C22B 19/20
- Obtaining zinc otherwise than by distilling
- C22B 19/26
- Refining solutions {containing zinc values, e.g.}obtained by leaching zinc ores ({ treatment or purification of solutions by liquid-liquid extraction, by ion exchange or by adsorption C22B 3/00 })
- C22B 19/34
- Obtaining zinc oxide (-purifying zinc oxide C01G 9/02-)
- U C22B 21/00**
- Obtaining aluminium**
- C22B 21/0007
- {Preliminary treatment of ores or scrap or any other metal source (-Bayer processes C01F -Bayer processes C01F)}
- C22B 21/0015
- {by wet processes (-C22B 21/02 , C22B 21/04 and C22B 21/06 take precedence-)}
- C22B 21/0038
- {by other processes (-electrolysis C25C ; C22B 21/02 and C22B 21/04 take precedence-)}

- C22B 21/0069
- {from scrap, skimmings or any secondary source aluminium e.g. recovery of alloy constituents (~~C22B 21/0046~~ , ~~C22B 21/0053~~ and ~~C22B 21/0092~~ take precedence-)}
- C22B 21/0084
- {melting and handling molten aluminium (~~C22B 21/02~~ , ~~C22B 21/04~~ and ~~C22B 21/06~~ take precedence-)}
- C22B 21/02
- with reducing(~~C22B 21/04~~ takes precedence-)}
- C22B 21/04
- with alkali metals {earth alkali metals included}
- C22B 21/06
- refining{ electrolytic refining ~~C25C~~ ; (~~C22B 21/0046~~ , ~~C22B 21/0061~~ take precedence-)}
- C22B 21/062
- {using salt or fluxing agents (~~C22B 21/064~~ , ~~C22B 21/066~~ , and ~~C22B 21/068~~ take precedence-)}
- C22B 21/064
- {using inert or reactive gases (~~C22B 21/066~~ and ~~C22B 21/068~~ take precedence-)}
- C22B 21/066
- {Treatment of circulating aluminium, e.g. by filtration (~~C22B 21/068~~ takes precedence-)}
- U C22B 23/00 Obtaining nickel or cobalt**
- U C22B 23/02
- by dry processes
- C22B 23/025
- {with formation of a matte or by matte refining or converting into nickel or cobalt, e.g. by the Oxford process (~~leaching of mattes C22B 23/04~~-)}
- C22B 23/04
- by wet processes ({ recovery or separation of nickel or cobalt using organic agents ~~C22B 3/00~~ })
- C22B 23/0453
- {Treatment or purification of solutions, e.g. obtained by leaching (~~C22B 23/0407~~ takes precedence-)}
- U C22B 25/00 Obtaining tin**
- C22B 25/06
- from scrap, especially tin scrap (~~by electrolytic procedure C25C 1/14~~-)
- U C22B 30/00 Obtaining antimony, arsenic or bismuth**
- C22B 30/04
- Obtaining arsenic(~~C22B 3/16~~ , ~~C22B 3/0005~~ and ~~C22B 3/0098~~ take precedence-)}
- U C22B 34/00 Obtaining refractory metals**
- U C22B 34/10
- Obtaining titanium, zirconium or hafnium
- C22B 34/12
- • Obtaining titanium{ or titanium compounds from ores or scrap by metallurgical processing; preparation of titanium compounds from other titanium compounds see ~~C01G 23/00~~ to ~~C01G 23/08~~-}
- U C22B 34/1236
- • • {obtaining titanium or titanium compounds from ores or scrap by wet processes, e.g. by leaching}
- C22B 34/1259
- • • {treatment or purification of titanium containing solutions or liquors or slurries (~~C01G 23/001~~ takes precedence-)}
- C22B 34/1263
- • • {obtaining metallic titanium from titanium compounds, e.g. by reduction (~~C22B 34/129~~ takes precedence-)}
- C22B 34/1281
- • • • {using carbon containing agents, e.g. C, CO, carbides (~~C22B 34/1286~~takes precedence)}
- C22B 34/14
- • Obtaining zirconium or hafnium{ Treatment or purification of solutions by liquid-liquid extraction, by ion exchange or by adsorption ~~C22B 3/00~~ , ~~C01G 25/003~~ , ~~C01G 27/003~~-}
- U C22B 34/30
- Obtaining chromium, molybdenum or tungsten
- C22B 34/34
- • Obtaining molybdenum(~~C22B 3/0005~~ , ~~C22B 3/0098~~ and ~~C01G 39/003~~ take precedence; from catalyst or superalloy scrap : see also ~~C22B 7/00~~-)}
- C22B 41/00 Obtaining germanium(~~C22B 3/0005~~ and ~~C22B 3/0098~~ takes precedence-)}**

- U C22B 47/00** **Obtaining manganese**
- U C22B 47/0018 · {Treating ocean floor nodules}
 - U C22B 47/0045 · · {by wet processes}
 - U C22B 47/0054 · · · {leaching processes}
 - C22B 47/0063 · · · · {with acids or salt solutions (~~C22B 47/0072~~ takes precedence)}
 - C22B 47/0081 · · · {Treatment or purification of solutions, e.g. obtained by leaching (~~C22B 47/0054~~ takes precedence)}
- C22B 58/00** **Obtaining gallium or indium{(treatment or purification of solutions by liquid-liquid extraction, by ion exchange or by adsorption ~~C22B 3/0004~~)}**
- U C22B 60/00** **Obtaining metals of atomic number 87 or higher, i.e. radioactive metals**
- U C22B 60/02 · Obtaining thorium, uranium, or other actinides
 - U C22B 60/0204 · · {obtaining uranium}
 - U C22B 60/0217 · · · {by wet processes}
 - C22B 60/0252 · · · · {treatment or purification of solutions or of liquors or of slurries (~~C22B 60/0221~~ takes precedence)}
 - U C22B 60/0265 · · · · · {extraction by solid resins}
 - C22B 60/0273 · · · · · · {Extraction by titanium containing adsorbents, e.g. by hydrous titanium oxide (~~C22B 60/0269~~ takes precedence)}
 - C22B 60/0278 · · · · · {by chemical methods (~~C22B 60/0256~~ , ~~C22B 60/026~~ , or ~~C22B 60/0265~~ take precedence)}
- C22B 61/00** **Obtaining metals not elsewhere provided for in this subclass (~~iron ~~C21~~~~)**

Project: N/A (C22C)

- U C22C 1/00** **Making alloys (powder-metallurgical apparatus or processes, not specially modified for making alloys ~~B22F~~; by electrothermal methods ~~C22B 4/00~~; by electrolysis ~~C25C~~)**
- U C22C 1/04 · by powder metallurgy (~~C22C 1/08~~ , {~~C22C 1/05~~ , ~~C22C 1/10~~ , ~~C22C 32/00~~ , ~~C22C 47/00~~ , ~~C22C 49/00~~} take precedence)
 - C22C 1/0483 · · {Alloys based on the low melting point metals Zn, Pb, Sn, Cd, In or Ga}
 - U C22C 1/05 · · Mixtures of metal powder with non-metallic powder (~~C22C 1/08~~ , {~~C22C 47/00~~ , ~~C22C 49/00~~} take precedence)
 - C22C 1/058 · · · {by reaction sintering (*i.e. gasless reaction starting from a mixture of solid metal compounds*)}(~~*i.e. gasless reaction starting from a mixture of solid metal compounds*~~)}
 - U C22C 1/10 · Alloys containing non-metals ({ ~~C22C 1/05~~ , ~~C22C 1/08~~ , { ~~C22C 47/00~~ , ~~C22C 49/00~~} take precedence)
 - C22C 1/1005 · · {Pretreatment of the non-metallic additives (pretreatment of non-metallic fibres ~~C22C 47/02~~)}
- WARNING**
Groups ~~C22C 1/1005~~ , ~~C22C 1/101~~ and ~~C22C 1/1015~~ are not complete, see also ~~C22C 1/10~~
- C22C 1/101 · · · {by coating}
 - C22C 1/1015 · · · {by preparing or treating a non-metallic additive preform}
 - C22C 1/1084 · · {by mechanical alloying (*blending, milling*)}(~~*blending, milling*~~)}
- U C22C 19/00** **Alloys based on nickel or cobalt**

- C22C 19/007
- ~~{with a light metal (alkali metal Li, Na, K, Rb, Cs; earth alkali metal Be, Mg, Ca, Sr, Ba, Al Ga, Ge, Ti)}~~ or B, Si, Zr, Hf, Sc, Y, lanthanides, actinides, as the next major constituent
- U C22C 32/00** **Non-ferrous alloys containing at least 5% by weight but less than 50% by weight of oxides, carbides, borides, nitrides, silicides or other metal compounds, e.g. oxynitrides, sulfides whether added as such or formed in situ**
- NOTE
This group comprises also dispersion hardened alloys with less than 5% of dispersed compounds
- C22C 32/0005
- ~~{with at least one oxides and at least one of carbides, nitrides, borides or silicides as the main non-metallic constituents}~~
- C22C 32/001
- ~~{with only oxides}~~
- U C22C 32/0015**
- ~~{with only single oxide(s) as non-metallic constituent(s)}~~
- C22C 32/0026
- ~~{matrix based on Ni, Co, Cr, or alloys thereof ; on Fe for only ODS steels (matrix based on Fe other than ODS steels [C22C 33/00](#), by powder metallurgy [C22C 33/02](#))}~~
- C22C 32/0084
- ~~{carbon or graphite as the non-metallic constituent}~~
- C22C 32/0094
- ~~{with organic materials as the non-metallic constituent e.g. resin}~~
- U C22C 33/00** **Making ferrous alloys**
- U C22C 33/02**
- by powder metallurgy (working metallic powder [B22F](#))
- C22C 33/025
- ~~{having an intermetallic of the REM-Fe type which is not magnetic}~~
- U C22C 33/0257**
- ~~{characterised by the range of the alloying elements}~~
- C22C 33/0264
- ~~{the maximum content of each alloying element not exceeding 5%}~~
- C22C 33/0271
- ~~{with only C, Mn, Si, P, S, As as alloying elements, e.g. carbon steel}~~
- C22C 33/0278
- ~~{with at least one alloying element having a minimum content above 5%}~~
- C22C 33/0285
- ~~{with Cr, Co, or Ni having a minimum content higher than 5%}~~
- C22C 33/0292
- ~~{with more than 5% preformed carbides, nitrides or borides}~~
- U C22C 47/00** **Making alloys containing metallic or non-metallic fibres or filaments**
- U C22C 47/02**
- Pretreatment of the fibres or filaments
- C22C 47/025
- ~~{Aligning or orienting the fibres}~~
- WARNING
Not complete, see also [C22C 47/02](#)
- U C22C 47/06**
- ~~{by forming the fibres or filaments into a preformed structure, e.g. using a temporary binder to form a mat-like element}~~
- C22C 47/062
- ~~{from wires or filaments only}~~
- WARNING
Groups [C22C 47/062](#), [C22C 47/064](#), [C22C 47/066](#) and [C22C 47/068](#) are not complete, see also [C22C 47/02](#) or [C22C 47/06](#)
- C22C 47/064
- ~~{Winding wires}~~
- C22C 47/066
- ~~{Weaving wires}~~
- C22C 47/068
- ~~{Aligning wires}~~

Project: N/A (C23C)

C23C

COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; SURFACE TREATMENT OF METALLIC MATERIAL BY DIFFUSION INTO THE SURFACE, BY CHEMICAL CONVERSION OR SUBSTITUTION; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL (applying liquids or other fluent materials to surfaces in general [B05](#); making metal-coated products by extrusion [B21C 23/22](#); covering with metal by connecting pre-existing layers to articles, see the relevant places, e.g. [B21D 39/00](#), [B23K](#); working of metal by the action of a high concentration of electric current on a workpiece using an electrode [B23H](#); metallising of glass [C03C](#); metallising mortars, concrete, artificial stone, ceramics or natural stone [C04B 41/00](#); paints varnishes, laquers [C09D](#); enamelling of, or applying a vitreous layer to, metals [C23D](#); inhibiting corrosion of metallic material or incrustation in general [C23F](#); single-crystal film growth [C30B](#); manufacture of semiconductor devices [H01L](#); manufacture of printed circuits [H05K](#))

NOTE

In this subclass, an operation is considered as pre-treatment or after-treatment when it is specially adapted for, but quite distinct from, the coating process concerned and constitutes an independent operation. If an operation results in the formation of a permanent sub- or upper layer, it is not considered as pre-treatment or after-treatment and is classified as a multi-coating process.

WARNING

1. Groups [C23C 28/30](#) to [C23C 28/44](#) do not correspond to former or current IPC-groups. Concordance CPC : IPC for these groups is as follows - [C23C 28/30](#) - [C23C 28/44](#) : [C23C 28/00](#)

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C23C 14/36](#) to [C23C 14/44](#) covered by
[C23C 14/34](#) + subgr.

The following IPC group is not used in the CPC system. Subject-matter covered by the group is classified in the following CPC groups : [C23C 18/28](#) covered by [C23C 18/2006](#) - [C23C 18/2093](#)

C23C 2/00 -
C23C 6/00

Coating by applying the coating material in the molten state (casting [B22D](#), e.g. [B22D 19/08](#), [B22D 23/04](#), [B29](#); built-up welding [B23K](#), e.g. [B23K 5/18](#), [B23K 9/04](#))

C23C 2/02

- Pre-treatment of the material to be coated, e.g. for coating on selected surface areas (-[C23C 2/30](#) takes precedence-)

C23C 2/14

- Removing excess of molten coatings; Controlling or regulating the coating thickness (-controlling or regulating thickness in general [G05D 5/02](#)-)

C23C 2/26

- After-treatment (-[C23C 2/14](#) takes precedence-)

C23C 2/30

- Fluxes or coverings on molten baths (-[C23C 2/22](#) takes precedence-)

C23C 2/32

- using vibratory energy applied to the bath or substrate (-[C23C 2/14](#) takes precedence-)

C23C 2/34

- characterised by the shape of the material to be treated (-[C23C 2/14](#) takes precedence-)

C23C 4/00

Coating by spraying the coating material in the molten state, e.g. by flame, plasma or electric discharge (-spraying guns [B05B](#); making alloys containing fibres or filaments by thermal spraying of metal [C22C 47/16](#); plasma guns [H05H](#)-)

U C23C 4/04

- characterised by the coating material

- C23C 4/06
- • Metallic material {e.g. mixture of metallic alloys and hard particles like SiC and WC (-C23C 4/085 takes precedence-)}
- U C23C 4/12
- characterised by the method of spraying
- C23C 4/122
- • {utilising detonation (-apparatus for spraying by means of detonations in general B05B 7/0006-)}
- C23C 4/124
- • {utilising flame spraying (-apparatus for spraying by means of flame in general B05B 7/20-)}
- C23C 4/125
- • {utilising wire arc spraying (-apparatus for spraying by means of electric arc in general B05B 7/22-)}
- C23C 4/127
- • {utilising plasma spraying (-plasma torches in general H05H 1/26 , apparatus for spraying by means of electric arc in general B05B 7/22-)}
- C23C 8/00**
- Solid state diffusion of only non-metal elements into metallic material surfaces (-diffusion of silicon C23C 10/00-); Chemical surface treatment of metallic material by reaction of the surface with a reactive gas, leaving reaction products of surface material in the coating, e.g. conversion coatings, passivation of metals (-C23C 14/00 takes precedence-)**
- C23C 8/02
- Pre-treatment of the material to be coated (-C23C 8/04 takes precedence-)
- C23C 8/06
- using gases (-C23C 8/36 takes precedence-)
- C23C 8/36
- • using ionised gases, e.g. ionitriding (-discharge tubes with provision for introducing objects or material to be exposed to the discharge H01J 37/00-)
- C23C 8/60
- using solids, e.g. powders, pastes (-using liquid suspensions of solids C23C 8/40-)
- U **C23C 10/00**
- Solid state diffusion of only metal elements or silicon into metallic material surfaces**
- C23C 10/02
- Pretreatment of the material to be coated (-C23C 10/04 takes precedence-)
- U C23C 10/28
- using solids, e.g. powders, pastes
- C23C 10/30
- • using a layer of powder or paste on the surface (-using liquid suspensions of solids C23C 10/18-)
- U **C23C 12/00**
- Solid state diffusion of at least one non-metal element other than silicon and at least one metal element or silicon into metallic material surfaces**
- C23C 12/02
- Diffusion in one step
- C23C 14/00**
- Coating by vacuum evaporation, by sputtering or by ion implantation of the coating forming material (-discharge tubes with provision for introducing objects or material to be exposed to the discharge H01J 37/00-)**
- C23C 14/02
- Pre-treatment of the material to be coated (-C23C 14/04 takes precedence-)
- C23C 14/024
- • {Deposition of sublayers, e.g. to promote adhesion of the coating (-C23C 14/027 takes precedence-)}
- C23C 14/06
- characterised by the coating material ({ C23C 14/0021 } , C23C 14/04 take precedence-)
- C23C 14/0641
- • {Nitrides (-C23C 14/0617 takes precedence-)}
- C23C 14/08
- • Oxides (-C23C 14/10 takes precedence-)
- U C23C 14/22
- characterised by the process of coating
- C23C 14/221
- • {Ion beam deposition (-C23C 14/46 , C23C 14/48 take precedence-)}
- U C23C 14/24
- • Vacuum evaporation
- C23C 14/243
- • • {Crucibles for source material (-C23C 14/28 , C23C 14/30 take precedence-)}
- C23C 14/28
- • • by wave energy or particle radiation (-C23C 14/32 to C23C 14/48 take precedence-)

- C23C 14/32
 - • • by explosion; by evaporation and subsequent ionisation of the vapours {e.g. ion-plating}{(-C23C 14/34 to C23C 14/48 take precedence-)}
- U C23C 14/34
 - • Sputtering
- C23C 14/3457
 - • • {using other particles than noble gas ions (-C23C 14/0036 , C23C 14/46 take precedence-)}
- C23C 14/3464
 - • • {using more than one target (-C23C 14/56 takes precedence-)}
- C23C 14/35
 - • • by application of a magnetic field, e.g. magnetron sputtering{(-C23C 14/3457 takes precedence-)}
- C23C 14/352
 - • • • {using more than one target (-C23C 14/56 takes precedence-)}
- C23C 14/54
 - • Controlling or regulating the coating process (-controlling or regulating in general G05-)
- U C23C 14/56
 - • Apparatus specially adapted for continuous coating; Arrangements for maintaining the vacuum, e.g. vacuum locks
- C23C 14/568
 - • • {Transferring the substrates through a series of coating stations (-C23C 14/562 takes precedence-)}
- U C23C 14/58
 - After-treatment
- C23C 14/5886
 - • {Mechanical treatment (involving removal of material C23C 14/588)}
- C23C 16/00 -
C23C 20/00
C23C 16/00**

Chemical deposition or plating by decomposition; Contact plating (-solid state diffusion C23C 8/00 to C23C 12/00-)

Chemical coating by decomposition of gaseous compounds, without leaving reaction products of surface material in the coating, i.e. chemical vapour deposition (CVD) processes (-reactive sputtering or vacuum evaporation C23C 14/00-)
- C23C 16/02
 - Pretreatment of the material to be coated (-C23C 16/04 takes precedence-)
- U C23C 16/0209
 - • {by heating}
- C23C 16/0218
 - • • {in a reactive atmosphere (-C23C 16/0227 takes precedence-)}
- U C23C 16/0272
 - • {Deposition of sub-layers, e.g. to promote the adhesion of the main coating}
- C23C 16/0281
 - • • {of metallic sub-layers (-C23C 16/029 takes precedence-)}
- U C23C 16/22
 - characterised by the deposition of inorganic material, other than metallic material
- U C23C 16/30
 - • Deposition of compounds, mixtures or solid solutions, e.g. borides, carbides, nitrides
- C23C 16/34
 - • • Nitrides{(-C23C 16/303 takes precedence-)}
- C23C 16/44
 - characterised by the method of coating (-C23C 16/04 takes precedence-)
- C23C 16/4411
 - • {Cooling of the reaction chamber walls (-C23C 16/45572 takes precedence-)}
- C23C 16/4418
 - • {Methods for making free-standing articles (-C23C 16/01 takes precedence-)}
- U C23C 16/448
 - • characterised by the method used for generating reactive gas streams, e.g. by evaporation or sublimation of precursor materials
- C23C 16/4481
 - • • {by evaporation using carrier gas in contact with the source material (-C23C 16/4486 takes precedence-)}
- C23C 16/4485
 - • • {by evaporation without using carrier gas in contact with the source material (-C23C 16/4486 takes precedence-)}
- C23C 16/453
 - • passing the reaction gases through burners or torches, e.g. atmospheric pressure CVD (-C23C 16/513 takes precedence; for flame or plasma spraying of coating material in the molten state C23C 4/00-)
- U C23C 16/455
 - • characterised by the method used for introducing gases into reaction chamber or for modifying gas flows in reaction chamber
- U C23C 16/45523
 - • • {Pulsed gas flow or change of composition over time}

- U C23C 16/45525 {Atomic layer deposition (ALD)}
- U C23C 16/45527 {characterized by the ALD cycle, e.g. different flows or temperatures during half-reactions, unusual pulsing sequence, use of precursor mixtures or auxiliary reactants or activations}
- U C23C 16/45536 {Use of plasma, radiation or electromagnetic fields}
- C23C 16/4554 {Plasma being used non-continuously in between ALD reactions (-C23C 16/56 takes precedence-)}
- U C23C 16/458 . . . characterised by the method used for supporting substrates in the reaction chamber
- C23C 16/4582 . . . {Rigid and flat substrates, e.g. plates or discs (-C23C 16/4581 takes precedence-)}
- C23C 16/46 . . . characterised by the method used for heating the substrate (-C23C 16/48 , C23C 16/50 take precedence-)
- C23C 16/50 . . . using electric discharges{(-generation and control of plasma in discharge tubes for surface treatment H01J 37/32 , H01J 37/34-)}
- C23C 16/517 . . . using a combination of discharges covered by two or more of groups C23C 16/503 to C23C 16/515
- C23C 16/52 . . . Controlling or regulating the coating process ({ C23C 16/45557 , C23C 16/279 take precedence }); controlling or regulating in general G05)

C23C 18/00

Chemical coating by decomposition of either liquid compounds or solutions of the coating forming compounds, without leaving reaction products of surface material in the coating (-chemical surface reaction C23C 8/00 , C23C 22/00-); Contact plating

NOTE

This groups covers also suspensions containing reactive liquids and non-reactive solid particles.

- U C23C 18/02 . . . by thermal decomposition
 - C23C 18/04 . . . Pre-treatment of the material to be coated (-C23C 18/06 takes precedence-)
 - U C23C 18/12 . . . characterised by the deposition of inorganic material other than metallic material
- WARNING
Groups C23C 18/1204 to C23C 18/1295 are not complete pending a reorganisation. See also this group
- U C23C 18/1204 . . . {inorganic material, e.g. non-oxide and non-metallic such as sulfides, nitrides based compounds}
 - U C23C 18/1208 {Oxides, e.g. ceramics}
 - C23C 18/1216 {Metal oxides (-C23C 18/1212 takes precedence-)}
 - C23C 18/16 . . . by reduction or substitution, e.g. electroless plating (-C23C 18/54 takes precedence-)
 - U C23C 18/1601 . . . {Process or apparatus}
 - U C23C 18/1633 . . . {Process of electroless plating}
 - U C23C 18/1635 {Composition of the substrate}
 - U C23C 18/1639 {Substrates other than metallic, e.g. inorganic or organic or non-conductive}
 - C23C 18/1642 {semiconductor (-semiconductor H01L 21/288-)}
 - U C23C 18/1646 {Characteristics of the product obtained}
 - C23C 18/165 {Multilayered product (layered product B32B)}
 - U C23C 18/1675 {Process conditions}

- C23C 18/1683 {Control of electrolyte composition, e.g. measurement, adjustment (-regeneration of bath [C23C 18/1617-](#))}
- U C23C 18/18 . . Pre-treatment of the material to be coated
- U C23C 18/20 . . . of organic surfaces, e.g. resins
- C23C 18/2006 {-by other methods than those of [C23C 18/22](#) to [C23C 18/30](#)-}
- U C23C 18/2046 {by chemical pretreatment}
- U C23C 18/2053 {only one step pretreatment}
- C23C 18/206 {Use of metal other than noble metals and tin, e.g. activation, sensitisation with metals (-Sensitising with tin [C23C 18/285](#) , sensitising with noble metals [C23C 18/30-](#))}
- U C23C 18/31 . . Coating with metals
- C23C 18/32 . . . Coating with nickel, cobalt or mixtures thereof with phosphorus or boron (-[C23C 18/50](#) takes precedence-)
- C23C 18/52 . . using reducing agents for coating with metallic material not provided for in a single one of groups [C23C 18/32](#) to [C23C 18/50](#)
- C23C 20/00** **Chemical coating by decomposition of either solid compounds or suspensions of the coating forming compounds, without leaving reaction products of surface material in the coating (-chemical surface reaction [C23C 8/00](#) , [C23C 22/00-](#))**
- NOTE
This group covers also suspensions containing non-reactive liquids and reactive solid particles.
- C23C 22/00 -
C23C 30/00
C23C 22/00** **Chemical surface treatment of metallic material by reaction of the surface with a reactive medium (-with a reactive gas [C23C 8/00-](#))**
- Chemical surface treatment of metallic material by reaction of the surface with a reactive liquid, leaving reaction products of surface material in the coating, e.g. conversion coatings, passivation of metals (-wash primers [C09D 5/12-](#))**
- NOTES
This group covers also suspensions containing reactive liquids and non-reactive solid particles.
In groups [C23C 22/02](#) to [C23C 22/86](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.
Rejuvenating of the bath is classified in the appropriate place for the specific bath composition.
- U C23C 22/73 . . characterised by the process
- C23C 22/77 . . Controlling or regulating of the coating process (-controlling or regulating in general [G05-](#))
- C23C 22/86 . . Regeneration of coating baths
- C23C 24/00** **Coating starting from inorganic powder (-spraying of the coating material in molten state [C23C 4/00](#) ; solid state diffusion [C23C 8/00](#) to [C23C 12/00](#) ; manufacture of composite layers, workpieces or articles by sintering metallic powder [B22F 7/00](#) ; friction welding [B23K 20/12-](#))**
- C23C 24/08 . . by application of heat or pressure and heat (-[C23C 24/04](#) takes precedence-)
- C23C 26/00** **Coating not provided for in groups [C23C 2/00](#) to [C23C 24/00](#)**
- C23C 26/02 . . applying molten material to the substrate (-applying melts to surfaces, in general [B05-](#))

- C23C 28/00** Coating for obtaining at least two superposed coatings either by methods not provided for in a single one of groups [C23C 2/00](#) to [C23C 26/00](#) or by combinations of methods provided for in subclasses [C23C](#) and [C25C](#) or [C25D](#)
- C23C 28/02 · only coatings {only including layers} of metallic material
- C23C 30/00** Coating with metallic material characterised only by the composition of the metallic material, i.e. not characterised by the coating process (- [C23C 26/00](#) , [C23C 28/00](#) take precedence)

Project: N/A (C23D)

- C23D** ENAMELLING OF, OR APPLYING A VITREOUS LAYER TO, METALS (chemical composition of the enamels [C03C](#))
- C23D 3/00** Chemical treatment of the metal surfaces prior to coating (-cleaning and degreasing of metallic objects [C23G](#)-)
- C23D 5/00** Coating with enamels or vitreous layers ({-including applying fused refractory layers [C23C 4/10](#) , [C23C 24/10](#)-})

Project: N/A (C25D)

- U C25D 1/00** **Electroforming**
- C25D 1/003 · {-3D structures, e.g. superposed patterned layers}
- C25D 1/006 · {-Nanostructures, e.g. aluminum anodic oxidation templates [AAO]}
- U C25D 3/00** **Electroplating: Baths therefor**
- U C25D 3/02 · from solutions ([C25D5/24](#) to [C25D5/32](#) take precedence)
- U C25D 3/56 · · of alloys
- C25D 3/562 · · · {-containing more than 50% by weight of iron or nickel or cobalt { ; NiP, FeP, CoP (Phosphatising [C25D 11/36](#))}}
- U C25D 3/66 · from melts
- C25D 3/665 · · {-from ionic liquids}
- WARNING
Group [C25D 3/665](#) is not complete, pending reorganization, see also [C25D 3/66](#)
- U C25D 5/00** **Electroplating characterised by the process; Pretreatment or after-treatment of work-pieces**
- C25D 5/003 · {-Electroplating characterised by the use of gases, e.g. pressure influence (removal or gases or vapours, [C25D 21/04](#))}
- WARNING
Groups [C25D 5/003](#), [C25D 5/006](#) are not complete, pending reorganization, see also [C25D 5/00](#)
- C25D 5/006 · {-Electroplating with applied electromagnetic field, not locally , e.g. for plating magnetic layers}
- U C25D 5/02 · Electroplating of selected surface areas
- C25D 5/022 · · {-using masking means {([C25D 11/022](#) takes precedence)}}
- C25D 5/028 · · {-one side electroplating { , e.g. substrate conveyed in a bath with inhibited background plating}}
- U C25D 7/00** **Electroplating characterised by the article coated**

- C25D 7/001
- {-Magnets}
- WARNING
Groups [C25D 7/001-C25D 7/008](#) are not complete, pending reorganization, see also [C25D 7/00](#)
- C25D 7/003
- {-Threaded pieces, e.g. bolts, nuts}
- C25D 7/005
- {-Jewels or clockworks}
- C25D 7/006
- {-Nanoparticles}
- C25D 7/008
- {-Thermal barrier coatings}
- U C25D 7/12
- Semiconductors { without seed layer}
- C25D 7/123
- • {-Semiconductors first coated with a seed layer for filling vias}
- WARNING
Groups [C25D 7/123-C25D 7/126](#) are not complete, pending reorganization, see also [C25D 7/12](#)
- C25D 7/126
- • {-Semiconductors first coated with a seed layer for solar cells}
- U **C25D 11/00** **Electrolytic coating by surface reaction, i.e. forming conversion layers**
- C25D 11/005
- {-Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating [C25D 17/00](#))}
- WARNING
Groups [C25D 11/005](#), [C25D 11/022-C25D 11/028](#), [C25D 11/045](#) are not complete, pending reorganization, see also [C25D 11/00](#)
- U C25D 11/02
- Anodisation
- C25D 11/022
- • {-Anodisation on selected surface areas}
- C25D 11/026
- • {-Anodisation with spark discharge [ANOF]}
- C25D 11/028
- • {-Borodising,, i.e. borides formed electrochemically}
- U C25D 11/04
- • of aluminium or alloys based thereon
- C25D 11/045
- • • {-for forming AAO templates}
- C25D 11/36
- Phosphatising {, e.g. NiP, CoP, FeP- (bath solutions of NiP, CoP, FeP [C25D 3/562](#))}
- U **C25D 13/00** **Electrophoretic coating ([C25D 15/00](#) takes precedence; apparatus for continuously conveying articles into baths [B65G](#), e.g. [B65G 49/00](#))**
- C25D 13/10
- characterised by the additives used {not used, see [C09D 5/448](#)}
- U **C25D 17/00** **Constructional parts, or assemblies thereof, of cells for electrolytic coating (apparatus for continuously conveying articles into baths [B65G](#), e.g. [B65G 49/00](#); electric devices see the relevant classes, e.g. [H01B](#), [H02G](#)) {([C25D 7/06](#), [C25D 11/005](#), [C25D 13/22](#), [C25](#) takes precedence)}**
- C25D 17/001
- {-Apparatus specially adapted for plating wafers, e.g. semiconductors, solar cells}
- WARNING
Groups [C25D 17/005-C25D 17/008](#) are not complete, pending reorganization, see also [C25D 17/00](#)
- C25D 17/002
- {-Cell separation, e.g. membranes, diaphragms}
- C25D 17/004
- {-Sealing devices}
- C25D 17/005
- {-Contacting devices}
- C25D 17/007
- {-Current conducting devices}

- C25D 17/008
- {-Current insulating devices}
- U C25D 17/06
- Suspending or supporting devices for articles to be coated
- C25D 17/08
- · {-Supporting} racks{ i.e. not for suspending}
- U C25D 21/00** **Processes for servicing or operating cells for electrolytic coating**
- C25D 21/04
- Removal of gases or vapours {; gas or pressure control-(electroplating characterized by the use of gases [C25D 5/003](#))}
- C25D 21/06
- Filtering { particles other than ions-(filtering ions [C25D 21/22](#))}

Project: N/A (C30B)

- U C30B 7/00** **Single-crystal growth from solutions using solvents which are liquid at normal temperature, e.g. aqueous solutions (from molten solvents [C30B 9/00](#); by normal or gradient freezing [C30B 11/00](#); under a protective fluid [C30B 27/00](#))**
- C30B 7/005
- {-Epitaxial layer growth}
- WARNING
Group [C30B 7/005](#) is not complete, see also [C30B 7/00](#)
- U C30B 7/10
- by application of pressure, e.g. hydrothermal processes
- C30B 7/105
- · {-using ammonia as solvent, i.e. ammonothermal processes}
- U C30B 15/00** **Single-crystal growth by pulling from a melt, e.g. Czochralski method (under a protective fluid [C30B 27/00](#))**
- U C30B 15/20
- Controlling or regulating (controlling or regulating in general [G05](#))
- C30B 15/203
- · {-the relationship of pull rate (v) to axial thermal gradient (G)}
- C30B 15/206
- · {-the thermal history of growing the ingot}
- U C30B 23/00** **Single-crystal growth by condensing evaporated or sublimed material**
- NOTE
Groups [C30B 23/002](#) to [C30B 23/005](#) take precedence over groups [C30B 23/007](#) to [C30B 23/08](#)
- WARNING
Group [C30B 23/002](#) to [C30B 23/005](#) are not complete, see also [C30B 23/02](#)
- C30B 23/002
- {-Controlling or regulating}
- C30B 23/005
- · {-Controlling or regulating flux or flow of depositing species or vapour}
- U C30B 23/02
- Epitaxial-layer growth
- C30B 23/025
- · {-characterised by the substrate}
- U C30B 23/06
- · Heating of the deposition chamber, the substrate or the material to be evaporated
- C30B 23/063
- · · {-Heating of the substrate}
- WARNING
Group [C30B 23/063](#) is not complete, see also [C30B 23/06](#)
- C30B 23/066
- · · {-Heating of the material to be evaporated}
- WARNING
Group [C30B 23/066](#) is not complete, see also [C30B 23/06](#)
- U C30B 25/00** **Single-crystal growth by chemical reaction of reactive gases, e.g. chemical vapour-deposition growth**
- U C30B 25/02
- Epitaxial-layer growth

- U C30B 25/16
C30B 25/165
- · Controlling or regulating (controlling or regulating in general [G05](#))
 - · · {-the flow of the reactive gases}
- WARNING
Not complete pending reclassification, see also group [C30B 25/14](#)
- U C30B 25/18
C30B 25/183
- · characterised by the substrate
 - · · {-being provided with a buffer layer, e.g. a lattice matching layer}
- WARNING
This group is not complete pending reclassification; see also [C30B 25/18](#) and subgroups
- C30B 25/186
- · · {-being specially pre-treated by e.g. chemical or physical means}
- U C30B 29/00** **Single crystals or homogeneous polycrystalline material with defined structure characterised by the material or by their shape (alloys [C22C](#))**
- NOTE
In groups [C30B 29/02](#) to [C30B 29/58](#), in the absence of an indication to the contrary, a material is classified in the last appropriate place.
- U C30B 29/10
- Inorganic compounds or compositions
- U C30B 29/16
- · Oxides
- U C30B 29/22
- · · Complex oxides
- C30B 29/225
- · · · {-based on rare earth copper oxides, e.g. high T-superconductors}
- U C30B 29/60
- characterised by shape
- C30B 29/602
- · {-Nanotubes}
- U C30B 35/00** **Apparatus in general, specially adapted for the growth, production or after-treatment of single crystals or a homogeneous polycrystalline material with defined structure**
- C30B 35/007
- {-Apparatus for preparing, pre-treating the source material to be used for crystal growth}
- WARNING
This group is not complete pending reclassification; see also groups pertaining to the different crystal growth methods, particularly the main groups of subclass [C30B](#)

Project: N/A (C40B)

- U C40B 40/00** **Libraries per se, e.g. arrays, mixtures**
- U C40B 40/04
- Libraries containing only organic compounds
- NOTE
Libraries containing salts of organic compounds are classified in the groups for the libraries containing the parent compound
- C40B 40/14
- · Libraries containing macromolecular compounds and not covered by groups [C40B 40/06](#) to [C40B 40/12](#)

Project: N/A (D01C)

- D01C 5/00** **Carbonising rags, { threads or fabrics} to recover animal fibres, { i.e. chemical removal of vegetable impurities (treatment of threads or fabrics of animal fibres for other purposes than removal of vegetable impurities [D06L](#) or [D06M](#))}**

Project: N/A (D01D)

- U D01D 4/00** **Spinnerette packs; Cleaning thereof** ([D01D 5/0069](#), [D01D 5/24](#), [D01D 5/253](#), [D01D 5/28](#) take precedence)
- U D01D 4/02
D01D 4/025
- Spinnerettes (alloys therefor [C22C](#))
 - · {-Melt-blowing or solution-blowing dies}
- U D01D 5/00** **Formation of filaments, threads, or the like**
- D01D 5/0007
- {-Electro-spinning (non-woven fabrics produced by electro-spinning [D04H 1/728](#))}
- D01D 5/0015
- · {-characterised by the initial state of the material}
- D01D 5/0023
- · · {-the material being a polymer melt}
- D01D 5/003
- · · {-the material being a polymer solution or dispersion ([D01D 5/0053](#) takes precedence)}
- D01D 5/0038
- · · · {-the fibre formed by solvent evaporation, i.e. dry electro-spinning}
- D01D 5/0046
- · · · {-the fibre formed by coagulation, i.e. wet electro-spinning}
- D01D 5/0053
- · · {-the material being a low molecular weight compound or an oligomer, and the fibres being formed by self-assembly}
- D01D 5/0061
- · {-characterised by the electro-spinning apparatus}
- D01D 5/0069
- · · {-characterised by the spinning section, e.g. capillary tube, protrusion or pin}
- D01D 5/0076
- · · {-characterised by the collecting device, e.g. drum, wheel, endless belt, plate or grid ([D01D 5/0046](#) takes precedence)}
- D01D 5/0084
- · · · {-Coating by electro-spinning, i.e. the electro-spun fibres are not removed from the collecting device but remain integral with it, e.g. coating of prostheses}
- D01D 5/0092
- · · {-characterised by the electrical field, e.g. combined with a magnetic fields, using biased or alternating fields}

Project: N/A (D01F)

- U D01F 11/00** **Chemical after-treatment of artificial filaments or the like during manufacture** ([of artificial filaments from softened glass, minerals or slags C03C](#); [from ceramics C04B](#)); finishing [D06M](#))
- U D01F 11/10
- of carbon
- U D01F 11/12
- · with inorganic substances {Intercalation}
- D01F 11/129
- · · {-Intercalated carbon- or graphite fibres}

Project: N/A (D01G)

- U D01G 99/00** **Subject matter not provided for in other groups of this subclass**
- D01G 99/005
- {-Conditioning of textile fibre during treatment before spinning (conditioning during spinning or twisting [D01H 13/30](#))}

Project: N/A (D01H)

- U D01H 1/00** **Spinning or twisting machines in which the product is wound-up continuously** (open-end spinning machines [D01H 4/00](#); {doubling of yarns [B65H 54/00+T](#); doubled, plied or cabled threads [D02G 3/28](#), e.g. using hollow spindles [D02G 3/283](#); spin-twisting [D02G 3/281](#); threads with alternately "S" and "Z" direction of twist, e.g. self-twist process, [D02G 3/286](#); wrapping strands of filaments or staple fibres by a binder yarn [D02G 3/38](#))}
- U D01H 1/14
- Details (drafting arrangements [D01H 5/00](#); twisting arrangements [D01H 7/00](#))

- U D01H 1/20
 - • Driving or stopping arrangements (for open-end spinning machines [D01H 4/12](#), [D01H 4/20](#), [D01H 4/42](#); safety devices [D01H 13/14](#))
- U D01H 1/32
 - • • for complete machines
- D01H 1/34
 - • • with two or more speeds; with variable-speed arrangements {e.g. variation of machine speed according to growing bobbin diameter-(responsive to reduction in material tension [D01H 13/16](#))}
- U D01H 5/00

Drafting machines or arrangements {Threading of roving into drafting machine}{arrangements in which draft is dependent on linear movement of take-up spindles, e.g. in mules, [D01H 3/00](#); devices for combing or orienting fibres for open-end spinning machines [D01H 4/30](#); {increasing the strength of a roving or sliver by false-twisting [D01H 7/92](#), during drafting [D01H 5/28](#), after drafting and before spinning according to groups [D01H 1/02](#) to [D01H 1/08](#), [D01H 7/90](#); depositing materials in cans after drafting [B65H 54/76 + T](#)}
- U D01H 5/18
 - Drafting machines or arrangements without fallers or like pinned bars
- U D01H 5/60
 - • Arrangements maintaining drafting elements free of fibre accumulations
- D01H 5/66
 - • • Suction devices {exclusively; -([D01H 5/625](#) and [D01H 5/645](#) take precedence; in cooperation with thread breakage detecting means [D01H 13/1691](#))}
- U D01H 7/00

Spinning or twisting arrangements (for open-end spinning [D01H 4/00](#))
- D01H 7/92
 - for imparting transient twist {i.e. false twist-([D01H 1/11](#) takes precedence)}
- U D01H 9/00

Arrangements for replacing or removing bobbins, cores, receptacles, or completed packages at paying-out or take-up stations (arrangements of general interest in the winding of filamentary material { [B65H 67/00](#)}){ ; Combination of spinning-winding machine}
- D01H 9/18
 - for supplying bobbins, cores, receptacles, or completed packages to, or transporting from, paying-out or take-up stations ([D01H 9/10](#) takes precedence); {Arrangements to prevent unwinding of roving from roving bobbins-(transporting full yarn bobbins to subsequent machines [B65H 67/06+T](#))}
- U D01H 13/00

Other common constructional features, details or accessories (for open-end spinning [D01H 4/00](#))
- D01H 13/28
 - Heating or cooling arrangements {for yarns-(removal of heat from machines [D01H 1/16](#))}
- U D01H 13/30
 - Moistening, sizing, oiling, waxing, colouring, or drying yarns or the like as incidental measures during spinning or twisting
- D01H 13/304
 - • {-Conditioning during spinning or twisting (for carding or combing [D01G 99/005](#))}
- D01H 15/00

Piecing arrangements (for open-end spinning machines [D01H 4/48](#); in machines for producing textile fabrics, see the appropriate subclasses); {Automatic end-finding, e.g. by suction and reverse package rotation; Devices for temporarily storing yarn during piecing-(piecing of rovings in combination with replacing of completed packages or cans [D01H 9/005](#))}

Project: N/A (D02G)

- U D02G 3/00

Yarns or threads, e.g. fancy yarns; Processes or apparatus for the production thereof, not otherwise provided for (for producing crimped or curled yarns [D02G 1/00](#))
- D02G 3/22
 - Yarns or threads characterised by constructional features, {e.g. blending, filament/fibre-(piecing of yarns or threads [D01H 15/00](#))}

- D03D 1/0076
 - D03D 1/0082
 - D03D 1/0088
 - D03D 1/0094
 - U D03D 3/00**
 - D03D 3/005
 - U D03D 13/00**
 - D03D 13/002
 - D03D 13/004
 - D03D 13/006
 - D03D 13/008
 - U D03D 15/00**
 - D03D 15/0016
 - D03D 15/0022
 - D03D 15/0027
 - D03D 15/0033
 - D03D 15/0038
 - D03D 15/0044
 - D03D 15/005
 - D03D 15/0055
 - D03D 15/0061
 - D03D 15/0066
 - D03D 15/0072
 - D03D 15/0083
 - D03D 15/0088
 - D03D 15/0094
 - U D03D 39/00**
 - U D03D 39/02
 - U D03D 39/08
 - D03D 39/083
 - D03D 39/086
- {-Photovoltaic fabrics}
 - {-Fabrics for printed circuit boards}
 - {-Fabrics having an electronic function}
 - {-Belts ([D03D 1/0005](#) takes precedence)}
- Woven fabrics characterised by their shape**
- {-Tapes or ribbons not otherwise provided for ([D03D 1/0005](#), [D03D 1/0011](#), [D03D 1/06](#), [D03D 1/08](#), [D03D 1/0094](#) take precedence)}
- Woven fabrics characterised by the special disposition of the warp or weft threads, e.g. with curved weft threads, with discontinuous warp threads, with diagonal warp or weft**
- {-With diagonal warps or wefts}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 13/00](#)
- {-with weave pattern being non-standard or providing special effects}
 - {-With additional leno yarn}
 - {-characterised by weave density or surface weight}
- Woven fabrics characterised by the material or construction of the yarn or other warp or weft elements used**
- {-using threads comprising a mineral}
 - {-using threads with beads}
 - {-using bicomponent threads}
 - {-using coloured threads}
 - {-using threads made of delicate fibers}
 - {-using knitted threads}
 - {-using leather threads}
 - {-using magnetic threads}
 - {-using threads with microdenier fibers}
 - {-using threads with a noble metal}
 - {-using paper threads}
 - {-using threads having a particular sectional shape}
 - • {-Flat threads}
 - {-using threads with different diameters}
- • • Pile-fabric looms**
- Axminster looms, i.e. wherein pile tufts are inserted during weaving
 - • Gripper Axminster looms
 - • • {-Selecting mechanisms}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 39/08](#)
- • • {-Gripper details }
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 39/08](#)

- U D03D 39/22 · Terry looms
D03D 39/223 · · {-Cloth control}
 WARNING
 Not complete pending the completion of a reclassification, see also group
[D03D 39/22](#)
- D03D 39/226 · · {-Sley control}
 WARNING
 Not complete pending the completion of a reclassification, see also group
[D03D 39/22](#)
- U D03D 41/00 Looms not otherwise provided for, e.g. for weaving chenille yarn; Details
D03D 41/008 peculiar to these looms**
 · {-Looms for weaving flat yarns}
 WARNING
 Not complete pending the completion of a reclassification, see also group
[D03D 41/00](#)
- U D03D 47/00 Looms in which bulk supply of weft does not pass through shed, e.g.
D03D 47/12 shuttleless looms, gripper shuttle looms, dummy shuttle looms (circular
D03D 47/125 looms [D03D 37/00](#))**
- U D03D 47/12 · wherein single picks of weft thread are inserted, i.e. with shedding between
 each pick
D03D 47/125 · · {-Weft holding devices (If the weft is reinserted in the next shed [D03D 47/48](#);
 in jet looms [D03D 47/308](#))}
 WARNING
 Not complete pending the completion of a reclassification, see also groups
[D03D 47/00](#) and [D03D 47/12](#)
- U D03D 47/20 · · Constructional features of the thread-engaging device on the inserters
U D03D 47/23 · · · Thread grippers (in dummy or gripper shuttles [D03J 5/06](#))
D03D 47/233 · · · · {-Carrying grippers}
 WARNING
 Not complete pending the completion of a reclassification, see also group
[D03D 47/23](#)
- D03D 47/236 · · · · {-Drawing grippers}
 WARNING
 Not complete pending the completion of a reclassification, see also group
[D03D 47/23](#)
- U D03D 47/27 · Drive or guide mechanisms for weft inserting
D03D 47/271 · · {-Rapiers}-
 WARNING
 Not complete pending the completion of a reclassification, see also group
[D03D 47/27](#)
- D03D 47/272 · · · {-Rapier bands}
 WARNING
 Not complete pending the completion of a reclassification, see also group
[D03D 47/27](#)

- D03D 47/273
 - • • {-Rapier rods}
 - WARNING
 - Not complete pending the completion of a reclassification, see also group [D03D 47/27](#)
- D03D 47/275
 - • {-Drive mechanisms}
 - WARNING
 - Not complete pending the completion of a reclassification, see also group [D03D 47/27](#)
- D03D 47/276
 - • • {-Details or arrangement of sprocket wheels}
 - WARNING
 - Not complete pending the completion of a reclassification, see also group [D03D 47/27](#)
- D03D 47/277
 - • {-Guide mechanisms (for shuttles [D03D 49/24](#))}
 - WARNING
 - Not complete pending the completion of a reclassification, see also group [D03D 47/27](#)
- D03D 47/278
 - • • {-for pneumatic looms}
 - WARNING
 - Not complete pending the completion of a reclassification, see also groups [D03D 47/27](#) and [D03D 49/62](#)
- U D03D 47/28
 - wherein the weft itself is projected into the shed
- U D03D 47/30
 - • by gas jet
- D03D 47/3006
 - • • {-Construction of the nozzles}
- D03D 47/3013
 - • • • {-Main nozzles}
- D03D 47/302
 - • • • {-Auxiliary nozzles}
- D03D 47/3026
 - • • {-Air supply systems}
- D03D 47/3033
 - • • • {-Controlling the air supply}
- D03D 47/304
 - • • • • {-Controlling of the air supply to the auxiliary nozzles}
- D03D 47/3046
 - • • • • {-Weft yarn selection}
 - WARNING
 - Not complete pending the completion of a reclassification, see also groups [D03D 47/30](#), [D03D 47/32](#) and [D03D 47/38](#)
- D03D 47/3053
 - • • • {-Arrangements or lay out of air supply systems}
- D03D 47/306
 - • • • {-Construction or details of parts, e.g. valves, ducts}
- D03D 47/3066
 - • • {-Control or handling of the weft at or after arrival}
- D03D 47/3073
 - • • • {-Detection means therefor}
- D03D 47/308
 - • • • {-Stretching or holding the weft}
- D03D 47/3086
 - • • • {-Weft removal (extraction of defective weft after stopping at definite point in weaving cycle [D03D 51/085](#))}
- D03D 47/3093
 - • • {-Displaying data}
- U D03D 47/34
 - Handling the weft between bulk storage and weft-inserting means

- D03D 47/342
- • {-knot detection}
- WARNING
Not complete pending the completion of a reclassification, see also groups [D03D 47/34](#) and [D03D 51/34](#)
- D03D 47/345
- • {-Rotating bobbins}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 47/34](#)
- D03D 47/347
- • {-Yarn brakes ([D03D 47/364](#) takes precedence)}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 47/34](#)
- D03D 47/36
- • Measuring and cutting the weft; -[N Devices for measuring and temporary storing the weft (cutting weft threads [D03D 49/70](#))]
- D03D 47/361
- • • {-Drum-type weft feeding devices}
- D03D 47/362
- • • • {-with yarn retaining devices, e.g. stopping pins ([D03D 47/367](#) takes precedence)}
- D03D 47/363
- • • • • {-Construction or control of the yarn retaining devices}
- D03D 47/364
- • • • • {-Yarn braking means acting on the drum}
- D03D 47/365
- • • • • {-Brushes}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 47/364](#)
- D03D 47/366
- • • • • {-Conical}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 47/364](#)
- D03D 47/367
- • • • {-Monitoring yarn quantity on the drum}
- D03D 47/368
- • • {-Air chamber storage devices}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 47/36](#)
- D03D 47/369
- • • {-Communication systems}
- WARNING
Not complete pending the completion of a reclassification, see also group [D03D 47/36](#)
- U D03D 49/00** **Details or constructional features not peculiar to looms of a particular type (temples [D03J 1/22](#))**
- U D03D 49/02
- Construction of loom framework
- WARNING
This group is in the process of being reorganised to its subgroups
- D03D 49/025
- • {-Ground supports}
- D03D 49/027
- • {-Arrangements or means for noise reduction}

- U D03D 51/00** **Driving, starting, or stopping arrangements; Automatic stop motions {(loom control associated with fabric inspection on the loom [D03J 1/007](#))}**
- D03D 51/005
- {-Independent drive motors (independent frame drives for dobbies [D03C 1/146](#), for other shedding mechanisms [D03C 13/02](#))}
- WARNING
Not complete pending the completion of a reclassification, see also groups [D03D 51/00](#) and [D03D 51/02](#)
- D03D 51/007
- {-Loom optimisation}
- WARNING
Not complete pending the completion of a reclassification, see also groups [D03D 51/00](#) and [D03D 51/02](#)

Project: N/A (D03J)

- U D03J 1/00** **Auxiliary apparatus combined with or associated with looms**
- D03J 1/005
- {-Displays or displaying data}
- D03J 1/006
- {-Controlling a group of looms}
- D03J 1/007
- {-Fabric inspection on the loom and associated loom control}
- D03J 1/008
- {-Cooling systems}
- WARNING
Not complete pending the completion of a reclassification; see also group [D03J 1/00](#)

Project: N/A (D04B)

- U D04B 1/00** **Weft knitting processes for the production of fabrics or articles not dependent on the use of particular machines; Fabrics or articles defined by such processes**
- U D04B 1/02
- Pile fabrics or articles having similar surface features
- D04B 1/025
- {-incorporating loose fibres, e.g. high-pile fabrics or artificial fur}
- U D04B 1/10
- Patterned fabrics or articles
- D04B 1/102
- · {-with stitch pattern ([D04B 1/06](#), [D04B 1/08](#) take precedence)}
- D04B 1/104
- · · {-Openwork fabric, e.g. pelerine fabrics}
- D04B 1/106
- · · {-at a selvedge, e.g. hems or turned welts}
- D04B 1/108
- · · {-Gussets, e.g. pouches or heel or toe portions}
- U D04B 1/12
- · characterised by thread material
- D04B 1/123
- · · {-with laid-in unlooped yarn, e.g. fleece fabrics (with elastic weft yarn [D04B 1/18](#))}
- D04B 1/126
- · · {-with colour pattern, e.g. intarsia fabrics}
- U D04B 1/22
- specially adapted for knitting goods of particular configuration
- D04B 1/225
- {-Elongated tubular articles of small diameter, e.g. coverings or reinforcements for cables or hoses}
- U D04B 1/24
- · wearing apparel
- D04B 1/246
- · · {-Upper torso garments, e.g. sweaters, shirts, leotards}
- U D04B 1/26
- · · stockings
- D04B 1/265
- · · · {-Surgical stockings (of unspecified knit construction and reinforced [A41B 11/02](#); of unspecified knit construction and elastic [A61F 13/08](#))}

- U D04B 15/00** **Details of, or auxiliary devices incorporated in, weft knitting machines, restricted to machines of this kind (details or auxiliary devices not so restricted [D04B 35/00](#))**
- U D04B 15/38 · Devices for supplying, feeding, or guiding threads to needles
- U D04B 15/48 · · Thread-feeding devices
- D04B 15/482 · · · {-comprising a rotatable or stationary intermediate storage drum from which the thread is axially and intermittently pulled off; Devices which can be switched between positive feed and intermittent feed}
- D04B 15/484 · · · · {-Yarn braking means acting on the drum}
- D04B 15/486 · · · · {-Monitoring reserve quantity}
- U D04B 15/54 · · Thread guides
- U D04B 15/56 · · · for flat-bed knitting machines
- D04B 15/565 · · · · {-Associated thread-clamping or thread-severing devices}
- U D04B 21/00** **Warp knitting processes for the production of fabrics or articles not dependent on the use of particular machines; Fabrics or articles defined by such processes**
- U D04B 21/14 · Fabrics characterised by the incorporation by knitting, in one or more thread, fleece, or fabric layers, of reinforcing, binding, or decorative threads; Fabrics incorporating small auxiliary elements, e.g. for decorative purposes (pile fabrics [D04B 21/02](#); non-woven fabrics in general [D04H](#))
- D04B 21/145 · · {-with stitches drawn from loose fibres, e.g. web-knitted fabrics}
- U D04B 21/16 · · incorporating synthetic threads
- D04B 21/165 · · · {-with yarns stitched through one or more layers or tows, e.g. stitch-bonded fabrics (layered products not united by stitch loops [B32B 5/22](#))}
- U D04B 21/20 · specially adapted for knitting articles of particular configuration
- D04B 21/202 · · {-warp knitted yarns}
- D04B 21/205 · · {-Elongated tubular articles of small diameter, e.g. coverings or reinforcements for cables or hoses}
- D04B 21/207 · · {-Wearing apparel or garment blanks}

Project: N/A (D04H)

D04H

MAKING TEXTILE FABRICS, e.g. FROM FIBRES OR FILAMENTARY MATERIAL (weaving [D03](#); knitting [D04B](#); braiding{or lace-making}[D04C](#); net-making{or making knotted carpets}[D04G](#); sewing [D05B](#); tufting [D05C](#), { e.g. [D05C 15/04](#) }; finishing non-woven fabrics [D06](#)); **FABRICS MADE BY SUCH PROCESSES OR APPARATUS, e.g. FELTS, NON-WOVEN FABRICS; COTTON-WOOL; WADDING** {Non-woven fabrics from staple fibres, filaments or yarns, bonded with at least one web-like material during their consolidation}(non-woven fabrics having an intermediate or external layer of a different kind, e.g. of woven fabric, [B32B](#));{ manufacturing hats [A42C](#); filtering material [B01D 39/00](#) ; making board or the like from wood fibre [B27N](#); producing shaped articles from mixtures containing fibres [B28B 1/52](#) ; making layered products from solid layers, at least one of which contains synthetic resin as an essential component [B32B 27/00](#) ; making or treating glass wool and mineral wool [C03B 37/00](#) ; compounding ingredients used as fillers for mortars and the like [C04B 14/38](#) , [C04B 16/06](#) , [C04B 20/0048](#) ; sintering plastics particles [C08J 9/24](#) ; manufacturing by extrusion of synthetic filaments and fibres in general [D01D](#); paper [D21C](#) to [D21H](#); making shaped articles from liquid suspensions of cellulose fibres [D21J](#))}

NOTES

In this subclass, the following expression is used with the meaning indicated:

- "non-woven fabrics" means fabrics formed wholly or partly of textile material by processes comprising operations other than the weaving, knitting, braiding, lacing, or knotting of yarns, threads, or filaments for which provision is made in other subclasses of Section D. This expression includes felts, cotton-wool, and wadding.

In this subclass:

- some of the non-woven fabrics can also be regarded as "layered products" within the meaning of subclass [B32B](#), and further classification in that subclass should be considered in accordance with the notes thereto;
 - in cases where the making of non-woven fabrics involves the use of particular chemical compounds or compositions, e.g. for treating or bonding fibres, filaments, or yarns, further classification in other appropriate subclasses should also be considered.

By varying the proportions of fibres or threads, and the chemical compounds or compositions, the final products may be given the appearance of paper, cardboard, leather or the like.

In this subclass, a number of groups, e.g. [D04H 1/067](#) , correspond to IPC2012.01

WARNING

1. Documents of the complete subclass [D04H](#) including all subgroups are in the process of being reorganised to the new groups corresponding to the IPC 2012.01 classification scheme defined below.

- U D04H 1/00 Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres**
- D04H 1/005
- {Making three-dimensional articles by consolidation (~~D04H 1/22~~ takes precedence-)}
- WARNING**
This group is no longer used for the classification of new documents as from April 1, 2011. The backfile is being reclassified into groups [D04H 1/00](#) , [D04H 1/42](#)]
- D04H 1/04
- from fleeces or layers composed of fibres having existing or potential cohesive properties, e.g. natural fibres, prestretched or fibrillated artificial fibres (~~felting apparatus D04H 17/00-~~)
- U D04H 1/08
- • and hardened by felting; Felts or felted products
- D04H 1/22
- • • Three-dimensional articles formed by felting processes(~~formed by other consolidation processes D04H 1/005-~~)
- U D04H 1/40
- from fleeces or layers composed of fibres without existing or potential cohesive properties
- WARNING**
Groups [D04H 1/407](#) and [D04H 1/413](#) are not complete pending a reorganisation. See also group [D04H 1/40](#)
Group [D04H 1/407](#) is not complete pending a reorganisation. See also group [D04H 1/40](#)
- U D04H 1/42
- • characterised by the use of certain kinds of fibres insofar as this use has no preponderant influence on the consolidation of the fleece
- WARNING**
Groups [D04H 1/4209](#) to [D04H 1/52](#) are not complete pending a reorganisation. See also group [D04H 1/4209](#) and other subgroups of [D04H 1/42](#)
- D04H 1/4266
- • • Natural fibres not provided for in group [D04H 1/425](#)
- U D04H 1/44
- • the fleeces or layers being consolidated by mechanical means, e.g. by rolling
- D04H 1/46
- • • by needling or like operations to cause entanglement of fibres (~~D04H 1/45~~ takes precedence; needling machines [D04H 18/00-](#))
- D04H 1/492
- • • • by fluid jet (~~D04H 1/49~~ takes precedence-)
- D04H 1/50
- • • by treatment to produce shrinking, swelling, crimping or curling of fibres (~~in combination with needling D04H 1/482-~~)
- D04H 1/54
- • by welding together the fibres, e.g. by partially melting or dissolving (~~in combination with needling D04H 1/485-~~)
- WARNING**
Groups [D04H 1/54](#) to [D04H 1/565](#) are not complete pending a reorganisation. See also group [D04H 1/541](#) and other subgroups of [D04H 1/54](#)
- U D04H 1/542
- • • Adhesive fibres
- D04H 1/551
- • • • Resins thereof not provided for in groups [D04H 1/544](#) - [D04H 1/55](#)

- D04H 1/58
- • by applying, incorporating or activating chemical or thermoplastic bonding agents, e.g. adhesives (-in combination with needling [D04H 1/488-](#))
- WARNING**
Groups [D04H 1/587](#) to [D04H 1/68](#) are not complete pending a reorganisation. See also groups [D04H 1/64](#) and other subgroups of [D04H 1/58](#)
- U D04H 1/64
- • • the bonding agent being applied in wet state, e.g. chemical agents in dispersions or solutions
- D04H 1/66
- • • • at spaced points or locations (-[D04H 1/68](#) takes precedence-)
- U D04H 1/70
- characterised by the method of forming fleeces or layers, e.g. reorientation of fibres
- WARNING**
Groups [D04H 1/72](#) to [D04H 1/76](#) are not complete pending a reorganisation. See also group [D04H 1/72](#)
- U D04H 1/72
- • the fibres being randomly arranged
- D04H 1/728
- • • by electro-spinning{ Electro-spinning methods and apparatus [D01D 5/0007-](#)}
- D04H 1/736
- • • characterised by the apparatus for arranging fibres (-[D04H 1/728](#) , [D04H 1/732](#) take precedence-)
- D04H 1/74
- • the fibres being orientated, e.g. in parallel{(anisotropic fleeces)}(anisotropic fleeces)}
- U D04H 3/00**
- Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length**
- D04H 3/005
- Synthetic yarns or filaments (-[D04H 3/013](#) takes precedence-)
- U D04H 3/02
- characterised by the method of forming fleeces or layers, e.g. reorientation of yarns or filaments
- D04H 3/05
- • in another pattern, e.g. zig-zag, sinusoidal((-[D04H 3/04](#) takes precedence-))
- U D04H 3/08
- characterised by the method of strengthening or consolidating
- U D04H 3/10
- • with bonds between yarns or filaments made mechanically
- D04H 3/105
- • • by needling (-needling machines [D04H 18/00-](#))
- U D04H 5/00**
- Non woven fabrics formed of mixtures of relatively short fibres and yarns or like filamentary material of substantial length**
- WARNING**
Groups [D04H 5/02](#) to [D04H 5/12](#) are not complete pending a reorganisation. See also group [D04H 5/02](#) and other subgroups of [D04H 5/00](#)
- D04H 5/02
- strengthened or consolidated by mechanical methods, e.g. needling (-needling machines [D04H 18/00-](#))
- D04H 11/00**
- Non-woven pile fabrics (layered products forming non-woven pile fabrics [B32B](#))**
- D04H 11/08
- formed by creation of a pile on at least one surface of a non-woven fabric without addition of pile-forming material, e.g. by needling, by differential shrinking (-needling machines [D04H 18/00-](#))
- U D04H 13/00**
- Other non-woven fabrics**

- U D04H 13/001 · {Making non-woven fabrics from staple fibres, filaments or yarns, bonded to at least one web-like material, e.g. woven, knitted non-woven fabric, paper, leather, during consolidation}
- WARNING**
This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#) , [D04H 1/4374](#) and [B32B](#)
- D04H 13/003 · · {strengthened or consolidated by mechanical methods (-needling machines [D04H 18/00](#) ; knitting [D04B](#), sewing [D05B-](#))}
- WARNING**
This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#) , [D04H 1/4374](#) , [D04H 1/44](#) , [D04H 1/45](#) and sub-groups, [D04H 1/52](#) , [D04H 3/105](#) , [D04H 3/11](#) , [D04H 3/115](#) , [D04H 5/02 - D04H 5/08](#) and [B32B](#)
- D04H 13/02 · Production of non-woven fabrics by partial defibrillation of oriented thermoplastics films

Project: N/A (D05B)

- U D05B 3/00 **Sewing apparatus or machines with mechanism for lateral movement of the needle or the work or both for making ornamental pattern seams, for sewing buttonholes, for reinforcing openings, or for fastening articles, e.g. buttons, by sewing (programme-controlled sewing machines [D05B 19/00](#); with devices for automatically controlling movement of work-carrier [D05B 21/00](#))**
- U D05B 3/02 · with mechanisms for needle-bar movement
- D05B 3/025 · · {-with a pair of needles mounted on the needle-bar}
- U D05B 23/00 **Sewing apparatus or machines not otherwise provided for (for making zip closures [A44B 19/00](#))**
- D05B 23/005 · {-Sewing machines specially adapted for binding or uniting carpets}
- D05B 23/006 · {-Sewing machines for making cylindrical articles}
- U D05B 57/00 **Loop takers, e.g. loopers**
- U D05B 57/08 · for lock-stitch sewing machines
- U D05B 57/10 · · Shuttles
- U D05B 57/14 · · · with rotary hooks
- D05B 57/143 · · · · {-Vertical axis type}
- D05B 57/146 · · · · {-Inclined axis type}
- U D05B 57/26 · Bobbin holders or casings; Bobbin holder or case guards; Bobbin discharge devices
- D05B 57/265 · · {-for looptakers with vertical axis}

Project: N/A (D06B)

- U D06B 1/00 **Applying liquids, gases or vapours on to textile materials to effect treatment, e.g. washing, dyeing, bleaching, sizing, impregnating (mercerising [D06B 7/00](#); solvent-treatment [D06B 9/00](#); treatment of selected parts of textile materials [D06B 11/00](#); with aid of vibration [D06B 13/00](#))**
- U D06B 1/10 · by contact with a member carrying the treating material
- U D06B 1/14 · · with a roller

- D06B 1/149
 - • • {the treating material being applied to the textile material without contact with the roller (e.g. by capillarity)}(e.g. by capillarity)}

U D06B 11/00 Treatment of selected parts of textile materials, e.g. partial dyeing

- D06B 11/0079
 - {Local modifications of the ability of the textile material to receive the treating materials, (e.g. its dyeability)}(e.g. its dyeability)}

Project: N/A (D06C)

U D06C 21/00 Shrinking by compressing

- D06C 21/005
 - {-Compacting belts}

U D06C 29/00 Finishing or dressing, of textile fabrics, not provided for in the preceding groups

- D06C 29/005
 - {-hydroentangling}

Project: N/A (D06F)

U D06F 29/00 Combinations of a washing machine with other separate apparatus in a common frame or the like, e.g. with rinsing apparatus

- D06F 29/005
 - {-the other separate apparatus being a drying appliance}

U D06F 35/00 Washing machines, apparatus, or methods not otherwise provided for

- D06F 35/001
 - {-using ozone}
- D06F 35/002
 - {-using bubbles}
- D06F 35/003
 - {-using electrochemical cells}
- D06F 35/004
 - {-using chlorine generators}
- D06F 35/005
 - {-Methods for washing, rinsing or spin-drying}
- D06F 35/006
 - • {-for washing or rinsing only}
- D06F 35/007
 - • {-for spin-drying only}
- D06F 35/008
 - • {-for disinfecting the tub or the drum}

U D06F 37/00 Details of washing machines of kinds covered by groups [D06F 21/00](#) to [D06F 25/00](#), restricted to machines of these kinds (details of more general application [D06F 39/00](#); details concerning drying only [D06F 58/00](#))

- U D06F 37/02
 - Rotary receptacles, e.g. drums
- U D06F 37/04
 - • adapted for rotation or oscillation about a horizontal or inclined axis
- U D06F 37/06
 - • • Ribs, lifters, or rubbing means forming part of the receptacle
 - • • • {-ribs or lifters having means for circulating the washing liquid}
- U D06F 37/12
 - • adapted for rotation or oscillation about a vertical axis
- U D06F 37/14
 - • • Ribs or rubbing means forming part of the receptacle
 - • • • {-ribs or lifters having means for circulating the washing liquid}
- U D06F 37/26
 - Casings; Tubs
- D06F 37/261
 - • {-Tubs made by a specially selected manufacturing process or characterised by their assembly from elements}
- D06F 37/262
 - • • {-made of plastic material, e.g. by injection moulding}
- D06F 37/263
 - • • {-assembled from at least two elements connected to each other; Connecting or sealing means therefor}
- D06F 37/264
 - • {-Tubs provided with reinforcing structures, e.g. ribs, inserts, braces}
- D06F 37/265
 - • {-Counterweights mounted to the tub; Mountings therefor}
- D06F 37/266
 - • {-Gaskets mounted between tub and casing around the loading opening}

- D06F 37/267
 - · {-Tubs specially adapted for mounting thereto components or devices not provided for in preceding subgroups ([D06F 37/206](#) takes precedence)}
- D06F 37/268
 - · · {-for suspension devices}
- D06F 37/269
 - · · {-for the bearing of the rotary receptacle}
- U D06F 39/00**

Details of washing machines in so far as such details are not special to washing machines of groups [D06F 21/00](#) to [D06F 25/00](#) or to any particular type of washing machine defined in groups [D06F 9/00](#) to [D06F 19/00](#) or [D06F 27/00](#)
- D06F 39/008
 - {-Steam generating arrangements}
- U D06F 39/08
 - Liquid supply or discharge arrangements (supplying liquid detergent [D06F 39/02](#))
- D06F 39/083
 - · {-Liquid discharge or recirculation arrangements}
- U D06F 58/00**

Domestic laundry driers (drying in general [F26B](#))
- U D06F 58/20
 - General details of domestic laundry driers ([D06F 59/00](#) takes precedence)
- D06F 58/206
 - · {-Heat pump arrangements}
- U D06F 58/26
 - · Heating arrangements, e.g. gas heating equipment ([D06F 58/18](#) takes precedence)
- D06F 58/266
 - · · {-Microwave heating equipment}

Project: N/A (D06H)

- U D06H 1/00**

Marking textile materials; Marking in combination with metering or inspecting
- U D06H 1/04
 - by attaching threads, tags, or the like
- D06H 1/043
 - · {-by attaching threads}
- D06H 1/046
 - · {-by attaching tags}
- U D06H 7/00**

Apparatus or processes for cutting, or otherwise severing, specially adapted for the cutting, or otherwise severing, of textile materials (severing for making buttonholes [A41H](#); hand cutting tools in general [B26B](#); cutting machines in general [B26D](#); severing otherwise than by cutting in general [B26F](#); { web delivery apparatus incorporating cutting devices [B65H 35/0006](#)}; trimming seamed edges, shearing surfaces of fabrics, shearing lace or embroidery, e.g. cutting loose threads [D06C](#))
- D06H 7/005
 - {-characterized by means or processes to avoid or reduce fraying of the cut edge}
- U D06H 7/22
 - Severing by heat or by chemical agents ({by laser beam [B23K 26/4055](#)})
- D06H 7/221
 - · {-by heat}
- D06H 7/223
 - · · {-using ultrasonic vibration}
- D06H 7/225
 - · · {-using meltable yarns or interwoven metal wires heated by an electric current}
- D06H 7/226
 - · {-by chemical agents}
- D06H 7/228
 - · · {-using dissolvable separator yarns}

Project: N/A (D06L)

- U D06L 3/00**

Bleaching fibres, threads, yarns, fabrics, feathers, or made-up fibrous goods, leather, or furs {(dyeing and bleaching [D06P 1/0024](#))}
- U D06L 3/12
 - Optical bleaching {brightening}
- D06L 3/1242
 - · {-Optical brightening in gaseous or solid form, e.g. transfer, powder}

Project: N/A (D06M)

D06M 7/00 Treating fibres, threads, yarns, fabrics, or fibrous goods made of other substances with subsequent freeing of the treated goods from the treating medium, e.g. swelling, {e.g. polyolefins}(D06M 10/00 takes precedence; treating fibres or filaments made of glass, mineral -, or slag wool C03C; {carbon fibres D01F 11/10})

U D06M 16/00 Biochemical treatment of fibres, threads, yarns, fabrics or fibrous goods made from such materials, e.g. enzymatic

D06M 16/003 · {-with enzymes or micro-organisms}

Project: N/A (D06N)

U D06N 3/00 Artificial leather, oilcloth or { other } material obtained by covering fibrous webs with macromolecular material, e.g. resins, rubber or derivatives thereof

D06N 3/0002 · {-characterised by the substrate}

D06N 3/0004 · · {-using ultra-fine two-component fibres, e.g. island/sea, or ultra-fine one component fibres (< 1 denier)}

D06N 3/0006 · · {-using woven fabrics}

D06N 3/0009 · · {-using knitted fabrics}

D06N 3/0011 · · {-using non-woven fabrics}

D06N 3/0013 · · {-using multilayer webs}

U D06N 3/0015 · · {using fibres of specified chemical or physical nature, e.g. natural silk}

D06N 3/0025 · · · {-Rubber threads; Elastomeric fibres; Stretchable, bulked or crimped fibres; Retractable, crimpable fibres; Shrinking or stretching of fibres during manufacture; Obliquely threaded fabrics}

D06N 3/0027 · · · · {-Rubber or elastomeric fibres}

WARNING

Groups [D06N 3/0027-D06N 3/0031](#) are not complete, pending reorganisation. See also [D06N 3/0025](#)

D06N 3/0029 · · · · {-Stretchable fibres; Stretching of fibres during manufacture}

D06N 3/0031 · · · · {-Retractable fibres; Shrinking of fibres during manufacture }

D06N 3/0034 · · · · {-Polyamide fibres (for elastomeric fibres [D06N 3/0025](#))}

D06N 3/0036 · · · · {-Polyester fibres (for elastomeric fibres [D06N 3/0025](#))}

D06N 3/0038 · · · · {-Polyolefin fibres (for elastomeric fibres [D06N 3/0025](#))}

D06N 3/0043 · {-characterised by their foraminous structure; Characteristics of the foamed layer or of cellular layers (foraminous structure obtained by stretching [D06N 3/0029](#))}

D06N 3/0047 · · {-obtained by incorporating air, i.e. froth }

U D06N 3/0056 · {characterised by the compounding ingredients of the macro-molecular coating }(D06N 3/005 takes precedence)

D06N 3/0059 · · {-Organic ingredients with special effects, e.g. oil- or water-repellent, antimicrobial, flame-resistant, magnetic, bactericidal, odour-influencing agents; perfumes (D06N 3/0065 takes precedence)}

D06N 3/0065 · · {-Organic pigments, e.g. dyes, brighteners}

D06N 3/0068 · · {-Polymeric granules, particles or powder, e.g. core-shell particles, microcapsules }

D06N 3/007 · {-characterised by mechanical or physical treatments ([D06N 3/0029](#), [D06N 3/0031](#) take precedence)}

- D06N 3/0081
- • {-by wave energy or particle radiation ([D06N 3/08](#) takes precedence)}
- U D06N 3/0086
- {characterised by the application technique}
- D06N 3/0088
- • {-by directly applying the resin ([D06N 3/0045](#) takes precedence)}
- U D06N 3/04
- with macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- D06N 3/042
- • {-Acrylic polymers ([D06N 3/045](#) takes precedence)}
- D06N 3/045
- • {-with polyolefin or polystyrene (co-)polymers}
- U D06N 3/10
- • with styrene-butadiene copolymerisation products { or other synthetic rubbers or elastomers except polyurethanes}
- D06N 3/103
- • • {-Thermosetting synthetic rubbers}
- D06N 3/106
- • • {-Elastomers}
- U D06N 3/12
- with macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds, {e.g. gelatine proteins}
- U D06N 3/121
- • {with polyesters, polycarbonates, alkyds (oils [D06N 3/16](#))}
- D06N 3/123
- • • {-with polyesters}
- U D06N 3/14
- • with polyurethanes
- D06N 3/141
- • • {-mixture of two or more polyurethanes in the same layer}
- D06N 3/142
- • • {-mixture of polyurethanes with other resins in the same layer}
- D06N 3/16
- with oil varnishes {i.e. drying oil varnishes, preferably linseed-oil-based; ~~factice (sulfurised oils)~~ *factice (sulfurised oils)*, Turkish birdlime, resinates reacted with drying oils; naphthenic metal salts}
- U D06N 3/18
- with two layers of different macromolecular materials ([D06N 3/08](#) takes precedence); {(with two layers of the same kind of macromolecular material [D06N 2213/03](#))}
- D06N 3/183
- • {-the layers are one next to the other}
- WARNING
Groups [D06N 3/183](#) and [D06N 3/186](#) are not complete, pending reorganisation. See also [D06N 3/18](#)
- D06N 3/186
- • {-one of the layers is on one surface of the fibrous web and the other layer is on the other surface of the fibrous web}
- D06N 5/00**
- {Roofing materials comprising a fibrous web coated with bitumen or another polymer, e.g. pitch (compositions of bituminous materials [C08L 95/00](#), roof covering [E04D 5/00](#), roofing underlays [E04D 12/002](#))}**
- D06N 5/003
- {-coated with bitumen}
- D06N 5/006
- • {-characterised by the means to apply it to a support or to another roofing membrane, e.g. self-adhesive layer or strip}
- U **D06N 7/00**
- Flexible sheet materials not otherwise provided for, e.g. textile threads, filaments, yarns or tow, glued on macromolecular material, {e.g. fibrous top layer with resin backing, plastic naps or dots on fabrics}**
- D06N 7/0002
- {-Wallpaper or wall covering on textile basis}
- WARNING
groups [D06N 7/0002](#), [D06N 7/0092-D06N 7/0097](#) are not complete, pending reorganisation. See also [D06N 7/00](#)
- D06N 7/0005
- {-Floor covering on textile basis comprising a fibrous substrate being coated with at least one layer of a polymer on the top surface}
- U D06N 7/0007
- • {characterised by their relief structure}

- D06N 7/0013
- • {obtained by chemical embossing (*chemisches Prägen*)}(~~chemisches Prägen~~)
- D06N 7/0026
- • {obtained by moulding, e.g. moulding table (*tapis moule*)}(~~tapis moule~~)
- D06N 7/0036
- {characterised by their backing, e.g. secondary backing, back-sizing}
- U D06N 7/0039
- {characterised by the physical or chemical aspects of the layers}
- D06N 7/0042
- • {-Conductive or insulating layers; Antistatic layers; Flame-proof layers}
- D06N 7/0047
- • {-Special extra layers under the surface coating, e.g. wire threads}
- D06N 7/0052
- • {-Compounding ingredients, e.g. rigid elements (compounding ingredients of the macromolecular coating [D06N 3/0056](#))}
- D06N 7/0063
- {-Floor covering on textile basis comprising a fibrous top layer being coated at the back with at least one polymer layer, e.g. carpets, rugs, synthetic turf}
- WARNING**
- Groups [D06N 7/0063-D06N 7/0084](#) are not complete, pending reorganisation. See also [D06N 7/0036](#)
- D06N 7/0065
- {-characterised by the pile}
- WARNING**
- Groups [D06N 7/0065](#), [D06N 7/0068](#) are not complete, pending reorganisation. See also [D06N 7/006](#)
- D06N 7/0068
- {-characterised by the primary backing or the fibrous top layer}
- D06N 7/0071
- {-characterised by their backing, e.g. pre-coat, back coating, secondary backing, cushion backing}
- D06N 7/0073
- • {-the back coating or pre-coat being applied as an aqueous dispersion or latex}
- D06N 7/0076
- • {-the back coating or pre-coat being a thermoplastic material applied by e.g. extrusion coating, powder coating or laminating a thermoplastic film}
- D06N 7/0078
- • {-the back coating or pre-coat being applied as a hot melt}
- D06N 7/0081
- • {-with at least one extra fibrous layer at the backing, e.g. stabilizing fibrous layer, fibrous secondary backing}
- D06N 7/0084
- • {-with at least one layer obtained by sintering or bonding granules together}
- D06N 7/0086
- • {-characterised by the cushion backing, e.g. foamed polyurethane}
- D06N 7/0089
- {-Underlays}
- D06N 7/0092
- {-Non-continuous polymer coating on the fibrous substrate, e.g. plastic dots on fabrics}
- D06N 7/0094
- {-Fibrous material being coated on one surface with at least one layer of an inorganic material and at least one layer of a macromolecular material}
- D06N 7/0097
- {-Web coated with fibres, e.g. flocked}

Project: N/A (D06P)

- U D06P 1/00
- General processes of dyeing or printing textiles, or general processes of dyeing leather, furs, or solid macromolecular substances in any form, classified according to the dyes, pigments, or auxiliary substances employed**
- U D06P 1/0004
- {General aspects of dyeing}
- D06P 1/0008
- {Dyeing processes in which the dye is not specific (*waste liquors*)}(~~waste liquors~~)
- D06P 1/008
- {Preparing dyes *in situ*-([D06P 1/12](#), [D06P 1/145](#) take precedence)}
- U D06P 1/44
- using insoluble pigments or auxiliary substances, e.g. binders

- U D06P 1/64
 - • using compositions containing low-molecular-weight organic compounds without sulfate or sulfonate groups
- U D06P 1/642
 - • • Compounds containing nitrogen
- U D06P 1/649
 - • • • Compounds containing carbonamide, thiocarbonamide or guanlyl groups
- U D06P 1/6495
 - • • • • {Compounds containing carbonamide -RCON= (R=H or hydrocarbons)}
- D06P 1/6496
 - • • • • • {Condensation products from carboxylic acids and hydroxyalkyl amine (*Kritchewski bases*)}(*Kritchewski bases*)
- U D06P 1/673
 - • Inorganic compounds
- U D06P 1/67333
 - • • {Salts or hydroxides (hydroxylamines [D06P 1/67308](#))}
- D06P 1/67341
 - • • • {of elements different from the alkaline or alkaline-earth metals or with anions containing those elements ([D06P 1/67383](#) takes precedence)}
- D06P 1/6735
 - • • • {of alkaline or alkaline-earth metals with anions different from those provided for in [D06P 1/67341](#)}
- U D06P 3/00**

Special processes of dyeing or printing textiles, or dyeing leather, furs, or solid macromolecular substances in any form, classified according to the material treated
- U D06P 3/82
 - textiles which contain different kinds of fibres
- D06P 3/854
 - • containing modified or unmodified fibres, {i.e. containing the same type of fibres having different characteristics, e.g. twisted and not-twisted fibres-(reserve dyeing [D06P 5/12](#))}
- U D06P 5/00**

Other features in dyeing or printing textiles, or dyeing leather, furs, or solid macromolecular substances in any form
- U D06P 5/13
 - Fugitive dyeing or stripping dyes
- D06P 5/135
 - • {-with combined acids or bases + oxidants + reductants means}
- U D06P 5/20
 - Physical treatments affecting dyeing, e.g. ultrasonic, electric
- D06P 5/2005
 - • {-Treatments with alpha, beta, gamma or other rays, e.g. stimulated rays}
- D06P 5/2011
 - • {-Application of vibrations, pulses or waves for non-thermic purposes}
- D06P 5/2016
 - • {-Application of electric energy}
- D06P 5/2022
 - • {-Textile treatments at reduced pression, i.e. lower than 1 atm}
- D06P 5/2044
 - • {-Textile treatments at a pression higher than 1 atm}
- D06P 5/2055
 - • • {-during dyeing}
- D06P 5/2066
 - • {-Thermic treatments of textile materials}

Project: N/A (D06Q)

D06Q 1/00

Decorating textiles (partial dyeing [D06B 11/00](#); reserving parts of the material before dyeing or printing textiles [D06P 5/12](#)){(making patterns or designs on fabrics [D06C 23/00](#))}

Project: N/A (D07B)**U D07B 1/00****Constructional features of ropes or cables**

- D07B 1/005
 - {-Composite ropes, i.e. ropes built-up from fibrous or filamentary material and metal wires}
- U D07B 1/02
 - Ropes built-up from fibrous or filamentary material, e.g. of vegetable origin, of animal origin, regenerated cellulose, plastics
- D07B 1/025
 - • {-comprising high modulus, or high tenacity, polymer filaments or fibres, e.g. liquid-crystal polymers}
- U D07B 1/06
 - Ropes or cables built-up from metal wires, e.g. of section wires around a hemp core

- U D07B 1/0606 • • {Reinforcing cords for rubber or plastic articles}
- D07B 1/0613 • • • {the reinforcing cords being characterised by the rope configuration}
- D07B 1/062 • • • {the reinforcing cords being characterised by the strand configuration}
- D07B 1/0626 • • • • {the reinforcing cords consisting of three core wires or filaments and at least one layer of outer wires or filaments, i.e. a 3+N configuration}
- D07B 1/0633 • • • • {having a multiple-layer configuration}
- D07B 1/064 • • • • {the reinforcing cords being twisted and with at least one wire exchanging place with another wire}
- D07B 1/0646 • • • {comprising longitudinally preformed wires}
- D07B 1/0653 • • • • {in the core}
- D07B 1/066 • • • {the wires being made from special alloy or special steel composition}
- D07B 1/0666 • • • {the wires being characterised by an anti-corrosive or adhesion promoting coating}
- D07B 1/0673 • • {having a rope configuration}
- D07B 1/068 • • • {characterised by the strand design}
- D07B 1/0686 • • • {characterised by the core design}
- D07B 1/0693 • • {having a strand configuration}
- U D07B 1/14 • Ropes or cables with incorporated auxiliary elements, e.g. for marking, extending throughout the length of the rope or cable
- D07B 1/141 • • {comprising liquid, pasty or powder agents, e.g. lubricants or anti-corrosive oils or greases}
- D07B 1/142 • • • {for ropes or rope components built-up from fibrous or filamentary material}
- D07B 1/144 • • • {for cables or cable components built-up from metal wires}
- D07B 1/145 • • {comprising elements for indicating or detecting the rope or cable status}
- D07B 1/147 • • {comprising electric conductors or elements for information transfer ([D07B 1/145](#) takes precedence)}
- D07B 1/148 • • {comprising marks or luminous elements}
- U D07B 1/16 • Ropes or cables with an enveloping sheathing or inlays of rubber or plastics ([D07B 1/04](#), [D07B 1/10](#) take precedence)
- D07B 1/162 • • {characterised by a plastic or rubber enveloping sheathing}
- D07B 1/165 • • {characterised by a plastic or rubber inlay}
- D07B 1/167 • • • {having a predetermined shape}
- U D07B 1/18 • Grommets {(slings [B66C 1/12](#))}
- D07B 1/185 • • {characterised by the eye construction}
- U D07B 3/00 General-purpose machines or apparatus for producing twisted ropes or cables from component strands of the same or different material**
- U D07B 3/08 • in which the take-up reel rotates about the axis of the rope or cable { or in which a guide member rotates about the axis of the rope or cable to guide the rope or cable on the take-up reel in fixed position} and the supply reels are fixed in position
- D07B 3/085 • • {in which a guide member rotates about the axis of the rope or cable to guide the rope or cable on the take-up reel in fixed position}
- U D07B 3/10 • • with provision for imparting more than one complete twist to the ropes or cables for each revolution of the take-up reel { or of the guide member}
- D07B 3/103 • • • {characterised by the bow construction}
- D07B 3/106 • • • {characterised by comprising two bows, both guiding the same bundle to impart a twist}

- U D07B 5/00 Making ropes or cables from special materials or of particular form**
 D07B 5/005 · {-characterised by their outer shape or surface properties}
 D07B 5/007 · {-comprising postformed and thereby radially plastically deformed elements}
- U D07B 7/00 Details of, or auxiliary devices incorporated in, rope- or cable-making machines; Auxiliary apparatus associated with such machines**
- U D07B 7/02 · Machine details; Auxiliary devices
 D07B 7/027 · · {-Postforming of ropes or strands}
- U D07B 7/16 · Auxiliary apparatus
 D07B 7/165 · · {-Apparatus for making slings}
 D07B 7/167 · · {-Apparatus for joining rope components}

Project: N/A (D21B)

- U D21B 1/00 Fibrous raw materials or their mechanical treatment**
- U D21B 1/04 · by dividing raw materials into small particles, e.g. fibres (breaking-up or cutting wood or the like by dry methods [B27L](#); disintegrating peat [C10F 7/02](#); obtaining fibres mechanically for spinning from rags, peat, or the like [D01B](#))
- U D21B 1/12 · · by wet methods, by the use of steam (beaters [D21D 1/00](#))
- U D21B 1/30 · · · Defibrating by other means
- U D21B 1/32 · · · · of waste paper
- U D21B 1/325 · · · · · {de-inking devices}
- D21B 1/327 · · · · · · {-using flotation devices}

Project: N/A (D21C)

- D21C 9/00 After-treatment of cellulose pulp, e.g. of wood pulp, or cotton linters; { Treatment of dilute or dewatered pulp or process improvement taking place after obtaining the raw cellulosic material and not provided for elsewhere-(polysaccharides, derivatives thereof [C08B](#); paper-making [D12D](#) to [D12H](#))}**
- D21C 9/008 · {-Prevention of corrosion or formation of deposits on pulp-treating equipment ([D21C 9/08](#), [D21H 21/02](#) take precedence)}
- D21C 9/08 · Removal of fats, resins, pitch or waxes; { Chemical or physical purification, i.e. refining, of crude cellulose by removing non-cellulosic contaminants, optionally combined with bleaching-(fats, waxes [C11B](#); natural resins [C09F 1/00](#); hemicellulose [C08B 37/14](#); purification by mechanical means [D21D 5/00](#))}
- U D21C 9/10 · Bleaching; { Apparatus therefor}
- D21C 9/1068 · · {with O₂ (closed, see [D21C 9/147](#))}
- D21C 9/1073 · · {with O₃ (closed, see [D21C 9/153](#))}
- D21C 9/18 · De-watering (de-watering in general [F26B](#)); {-Elimination of cooking or pulp-treating liquors from the pulp }(D21C 9/002, [D21C 9/02](#) take precedence; paper-making machines [D21F](#); strainers in digesters [D21C 7/00](#); presses in general [B30B](#))
- U D21C 11/00 Regeneration of pulp liquors {or effluent waste waters}**
- U D21C 11/06 · Treatment of pulp gases; Recovery of the heat content of the gases; { Treatment of gases arising from various sources in pulp and paper mills; Regeneration of gaseous SO₂, e.g. arising from liquors containing sulfur compounds}

- D21C 11/08
 - • Deodorisation {Elimination of malodorous compounds, e.g. sulfur compounds such as hydrogen sulfide and mercaptans, from gas streams-(oxidation of liquors [D21C 11/0057](#); post-combustion of gases [D21C 11/127](#))}
- U D21C 11/12
 - Combustion of pulp liquors
- D21C 11/14
 - • Wet combustion; {Treatment of pulp liquors without previous evaporation, by oxidation of the liquors remaining at least partially in the liquid phase, e.g. by application or pressure-(oxidation of black, green or white liquors [D21C 11/0057](#))}

Project: N/A (D21D)

- U **D21D 1/00** **Methods of beating or refining; Beaters of the Hollander type (knotter screens [D21F](#))**
 - D21D 1/004
 - {-Methods of beating or refining including disperging or deflaking}
 - D21D 1/006
 - • {-Disc mills}
 - D21D 1/008
 - • • {-Discs}

Project: N/A (D21F)

- U **D21F 1/00** **Wet end of machines for making continuous webs of paper**
 - U D21F 1/0027
 - {Screen-cloths}
 - U D21F 1/0036
 - • {Multi-layer screen-cloths}
 - D21F 1/0045
 - • • {-Triple layer fabrics}
 - U D21F 1/02
 - Head boxes of Fourdrinier machines
 - D21F 1/022
 - • {-Means for injecting material into flow within the headbox}
 - D21F 1/024
 - • {-Details of the feed chamber}
 - D21F 1/026
 - • {-Details of the turbulence section}
 - D21F 1/028
 - • {-Details of the nozzle section}
- U **D21F 3/00** **Press section of machines for making continuous webs of paper**
 - U D21F 3/02
 - Wet presses
 - U D21F 3/0209
 - • {with extended press nip}
 - D21F 3/0218
 - • • {-Shoe presses}
 - D21F 3/0227
 - • • • {-Belts or sleeves therefor}
 - D21F 3/0236
 - • • • • {-manufacturing methods}
 - D21F 3/0245
 - • • • • {-Means for fixing the sleeve to the roller end}
 - D21F 3/0254
 - • • {-Cluster presses, i.e. presses comprising a press chamber defined by at least three rollers}
 - D21F 3/0263
 - • • • {-Sealing arrangements therefor}
 - U D21F 3/04
 - • Arrangements thereof
 - D21F 3/045
 - • • {-including at least one extended press nip}
- U **D21F 5/00** **Dryer section of machines for making continuous webs of paper**
 - U D21F 5/18
 - Drying webs by hot air
 - D21F 5/181
 - • {-on Yankee cylinder}
- U **D21F 7/00** **Other details of machines for making continuous webs of paper**
 - U D21F 7/08
 - Felts
 - D21F 7/086
 - • {-Substantially impermeable for transferring fibrous webs}

- U D21F 11/00** **Processes for making continuous lengths of paper, or of cardboard, or of wet web for fibre board production, on paper-making machines**
- U D21F 11/14
D21F 11/145
- Making cellulose wadding, filter or blotting paper
 - · {-including a through-drying process}

Project: N/A (D21G)

- U D21G 1/00** **Calenders (if restricted to the treatment of particular materials see the relevant class, e.g. [B29C 43/24](#), [D06](#)); Smoothing apparatus**
- D21G 1/006
D21G 1/0066
- {-with extended nips}
 - {-using a special calendering belt}
- U D21G 9/00** **Other accessories for paper-making machines**
- U D21G 9/0009
D21G 9/0018
D21G 9/0027
D21G 9/0036
D21G 9/0045
D21G 9/0054
- {Paper-making control systems}
 - · {-controlling the stock preparation}
 - · {-controlling the forming section}
 - · {-controlling the press or drying section}
 - · {-controlling the calendering or finishing}
 - · {-details of algorithms or programs}
- U D21G 9/0063
D21G 9/0072
- {Devices for threading a web tail through a paper-making machine}
 - · {-using at least one rope}

Project: N/A (D21H)**D21H 1/00****Paper; -Cardboard (fibreboard [D21J](#))**NOTE

Layered products classified in this group are also classified in subclass [B32B](#)

D21H 1/02

- Multi-ply material {finished plies}

D21H 1/04

- · by using an adhesive

D21H 1/06

- · Apparatus

D21H 1/08

- · with incorporated laminae of threads or fabric

D21H 3/00

Paper or cardboard prepared by adding substances to the pulp or to the formed web on the paper-making machine { and by applying substances to finished paper or cardboard (on the paper-making machine), also when the intention is to impregnate at least a part of the paper body}

NOTE

A compound is always classified in the last appropriate place.

D21H 3/82

- by adding insoluble coloured substances, e.g. powders, fibres, pieces of metal, for obtaining different colours in the paper {fancy papers; substances characterised by their physical appearance, e.g. form, rather than by their chemical constitution}

D21H 5/00

Special paper or cardboard not otherwise provided for (duplicating or recording paper [B41M](#))

- D21H 5/0005
- {-Processes or apparatus specially adapted for applying liquids or other fluent materials to finished paper or board, e.g. impregnating, coating (applying liquids to surfaces in general [B05](#); treating textile materials by liquids, gases or vapours [D06B](#); impregnated or coated fibreboard [D21J 1/08](#); apparatus for making patterned paper [D21H 5/06](#); printing machines [B41F](#))}
- NOTE
Equipment related to specific chemical treatment, see relevant sub-groups for this treatment; e.g. parchmentising or vulcanising [D21H 5/08](#), treatment with viscose [D21H 17/25](#)
- D21H 5/005
- {-involving several different techniques of application (treatments in which the characteristics of a single treatment are of interest only, or in which all treatments have characteristics provided for in a single sub-group, see the relevant sub-groups for the single treatment; several superposed coatings [D21H 19/82](#); apparatus for making multi-ply material [D21H 1/06](#))}
- D21H 5/02
- Patterned paper
- D21H 5/04
- • marbled
- D21H 5/06
- • Apparatus
- D21H 5/08
- Vegetable parchment
- D21H 5/12
- characterised by the use of special fibrous materials (felts or other non-woven fabrics [D04](#))
- D21H 5/14
- • of cellulose fibres only
- D21H 5/16
- • • Tobacco or cigarette paper
- D21H 5/18
- • of inorganic fibres with or without cellulose fibres
- D21H 5/20
- • of organic non-cellulosic fibres too short for spinning, with or without cellulose fibres
- D21H 5/22
- Fungicidal, bactericidal, insecticidal, disinfecting, antiseptic, or corrosion-inhibiting paper {antistatic, antioxygenic paper-(toilet paper [A47K 10/16](#))}
- D21H 5/24
- having enhanced flexibility or extensibility produced by mechanical treatment of the unfinished paper (crêping paper [B31F 1/12](#); {making patterned paper [D21F 11/006](#), apertured paper [D21F 11/008](#))}
- D21H 5/26
- Special paper or cardboard manufactured by dry method; { Apparatus or processes for forming webs by dry method from mainly short-fibre or particle material, e.g. paper pulp-(making board from wood, e.g. lignocellulosic, particles or fibres [B27N 1/00](#) and subgroups; making non-woven fabrics from textile fibres [D04H 1/72](#); machines for forming diapers [A61F 13/15585](#); lap-forming devices in preliminary treatment of fibres, e.g. for spinning [D01G 25/00](#))}
- D21H 5/2678
- • ~~{Manufacture of layered products (assembly of superposed sheets)}~~*{Manufacture of layered products (assembly of superposed sheets)}*, comprising the consolidation of such a structure (formation of a web by dry method directly on to other webs formed solely by dry method [D21H 5/2628](#) and subgroups)}

U D21H 17/00 Non-fibrous material added to the pulp, characterised by its constitution; Paper-impregnating material characterised by its constitution

NOTES

In this group, in the absence of an indication to the contrary, a material is classified in the last appropriate place.

In this group, it is desirable to classify the individual constituents of fibres used in the pulp or paper using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 15/00](#).

- D21H 17/71
- Mixtures of material ([D21H 17/69](#) takes precedence){ Pulp or paper comprising several different materials not incorporated by special processes-([D21H 23/10](#), [D21H 23/70](#), [D21H 23/76](#) take precedence)}

NOTE

In this group, it is desirable to classify the individual components of the mixtures using Combination Sets with symbols chosen from groups [D21H 17/00](#) or [D21H 21/00](#).

- D21H 17/72
- • of organic material
- D21H 17/73
- • of inorganic material
- D21H 17/74
- • of organic and inorganic material

U D21H 27/00 Special paper not otherwise provided for, e.g. made by multi-step processes

NOTES

This group provides for the classification of paper with special properties or applications which are only partially or not at all provided for elsewhere in the classification. Whenever possible, however, these papers are classified according to the criteria used in the other groups of this subclass.

In this group, it is desirable to classify the individual constituents using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 25/00](#).

- D21H 27/002
- {-Tissue paper; Absorbent paper ([D21H 21/22](#), [D21H 27/02](#), [D21H 27/20](#) take precedence; toilet paper [A47K 10/00](#); absorbent pads for physiological fluids [A61L 15/16](#); making on paper-making machines [D21F 11/00](#))}

WARNING

Not complete. Documents presently classified elsewhere, mainly in [D21F](#) and [D21H](#), need reclassification to this group or its subgroups

- D21H 27/004
- • {-characterised by specific parameters ([D21H 27/008](#) takes precedence)}
- D21H 27/005
- • • {-relating to physical or mechanical properties, e.g. tensile strength, stretch, softness}
- D21H 27/007
- • • • {-relating to absorbency, e.g. amount or rate of water absorption, optionally in combination with other parameters relating to physical or mechanical properties}
- D21H 27/008
- • {-characterised by inhomogeneous distribution or incomplete coverage of properties, e.g. obtained by using materials of chemical compounds ([D21H 23/02](#), [D21H 23/76](#), [D21H 27/02](#) take precedence)}

Project: N/A (E01B)

E01B

PERMANENT WAY; PERMANENT-WAY TOOLS; MACHINES FOR MAKING RAILWAYS OF ALL KINDS (derailing or rerailing blocks on track, track brakes or retarders [B61K](#))

	E01B 1/00	Ballastway; Other means for supporting the sleepers or the track; Drainage of the ballastway (-draining by trenches, culverts, or conduits E01F 5/00-)
	E01B 2/00	General structure of permanent way (-railway networks B61B 1/00 ; foundations for pavings E01C 3/00 ; foundations in general E02D-)
	E01B 3/00	Transverse or longitudinal sleepers (-for switches or crossings E01B 7/22-); Other means resting directly on the ballastway for supporting rails
	E01B 3/02	· made from wood (-drying or impregnating B27K -)
U	E01B 3/04	· · Means for preventing cleaving
	E01B 3/08	· · · Straps or bands for hooping or encircling sleepers (-apparatus for hooping wooden railway sleepers on the spot E01B 31/28 -)
U	E01B 3/16	· made from steel
	E01B 3/20	· · Sleeper construction for special purposes, e.g. with openings for ballast working (-sleepers for shiftable track for heavy loads E01B 23/12 -)
	E01B 3/28	· made from concrete or from natural or artificial stone (-manufacture B28 -)
	E01B 3/32	· · with armouring or reinforcement (-hollow sleepers E01B 3/30 -)
	E01B 3/34	· · · with pre-tensioned armouring or reinforcement (-pre-tensioned armouring or reinforcing elements E04C 5/00 -)
	E01B 3/46	· made from different materials (- E01B 3/26 , E01B 3/42 take precedence-)
	E01B 5/00	Rails; Guard rails (-manufacture of rails B21B-); Distance-keeping means for them
	E01B 7/00	Switches; Crossings (-operating mechanisms B61L-)
	E01B 7/26	· Lubricating of switches (-lubricating of rails B61K 3/00 -)
	E01B 9/00	Fastening rails on sleepers, or the like (-fastening rails to bridges E01D 19/12-)
U	E01B 9/02	· Fastening rails, tie-plates, or chairs directly on sleepers or foundations; Means therefor
U	E01B 9/04	· · Fastening on wooden or concrete sleepers or on masonry without clamp members
	E01B 9/06	· · · Railways spikes (-nails in general F16B -)
	E01B 9/10	· · · Screws or bolts for sleepers (-screws or bolts in general F16B -)
	E01B 9/14	· · · Plugs, sleeves, thread linings, or other inserts for holes in sleepers (-inserting plugs or sleeves E01B 31/26 -)
U	E01B 9/38	· Indirect fastening of rails by using tie-plates or chairs; Fastening of rails on the tie-plates or in the chairs
	E01B 9/40	· · Tie-plates for flat-bottom rails (-manufacture B21 -)
	E01B 11/00	Rail joints (-electrical connection of the rail B60M 5/00-)
U	E01B 11/02	· Dismountable rail joints
U	E01B 11/36	· · Fastening means for fishplates
	E01B 11/38	· · · Loking arrangements for fastening means (-locking means for nuts or bolts in general F16B -)
	E01B 11/44	· Non-dismountable rail joints; Welded joints (-welding methods B23K -)
	E01B 11/56	· Special arrangements for supporting rail ends (-foot supports E01B 11/08 to E01B 11/14 -)
	E01B 11/62	· · Bridge chairs (-chairs E01B 9/54 to E01B 9/58 -)

- E01B 17/00** Cattle guards connected to the permanent way (-grids in general for preventing cattle from straying [A01K 3/00-](#))
- E01B 19/00** Protection of permanent way against development of dust or against the effect of wind, sun, frost, or corrosion; Means to reduce development of noise (-snow fences [E01F 7/02](#) , snow-ploughs [E01H 8/02](#) , watering [E01H 11/00-](#))
- E01B 21/00** Track superstructure adapted for tramways in paved streets (-paving [E01C 9/04](#) , [E01C 9/06-](#))
- U E01B 23/00** Easily dismountable or movable tracks, e.g. temporary railways; Details specially adapted therefor
- U E01B 23/02 • Tracks for light railways, e.g. for field, colliery, or mine use
- E01B 23/06 • • Switches (-turntables [B60S](#) , [B61J-](#)); Portable switches; Turnouts
- U E01B 23/10 • Shiftable tracks for heavy loads, e.g. carrying excavators
- E01B 23/14 • • Fastening or joining means (-fastening of rails by keys [E01B 9/24-](#))
- E01B 25/00** Tracks for special kinds of railways (-systems [B61B](#) ; wheel tracks on roads [E01C 9/02-](#))
- U E01B 25/16 • Tracks for aerial rope railways with a stationary rope
- E01B 25/18 • • Ropers; Supports, fastening or straining means for ropes (-ropes in general [D07B](#) ; masts [E04H 12/00](#) ; ropes sockets [F16G-](#))
- E01B 25/28 • Rail tracks for guiding vehicles when running on road or similar surface (-wheel tracks on roads [E01C 9/02-](#))
- E01B 27/00 - E01B 37/00** **Making, maintaining, renewing, or taking-up the ballastway or the track; Tools or machines specially designed therefor (-derailing or rerailing of machines [B61K 5/00](#) ; removal of foreign matter from the permanent way, vegetation control applying liquids [E01H-](#))**
- E01B 27/04 • Removing the ballast; Machines therefor, whether or not additionally adapted for taking-up ballast (-[E01B 27/06](#) , [E01B 27/12](#) takes precedence; redistributing ballasting material [E01B 27/02-](#))
- U E01B 27/06 • Renewing or cleaning the ballast in situ, with or without concurrent work on the track
- E01B 27/08 • • the track having been taken-up (-[E01B 27/11](#) takes precedence-)
- E01B 27/10 • • without taking-up track (-[E01B 27/11](#) takes precedence-)
- U E01B 27/12 • Packing sleepers, with or without concurrent work on the track; Compacting track-carrying ballast
- E01B 27/13 • • Packing sleepers, with or without concurrent work on the track (-performing ballast cores or seats for sleepers [E01B 27/02-](#))
- E01B 27/20 • • Compacting the material of the track-carrying ballastway, e.g. by vibrating the track, by surface vibrators (-of trackless ballastway [E01B 27/02](#) ; for packing sleepers [E01B 27/12-](#))
- E01B 29/00** **Laying, rebuilding, or taking-up tracks; Tools or machines therefor (-[E01B 27/00](#) , [E01B 31/00](#) take precedence-)**
- E01B 29/02 • Transporting, laying, removing, or renewing lengths of assembled track, assembled switches, or assembled crossings (-[E01B 29/04](#) takes precedence-)
- E01B 29/04 • Lifting or levelling of tracks (-lifting devices in general [B66F-](#))
- E01B 29/05 • Transporting, laying, removing, or renewing both rails and sleepers (-as assembled units [E01B 29/02-](#))
- E01B 29/06 • Transporting, laying, removing or renewing sleepers (-[E01B 29/05](#) takes precedence; carrying devices [B65G 7/12-](#))

- U E01B 29/09
- • under, or from under, installed rails
- E01B 29/13
- • • for moving sleepers in a direction parallel to the rails, e.g. for spacing or aligning them (–[E01B 29/10](#) takes precedence–)
- E01B 29/14
- • • for lifting sleepers up to the rails (–lifting devices in general [B66F](#)–)
- E01B 29/16
- Transporting, laying, removing, or replacing rails; Moving rails placed on sleepers in the track (–[E01B 29/05](#) takes precedence; moving or tilting heavy loads in general [B65G 7/00](#)–)
- E01B 29/22
- • Raising rails from sleepers, e.g. for inserting sole-plates (–lifting devices in general [B66F](#)–)
- E01B 29/24
- Fixing or removing detachable fastening means or accessories thereof; Pre-assembling track components by detachable fastening means (–[E01B 29/02](#) , [E01B 31/26](#) take precedence–)
- E01B 29/26
- • the fastening means being spikes (–[E01B 29/16](#) takes precedence; hand-held tools for nail or staple driving or extracting [B25C](#)–)
- E01B 29/28
- • the fastening means being of screw-and-nut type (–portable apparatus for fixing or removing screws or the like [B25B](#)–); Apparatus therefor, adapted to additionally drilling holes
- E01B 29/32
- Installing or removing track components, not covered by the preceding groups, e.g. sole-plates, rail anchors (–[E01B 31/26](#) takes precedence–)
- E01B 29/40
- Means or arrangements for temporarily supporting laid tracks, or rails or sleepers in the track (–temporary fishplates [E01B 11/18](#)–)
- E01B 29/42
- Undetachably joining or fastening track components in or on the track, e.g. by welding, by gluing; Pre-assembling track components by gluing; Sealing joints with filling components (–[E01B 31/26](#) takes precedence; independent heating means [E01B 31/18](#) ; welding in general [B23K](#); gluing metal parts in general [F16B 11/00](#)–)
- E01B 29/46
- • Devices for holding, positioning, or urging together the rail ends (–adjusting the joint by moving rails [E01B 29/20](#)–)
- E01B 31/00**
- Working rails, sleepers, baseplates, or the like, in or on the line; Machines, tools, or auxiliary devices specially designed therefor (–characterised by features independent of use on assembled track [B21](#) , [B23](#) to [B25](#) , [B27](#)–)**
- U E01B 31/02
- Working rail or other metal track components on the spot
- E01B 31/08
- • Bending, e.g. for straightening rails or rail joints (–for aligning rail ends to be welded [E01B 29/46](#)–)
- E01B 31/18
- • Reconditioning or repairing worn or damaged parts on the spot, e.g. applying inlays, building-up rails by welding (–[E01B 31/04](#) to [E01B 31/12](#) take precedence–); Heating or cooling of parts on the spot, e.g. for reducing joint gaps, for hardening rails
- E01B 31/20
- Working or treating non-metal sleepers in or on the line, e.g. marking, creosoting (–working metal sleepers [E01B 31/02](#)–)
- E01B 31/22
- • Cutting or grinding wooden sleepers, e.g. for forming rail seats (–[E01B 31/24](#) takes precedence–)
- E01B 31/23
- • • Sectioning (–combined with removal of segments from track [E01B 29/11](#)–)
- E01B 31/24
- • Forming, treating, reconditioning, or cleaning holes in sleepers; Drilling-templates (–[E01B 29/28](#) , [E01B 31/26](#) take precedence–)
- E01B 31/28
- • Applying or removing anti-splitting or like reinforcing means (–[E01B 31/26](#) takes precedence; straps or bands therefor [E01B 3/08](#)–)
- E01B 33/00**
- Machines or devices for shifting tracks, with or without lifting, e.g. for aligning track, for shifting excavator track (–combined with sleeper packing machines [E01B 27/17](#)–)**

- E01B 35/00** Applications of measuring apparatus or devices for track-building purposes (-apparatus on locomotives or cars to indicate or record bad track sections [B61K 9/00](#) ; measuring angles, linear dimensions, or irregularities in general [G01B](#) , [G01C](#)-)
- E01B 37/00** Making, maintaining, renewing, or taking-up the ballastway or the track, not provided for in a single one of groups [E01B 27/00](#) to [E01B 35/00](#)
- E01B 2202/00 - E01B 2205/00** Making, maintaining, renewing, or taking-up the ballastway or the track; Tools or machines specially designed therefor (-derailing or rerailing of machines [B61K 5/00](#) ; removal of foreign matter from the permanent way, vegetation control applying liquids [E01H](#)-)
- U E01B 2203/00** Devices for working the railway-superstructure
- U E01B 2203/04** · Cleaning or reconditioning ballast or ground beneath
- E01B 2203/042** · · in situ, e.g. vacuum-cleaners

Project: N/A (E01C)

- E01C** CONSTRUCTION OF, OR SURFACES FOR, ROADS, SPORTS GROUNDS, OR THE LIKE; MACHINES OR AUXILIARY TOOLS FOR CONSTRUCTION OR REPAIR (forming roads or like surfaces by compacting or grading snow or ice [E01H](#))
- E01C 1/00** Design or layout of roads, e.g. for noise abatement, for gas absorption (-design or layout of sports grounds [A63C 19/00](#) ; design or layout of airfields [B64F](#) , { of helicopter landing stages [E01F 3/00](#) })
- E01C 1/002** · {Design or lay-out of roads, e.g. street systems, cross-sections (-[E01C 1/005](#) , [E01C 1/007](#) take precedence; of footpaths, sidewalks, berms, hard shoulders or cycle tracks [E01C 15/00](#)-); Design for noise abatement, e.g. sunken road(-reducing transmission of structure-born noise [E01C 3/06](#) ; arrangement of means for absorbing surfacings see the groups for the respective surfacings; other arrangements for absorbing or reflecting air transmitted road traffic noise, e.g. barriers [E01F 8/00](#)-)}
- E01C 1/005** · {Means permanently installed along the road for removing or neutralising exhaust gases (-collecting exhaust gases with central suction systems, e.g. in workshops or tunnels, [B08B 15/002](#)-)}
- E01C 1/007** · {Design or auxiliary structures for compelling drivers to slow down or to proceed with caution, e.g. tortuous carriageway; Arrangements for discouraging high-speed or non-resident traffic (-decelerating or arresting surfacings [E01C 9/007](#) ; road surface configuring or surface arrangements for enforcing reduced speed or required caution, e.g. speed-control humps [E01F 9/047](#)-)}
- E01C 1/02** · Crossings, junctions or interconnections between roads on the same level{(-construction of traffic islands [E01F 1/00](#)-)}
- E01C 3/00** Foundations for pavings (-specially adapted for playgrounds or sports grounds [E01C 13/02](#) ; foundations in general [E02D](#)-)
- E01C 3/003** · {characterised by material or composition used, e.g. waste or recycled material (-[E01C 3/006](#) , [E01C 3/04](#) and [E01C 3/06](#) take precedence-)}
- E01C 3/006** · {made of prefabricated single units (-[E01C 3/06](#) takes precedence-)}
- E01C 3/04** · Foundations produced by soil stabilisation{(-soil stabilisation for road building in general [E01C 7/36](#)-)}
- E01C 3/06** · Methods or arrangements for protecting foundations from destructive influence of moisture, frost or vibration{(-heating devices [E01C 11/26](#) ; draining the subbase of roads [E01F 5/00](#)-)}

- E01C 5/00 Pavings made of prefabricated single units** **(-specially adapted for playgrounds or sports grounds [E01C 13/04](#) , for footpaths, sidewalks or cycle tracks [E01C 15/00](#) ; making artificial stones [C04B](#) ; building stones [E04C](#) ; flooring [E04F](#))**
- E01C 5/005 · {Individual couplings or spacer elements for joining the prefabricated units **(-[E01C 5/10](#) takes precedence-)**}
- E01C 5/008 · {made of vegetable stems, e.g. straw, thatch **(-of wood [E01C 5/14-](#)); made of textiles(-of bituminous textile webs [E01C 5/12](#) ; of linoleum [E01C 5/20-](#))}**}
- E01C 5/02 · made of natural stones, e.g. sett stones**{(-as inserts in binders or bound thereby into greater unity [E01C 5/22-](#))}**}
- E01C 5/04 · made of bricks**{(-of asphalt bricks [E01C 5/12-](#))}**}
- U E01C 5/06 · made of units with cement or like binders
- E01C 5/08 · · Reinforced units **{with steel frames(-with metal upper or under layers [E01C 5/22-](#))}**}
- E01C 5/10 · · · Prestressed reinforced units; {Prestressed coverings from reinforced or non-reinforced units**(-prestressed concrete coverings [E01C 7/16-](#))}**}
- E01C 5/12 · made of units with bituminous binders **{or from bituminous material, e.g. asphalt mats}**}
- E01C 5/16 · made of metallic units **{(with a filling or ground plate of other material [E01C 5/22](#) ; for temporary pavings [E01C 9/083](#) ; } steel gratings [E01C 9/10-](#))}**}
- E01C 5/18 · made of rubber units**{(-of units made from other material and having a rubber upper layer [E01C 5/226-](#))}**}
- E01C 5/20 · made of units of plastics,{e.g. concrete with plastics, linoleum} **(-[E01C 5/18](#) takes precedence; { of textiles made of synthetic fibres [E01C 5/008](#))}**}
- E01C 7/00 Coherent pavings made in situ** **(-specially adapted for playgrounds or sports grounds [E01C 13/06](#) ; for footpaths, sidewalks or cycle tracks [E01C 15/00-](#))**
- E01C 7/08 · made of road-metal and binders**{(-[E01C 7/36](#) takes precedence-)**}
- E01C 7/085 · · {Aggregate or filler materials therefor; Coloured reflecting or luminescent additives therefor **(-thin surface layers or surface dressings [E01C 7/35-](#))}**}
- E01C 7/10 · · of road-metal and cement or like binders **(-cement or like binders, composition of mortars [C04B-](#))**}
- E01C 7/14 · · · Concrete paving**{(-from concrete prepared in situ [E01C 7/12](#) ; small individual units from concrete cast in situ [E01C 9/001](#) ; arrangement or construction of joints [E01C 11/04](#) ; reinforcements [E01C 11/18-](#))}**}
- E01C 7/142 · · · · {Mixtures or their components, e.g. aggregate **(-[E01C 7/147](#) , [E01C 7/355](#) take precedence; different layers of different composition [E01C 7/14-](#))}**}
- E01C 7/145 · · · · {Sliding coverings, underlayers or intermediate layers **(-isolating underlayers [E01C 3/06](#) ; sliding layers between coverings of different materials [E01C 7/34-](#)); Isolating or separating intermediate layers; Transmission of shearing force in horizontal intermediate planes, e.g. by protrusions, by inlays(-anchoring new concrete wearing layers on old concrete paving [E01C 7/147-](#))}**}
- E01C 7/147 · · · · {Repairing concrete pavings, e.g. joining cracked road sections by dowels, applying a new concrete covering **(-applying thin surface layers with other binder [E01C 7/35](#) ; repairing pavings in general [E01C 11/005](#) ; roughening by means of tools [E01C 11/24-](#))}**}
- E01C 7/16 · · · · Prestressed concrete paving**{(-prestressed coverings from prefabricated concrete units [E01C 5/10](#) ; prestressed joint constructions [E01C 11/04](#) ; prestressed reinforcements [E01C 11/20-](#))}**}

- E01C 7/18
 - • of road-metal and bituminous binders{(for surface treatments except for penetration coverings, or for thin surface layers [E01C 7/353](#) ; bituminous mixtures [C08L 95/00](#))}
- E01C 7/182
 - • • {Aggregate or filler materials, except those according to [E01C 7/26](#) (-[E01C 7/187](#) , [E01C 7/353](#) take precedence; different aggregates or fillers [E01C 7/18](#))}
- E01C 7/185
 - • • {Isolating, separating or connecting intermediate layers, e.g. adhesive layers; Transmission of shearing force in horizontal intermediate planes, e.g. by protrusions (-[E01C 7/187](#) takes precedence; adhesive layers for materials [E01C 7/35](#))}
- E01C 7/187
 - • • {Repairing bituminous covers, e.g. regeneration of the covering material in situ, application of a new bituminous topping (-application of thin surface layers with other binders [E01C 7/35](#) ; repairing pavings in general [E01C 11/005](#))}
- E01C 7/24
 - • • Binder incorporated as an emulsion or solution (-making dispersions or emulsions for road building [C04B](#))
- E01C 7/26
 - • • mixed with other materials, e.g. cement, rubber, leather, fibre{(fibrous material reinforcements for bituminous paving [E01C 11/165](#))}
- E01C 7/262
 - • • • {with fibrous material, e.g. asbestos; with animal or vegetal admixtures, e.g. leather, cork (-[E01C 7/265](#) takes precedence)}
- E01C 7/265
 - • • • {with rubber or synthetic resin, e.g. with rubber aggregate, with synthetic resin binder (-for thin overlays or surface dressings [E01C 7/35](#))}
- U E01C 7/32
 - • of courses of different kind made in situ

NOTE
This group is limited to coverings consisting of layers with different binders, except for thin intermediate or surface layers, which are classified in group [E01C 7/35](#)
- E01C 7/325
 - • • {Joining different layers, e.g. by adhesive layers; Intermediate layers, e.g. for the escape of water vapour, for spreading stresses (-sliding layers [E01C 7/34](#))}
- E01C 7/34
 - • • made of several courses which are not bound to each other; {Separating means therefor, e.g. sliding layers(-in or under concrete coverings [E01C 7/145](#))}
- E01C 7/35
 - • Toppings or surface dressings; Methods of mixing, impregnating, or spreading them{(devices therefor [E01C 19/00](#) ; mortar-macadam pavings [E01C 7/12](#) ; bituminous penetration coverings [E01C 7/18](#))}
- E01C 7/358
 - • • {-with a combination of two or more binders according to groups [E01C 7/351](#) to [E01C 7/356](#)}
- E01C 7/36
 - by subjecting soil to stabilisation{(-[E01C 7/06](#) takes precedence; foundations [E01C 3/04](#) ; soil conditioning or soil stabilising materials [C09K 17/00](#) ; soil stabilisation devices for road construction [E01C 21/00](#))}
- E01C 9/00**

Special pavings (-specially adapted for playgrounds or sports grounds [E01C 13/00](#) , for footpaths, sidewalks or cycle tracks [E01C 15/00](#)); Pavings for special parts of roads or airfields (-pavement lights [E01C 17/00](#) ; manhole or like covers or frames [E02D 29/14](#))
- E01C 9/001
 - {Paving elements formed in situ; Permanent shutterings therefor (-removable shutterings [E01C 19/502](#) ; moulding machines therefor [E01C 19/508](#)); Inlays or reinforcements which divide the cast material in a great number of individual units(-reinforcement girders which do not break the cohesion of the covering material [E01C 11/16](#) , [E01C 11/185](#))}
- E01C 9/004
 - {Pavings specially adapted for allowing vegetation (-individual spacer elements [E01C 5/006](#))}

- E01C 9/005
 - • {Coverings around trees forming part of the road (-protecting plants in general [A01G 13/00-](#))}
- E01C 9/007
 - {Vehicle decelerating or arresting surfacings or surface arrangements, e.g. arrester beds (-road surface configuration or surface arrangements for enforcing reduced speed, e.g. speed-control humps [E01F 9/047-](#)); Escape roads, e.g. for steep descents, for sharp bends}
- E01C 9/008
 - {Paving take-off areas for vertically starting aircraft (-landing platforms for helicopters [E01F 3/00-](#))}
- E01C 9/02
 - Wheel tracks (-rail tracks for guiding vehicles [E01B 25/28-](#))
- E01C 9/08
 - Temporary pavings ({ [E01C 9/008](#) takes precedence } ; steel gratings [E01C 9/10-](#))
- E01C 9/10
 - Steel gratings; Gratings made of material other than steel) ({ [E01C 9/001](#) to [E01C 9/02](#) , [E01C 9/06](#) take precedence; metal gratings for bridge floorings [E01D 19/125](#) ; } gully gratings [E03F 5/06-](#))
- E01C 11/00**
 - Details of pavings((-[E01C 1/005](#) , [E01C 5/003](#) , [E01C 5/005](#) , [E01C 7/145](#) , [E01C 7/185](#) , [E01C 7/325](#) take precedence-))**
- E01C 11/005
 - {Methods or materials for repairing pavings (-[E01C 7/35](#) takes precedence; for concrete coverings [E01C 7/147](#) ; for bituminous coverings [E01C 7/187](#) ; devices for repair works [E01C 23/06](#) ; repairing bridge floorings [E01D 22/00-](#))}
- E01C 11/02
 - Arrangement or construction of joints((-for pavings consisting of prefabricated units [E01C 5/00-](#)); Methods of making joints((-machines therefor [E01C 23/02](#) , [E01C 23/09](#) ; removable joint shutterings [E01C 23/021-](#)); Packing for joints (-sealing joints not restricted to road or airfield paving [E04B 1/68-](#))
- E01C 11/04
 - • for cement concrete paving((-[E01C 9/001](#) takes precedence-))
- E01C 11/08
 - • • Packing of metal((-[E01C 11/045](#) takes precedence-))
- E01C 11/10
 - • • Packing of plastic or elastic materials,{e.g. wood, resin(-[E01C 11/045](#) takes precedence-)}
- E01C 11/12
 - • • Packing of metal and plastic or elastic materials((-[E01C 11/045](#) takes precedence-))
- E01C 11/14
 - • • Dowel assembly; {Design or construction of reinforcements in the area of joints(-coupling devices for prefabricated units [E01C 5/005](#) ; combined with characteristic packings [E01C 11/08](#) to [E01C 11/12](#) ; removable holders [E01C 23/045-](#))}
- E01C 11/16
 - Reinforcements ({ as anchoring elements between layers [E01C 7/145](#) , [E01C 7/185](#) , [E01C 7/325](#) } ; for building in general [E04C-](#))
- E01C 11/165
 - • {particularly for bituminous or rubber- or plastic-bound pavings (-bituminated textile webs [E01C 5/12-](#))}
- E01C 11/18
 - • for cement concrete pavings((-prefabricated reinforced units [E01C 5/08-](#))}
- E01C 11/185
 - • • {the reinforcements extending up to the surface, e.g. anti-slip gratings (-for dividing concrete in a great number of individual units [E01C 9/001-](#))}
- E01C 11/20
 - • • for prestressed concrete pavings((-from prefabricated concrete units, similar prestressed units [E01C 5/10-](#))}
- E01C 11/22
 - Gutters; {Surface drainage of streets, roads or like traffic areas(-for sports grounds [E01C 13/00-](#)); Kerbs {or like edging members(-for sports grounds [E01C 13/00-](#))}
- E01C 11/221
 - • {Kerbs or like edging members, e.g. flush kerbs, shoulder retaining means (-specially adapted for guiding or warning traffic or for display purposes [E01F 9/053-](#)); Joint members, connecting or load-transfer means specially for kerbs}

- E01C 11/222
 - • • {Raised kerbs, e.g. for sidewalks ([E01C 11/223](#) , [E01F 9/0533](#) , [E01F 9/0536](#) take precedence; preformed sidewalk paving with integral kerb [E01C 15/00](#) ; specially for traffic islands [E01F 1/00](#)-); Integrated or portable means for facilitating ascent or descent}
- E01C 11/223
 - • • {Kerb-and-gutter structures; Kerbs with drainage openings channel or conduits, e.g. with out- or inlets, with integral gutter or with channel formed into the kerb (-gutters, subsurface channels per se [E01C 11/227](#) ; gullies adapted to be used with kerbs, gully gratings [E03F 5/04](#) , [E03F 5/06](#)-); Kerbs adapted to house cables or pipes, or to form conduits}
- E01C 11/224
 - • {Surface drainage of streets (-draining the subbase of roads, by trenches [E01F 5/00](#) , by sewers [E03F](#) ; draining arrangements for bridges [E01D 19/086](#)-)}
- E01C 11/225
 - • • {Paving specially adapted for through-the-surfacing drainage, e.g. perforated, porous; Preformed paving elements comprising, or adapted to form, passageways for carrying off drainage ([E01C 9/004](#) , [E01C 9/008](#) , [E01C 9/08](#) , [E01C 9/10](#) , [E01C 11/228](#) , [E01C 13/00](#) take precedence-)}
- E01C 11/227
 - • • {Gutters; Channels ([E01C 11/223](#) takes precedence; permanently installed flushing means [E01H 3/04](#)-); Roof drainage discharge ducts set in sidewalks}
- E01C 11/24
 - Methods or arrangements for preventing slipperiness or protecting against influences of the weather{(-measures taken in connection with the foundation [E01C 3/06](#) ; paving elements with anti-slip inlays [E01C 5/22](#) ; aggregates resisting to grinding [E01C 7/085](#) , [E01C 7/142](#) , [E01C 7/182](#) ; specially for surface layers [E01C 7/35](#) ; reinforcements extending up to the surface [E01C 11/16](#) , [E01C 11/18](#) , [E01C 11/185](#) ; drainage [E01C 11/22](#) ; windscreens [E01F 7/02](#) ; snow fences [E01F 7/02](#) ; combating fog [E01H 13/00](#)-)}
- E01C 11/245
 - • {for preventing ice formation or for loosening ice, e.g. special additives to the paving material, resilient coatings ([E01C 11/26](#) takes precedence; built-in sanding or sprinkling devices [E01H 10/00](#)-)}
- E01C 11/26
 - • Permanently installed heating or blowing devices{(-specially for combating fog [E01H](#) ; built-in melting devices for dislodged snow [E01H 5/102](#)-); Mounting thereof}
- E01C 11/265
 - • • {Embedded electrical heating elements (-in floors [F24D 13/00](#)-); Mounting thereof}
- E01C 13/00**

Pavings or foundations specially adapted for playgrounds or sports grounds; {Drainage, irrigation or heating of sports grounds} (-general layout [A63C 19/00](#) -)
- E01C 13/003
 - {Construction of, or surfacings for, rinks or tracks for roller skating, skateboarding or the like (-layout of roller-skating rinks [A63C 19/10](#)-)}
- E01C 13/02
 - Foundations, e.g. with drainage or heating arrangements{(-[E01C 13/003](#) , [E01C 13/083](#) , [E01C 13/10](#) take precedence; drainage of soil [E02B 11/00](#)-)}
- E01C 13/04
 - Pavings made of prefabricated single units ({ [E01C 13/003](#) , [E01C 13/06](#) } , [E01C 13/08](#) , [E01C 13/10](#) take precedence-)
- E01C 13/06
 - Pavings made in situ,{ e.g. for sand grounds, clay courts [E01C 13/003](#) } , ([E01C 13/08](#) , [E01C 13/10](#) take precedence-)
- E01C 13/08
 - Surfaces simulating grass; {Grass-grown sports grounds(-grass-like surfaces for skiing [E01C 13/12](#)-)}
- E01C 13/10
 - for artificial surfaces for outdoor or indoor practice of snow or ice sports ([E01C 13/08](#) takes precedence; production of snow or ice for winter sports or similar recreational purposes [F25C 3/00](#)-)
- E01C 13/12
 - for snow sports,{e.g. skiing or ski tow track(-mechanical ski trails [A63C 19/10](#)-)}

E01C 17/00	Pavements lights, i.e translucent constructions forming part of the surface (-blocks specially designed for marking roads E01F 9/04-)
E01C 19/00 - E01C 23/00	<u>Machine, tools, or auxiliary devices for constructing or repairing the surfacing of roads or like structures (-constructing the road bed E02D , E02F-)</u>
E01C 19/00	Machines, tools or auxiliary devices for preparing or distributing paving materials, for working the placed materials, or for forming, consolidating, or finishing the paving (-surface stabilisation E01C 21/00 ; apparatus specially adapted for reconditioning or repairing paving E01C 23/00-)
E01C 19/004	• {Devices for guiding or controlling the machines along a predetermined path (-for graders or bulldozers E02F 3/841 ; for other soil-shifting machines E02F 9/2045 -)}
E01C 19/008	• • {by reference lines placed along the road, e.g. wires co-operating with feeler elements (- E01C 19/006 takes precedence-)}
E01C 19/02	• for preparing the materials{(- E01C 19/002 , E01C 19/45 , E01C 19/46 , E01C 21/00 , E01C 23/065 take precedence; producing hydraulic cement concrete in general B28C 5/00 to B28C 9/00 -)}
E01C 19/05	• • Crushing, pulverising or disintegrating apparatus ({preparing and placing involving breaking E01C 19/466 ; in general B02C -); Aggregate screening, cleaning,{drying}or heating apparatus; {Dust-collecting arrangements specially adapted therefor}
E01C 19/08	• • Apparatus for transporting and {heating or}melting asphalt, bitumen, tar, or the like (-stationarily-arranged melting boilers for tar, asphalt, or the like, in general C10C 3/12 -)
E01C 19/10	• • Apparatus or plant for premixing or precoating aggregate or fillers with non-hydraulic binders, e.g. with bitumen, with resins,{i.e. producing mixtures or coating aggregates otherwise than by penetrating or surface dressing}; Apparatus for premixing non-hydraulic mixtures prior to placing or for reconditioning salvaged non-hydraulic compositions{(- E01C 19/08 , E01C 19/21 , E01C 21/00 , E01C 23/065 take precedence-)}
E01C 19/1004	• • • {Reconditioning or reprocessing bituminous mixtures, e.g. salvaged paving, fresh patching mixtures grown unserviceable; Recycling salvaged bituminous mixtures; Apparatus for the in-plant recycling thereof (- E01C 19/1036 takes precedence-)}
E01C 19/1009	• • • {Plant wherein type or construction of the mixer are irrelevant (- E01C 19/1004 takes precedence-)}
E01C 19/1013	• • • {Plant characterised by the mode of operation or the construction of the mixing apparatus; Mixing apparatus; (- E01C 19/1004 , E01C 19/1054 take precedence-)}
E01C 19/1022	• • • • {Coating the solid ingredients by passing same through a shower or cloud of binder (- E01C 19/21 , E01C 19/4813 take precedence-)}
U E01C 19/1027	• • • • {Mixing in a rotary receptacle}
E01C 19/1031	• • • • • {the mixture being discharged continuously (- E01C 19/1036 takes precedence-)}
E01C 19/104	• • • • {Mixing by means of movable members in a non-rotating mixing enclosure, e.g. stirrers (- E01C 19/08 takes precedence-)}
E01C 19/105	• • • • {-Mixing or coating by a combination of methods covered by E01C 19/1018 to E01C 19/104 , excluding E01C 19/1036 -}
E01C 19/1054	• • • {Preparing mixtures of which at least part of the solid ingredients has previously been deposited on the surface, excluding penetrating or surface dressing, e.g. in situ mixing, mixing involving lifting of spread or windrowed aggregate (-preparing and placing such bituminous mixtures E01C 19/463 ; recycling in place or on the road E01C 23/065 -)}

- U E01C 19/1059
 - • • {Controlling the operations; Devices solely for supplying or proportioning the ingredients}
- E01C 19/1063
 - • • • {Controlling the operations (-E01C 19/1068 takes precedence-)}
- E01C 19/12
 - for distributing granular or liquid materials ({ E01C 19/002 , E01C 19/45 , E01C 19/46 , E01C 19/48 , E01C 23/03 , E01C 23/065 } , E01C 23/07 take precedence; for filling joints or grooves E01C 23/02 , E01C 23/09-)
- E01C 19/15
 - • for laying-down uncoated stone or similar materials, or for striking-off or spreading same without compacting, e.g. for crushed rock base courses, sand cushions for paving ({ E01C 19/466 } , E01C 19/52 take precedence; distributing E01C 19/20 ; { laying down and rolling E01C 19/482 })
- E01C 19/16
 - • for applying or spreading liquid materials, e.g. bitumen slurries ({ E01C 19/1054 , E01C 19/21 , } E01C 19/45 , { E01C 19/4813 , E01C 21/00 , } E01C 23/02 , E01C 23/03 , { E01C 23/065 , E01C 23/096 , E01C 23/0973 , E01C 23/0993 } , E01C 23/16 take precedence; { spreading-out or smoothing-down means as parts of spraying apparatus E01C 19/178 })
- E01C 19/17
 - • • Application by spraying {or throwing}
- E01C 19/18
 - • Devices for distributing road-metals mixed with binders, e.g. cement, bitumen, without consolidating or ironing effect (-E01C 19/20 , { E01C 19/21 , E01C 19/46 } , E01C 19/47 , { E01C 19/48 , E01C 21/00 , E01C 23/065 , E01C 23/07 } take precedence; conveying installation for concrete or the like B65G-)
- E01C 19/185
 - • • {for both depositing and spreading-out or striking-off the deposited mixture (-laying-down the materials and consolidating them, or finishing the surface, E01C 19/48-)}
- E01C 19/20
 - • Apparatus for distributing, e.g. spreading, granular or pulverulent materials, e.g. sand, gravel, salt, dry binders ({ E01C 19/21 , E01C 19/4813 , E01C 19/482 , E01C 23/098 , E01C 23/166 take precedence; } fertiliser distributors A01C 15/00 ; { permanently-installed devices for applying gritting or thawing materials E01H 10/005 ; mobile spreaders specially adapted for treating wintry roads E01H 10/007 })
- E01C 19/2005
 - • • {without driven loosening, discharging or spreading (-E01C 19/205 takes precedence-)}
- E01C 19/201
 - • • {with driven loosening, discharging or spreading parts, e.g. power-driven, drive derived from road-wheels (-E01C 19/205 takes precedence-)}
- E01C 19/21
 - • for simultaneously but separately applying liquid material and granular or pulverulent material, e.g. bitumen and grit, with or without spreading{(-with rolling E01C 19/4813-); for filling grooves and gritting the filling}
- E01C 19/22
 - for consolidating or finishing laid-down unset materials ({ E01C 19/002 , E01C 19/48 , E01C 21/00 } E01C 23/02 { E01C 23/065 } take precedence; apparatus for generating vibrations in general B06B-)
- E01C 19/23
 - • Rollers therefor; Such rollers usable also for compacting soil ({ E01C 19/41 , } E01C 19/43 , { E01C 19/52 , E01C 23/065 } take precedence; specially adapted for agricultural purposes A01B 29/00 ; garden rollers A01G 1/12 ; making or maintaining surfaces of snow or ice E01H 4/00 ; solely for soil compaction E02D 3/026-)
- E01C 19/231
 - • • {with both elastically-deformable and rigid rolling elements, e.g. pneumatic-tyred compactor with selectively operative or inoperative steel-faced roll (-with auxiliary elastically-deformable rolling elements for working only restricted zones E01C 19/27 ; rigid-roll rollers with conventional pneumatic-tyred tractors or traction-units E01C 19/25 , E01C 19/26 , E01C 19/28-)}
- E01C 19/233
 - • • • {the rigid rolling elements being vibrated or subjected to impacts (-with vibrated elastically-deformable rolling elements E01C 19/287-)}

- E01C 19/24
 - • • hand propelled ({ [E01C 19/235](#) , } [E01C 19/27](#) to [E01C 19/29](#) , { [E01C 19/41](#) }take precedence)
- E01C 19/25
 - • • propelled by animals or vehicles ({ [E01C 19/235](#) } , [E01C 19/26](#) to [E01C 19/29](#) take precedence-)
- E01C 19/26
 - • • self-propelled or fitted to road vehicles ({ [E01C 19/231](#) , [E01C 19/235](#) } , [E01C 19/27](#) to [E01C 19/29](#) take precedence-)
- E01C 19/264
 - • • • {with attachments for work other than rolling, e.g. grading, scarifying (-rollers fitted to road-construction or earth-moving machinery [E01C 19/266](#)-)}
- E01C 19/266
 - • • • {fitted to vehicles, road-construction or earth-moving machinery, e.g. auxiliary roll readily movable to operative position (-[E01C 19/268](#) , [E01C 19/4806](#) , [E01C 19/488](#) , [E01C 19/52](#) , [E01C 21/00](#) , [E01C 23/065](#) take precedence-); provided with means for facilitating transport; Means for transporting rollers; Arrangements or attachments for converting vehicles into rollers, e.g. rolling sleeves for wheels}
- E01C 19/268
 - • • • {designed for rolling surfaces not situated in the plane of the riding surface of the apparatus, e.g. stepped-down surfaces, sloping edge of surfacing (-trench rollers [E02D 3/032](#) ; slope rollers [E02D 3/039](#)-)}
- E01C 19/27
 - • • with elastically-deformable rolling elements, e.g. pneumatic tyres ({ [E01C 19/231](#) takes precedence } ; vibrating or impacting [E01C 19/28](#)-)
- E01C 19/28
 - • • Vibrated rollers or rollers subjected to impacts, e.g. hammering blows ({ [E01C 19/235](#) , } [E01C 19/29](#) , { [E01C 19/41](#) }take precedence;{ combined with non-vibrated elastically-deformable rolling elements [E01C 19/233](#) })
- E01C 19/281
 - • • • {propelled by hand or by vehicles, e.g. towed (-[E01C 19/285](#) to [E01C 19/288](#) take precedence-)}
- E01C 19/282
 - • • • {self-propelled, e.g. with an own traction-unit (-[E01C 19/285](#) to [E01C 19/288](#) take precedence-)}
- E01C 19/285
 - • • • {with attachments for work other than rolling, e.g. dozer blades, shoes for conversion into plate vibrator; fitted to vehicles, road-construction or earth-moving machinery (-[E01C 19/29](#) , [E01C 19/4806](#) , [E01C 19/488](#) , [E01C 19/52](#) , [E01C 21/00](#) , [E01C 23/065](#) take precedence-); vibrated or the like auxiliary rolls, e.g. for rolling road edges; provided with means for facilitating transport}
- E01C 19/286
 - • • • {Vibration or impact-imparting means; Arrangement, mounting or adjustment thereof; Construction or mounting of the rolling elements, transmission or drive thereto, e.g. to vibrator mounted inside the roll (-[E01C 19/287](#) and [E01C 19/288](#) take precedence-)}
- E01C 19/287
 - • • • {with vibrated elastically-deformable or elastomer-faced rolling elements or with such elements subjected to impacts, e.g. multi-roll vibratory apparatus with an endless elastomer belt passed around the rolls (-rollers with both non-vibrated, elastically-deformable and vibrated rigid rolling elements [E01C 19/233](#)-)}
- E01C 19/29
 - • • Rolling apparatus adapted to apply a rolling pressure less than its weight, e.g. roller finishers travelling on formrail {combined with spread-out, strike-off or smoothing means; Rolling elements with controlled penetration or a controlled path of movement in a vertical plane, e.g. controlled by the formrails, by guides ensuring a desired configuration of the rolled surface}
- E01C 19/30
 - • Tamping or vibrating apparatus other than rollers{; Devices for ramming individual paving elements} ({ [E01C 19/41](#) , [E01C 19/43](#) , [E01C 19/4833](#) , [E01C 19/488](#) , [E01C 19/4886](#) , [E01C 19/52](#) , [E01C 21/00](#) , } [E01C 23/02](#) , [E01C 23/04](#) take precedence; vibrated depositing devices [E01C 19/12](#) ; tamping or vibrating rollers [E01C 19/28](#) ; portable percussion tools [B25D](#); tamping or vibrating soil [E02D 3/046](#)-)

- U E01C 19/34 . . . Power-driven rammers or tampers, {e.g. air-hammer impacted shoes for ramming stone-sett paving; Hand-actuated ramming or tamping machines, e.g. tampers with manually hoisted dropping weight}
- E01C 19/35 . . . Hand-held or hand-guided tools (-E01C 19/36 to E01C 19/40 take precedence-)
- E01C 19/38 . . . with means specifically for generating vibrations, {e.g. vibrating plate compactors, immersion vibrators (-E01C 19/40 , E01C 19/41 take precedence-)}
- U E01C 19/40 . . . adapted to impart a smooth finish to the paving, e.g. tamping or vibrating finishers
- NOTE
When classifying in group [E01C 19/402](#) , classification is also made in groups [E01C 19/405](#) or [E01C 19/407](#) if of interest
- E01C 19/405 . . . {with spreading-out, levelling or smoothing means other than the tamping or vibrating means for compacting or smoothing, e.g. with screws for spreading-out the previously dumped material, with non-vibratory lengthwise reciprocated smoothing beam (-E01C 19/407 takes precedence-)}
- E01C 19/42 . . Machines for imparting a smooth finish to freshly-laid paving courses other than by rolling, tamping or vibrating (-for distributing only [E01C 19/12](#) ; { hand-actuated smoothing tools [E01C 19/44](#) })
- E01C 19/44 . . Hand-actuated tools other than rollers, tampers, or vibrators, specially adapted for imparting a required finish to freshly-laid paving courses (-E01C 19/43 , { [E01C 23/02](#) }take precedence)
- E01C 19/45 . . Portable apparatus for preparing, or for preparing and applying to the road, compound liquid binders, e.g. emulsified bitumen, fluxed asphalt (-applying only [E01C 19/16](#)-)
- E01C 19/46 . . for preparing and placing the materials {e.g. slurry seals}{[E01C 19/002](#) , }
[E01C 19/45](#) , { [E01C 21/00](#) , [E01C 23/065](#) }take precedence)
- E01C 19/47 . . Hydraulic cement concrete mixers combined with distributing means specially adapted for road building ({ [E01C 19/025](#) takes precedence } ; concrete mixers per se [B28C](#)-)
- E01C 19/48 . . for laying-down the materials and consolidating them, or finishing the surface, {e.g. slip forms therefor, forming kerbs or gutters in a continuous operation in situ(-[E01C 19/002](#) , [E01C 23/065](#) take precedence; devices for guiding or controlling the machines along a predetermined path [E01C 19/004](#)-)}
- E01C 19/4806 . . {with solely rollers for consolidating or finishing (-[E01C 19/4886](#) takes precedence; combined with other consolidating or finishing means [E01C 19/488](#)-)}
- E01C 19/4813 . . {the materials being simultaneously but separately applied binders and granular or pulverulent material (-such application per se [E01C 19/21](#)-)}
- E01C 19/482 . . {the materials being uncoated stone or similar granular materials, e.g. sand (-laying-down uncoated stone or similar materials per se [E01C 19/15](#) ; distributing granular or pulverung materials per se [E01C 19/20](#)-)}
- E01C 19/4826 . . {the materials being aggregate mixed with binders (-distributing per se [E01C 19/18](#)-)}
- E01C 19/4833 . . {with tamping or vibrating means for consolidating or finishing, e.g. immersed vibrators, with or without non-vibratory or non-percussive pressing or smoothing means (-[E01C 19/4806](#) , [E01C 19/4886](#) take precedence; combined with rollers [E01C 19/488](#)-)}

- E01C 19/4866
 - {with solely non-vibratory or non-percussive pressing or smoothing means for consolidating or finishing (-E01C 19/4886 takes precedence; combined with rollers E01C 19/488-)}
- E01C 19/488
 - {with rollers for consolidating or finishing combined with tamping, vibrating, pressing or smoothing consolidation or finishing means (-E01C 19/4886 takes precedence-)}
- E01C 19/4886
 - {for forming in a continuous operation kerbs, gutters, berms, safety kerbs, median barriers or like structures in situ, e.g. by slip-forming, by extrusion (-removable forms for kerbs, gutters or similar structures E01C 19/506 ; making conduits in situ E02D 29/10-)}
- E01C 19/50
 - Removable forms or shutterings for road-building purposes (-E01C 23/02 , E01C 23/04 take precedence; permanent forms E01C 3/00 to E01C 7/00 , { E01C 9/00 to E01C 17/00 } ; slip forms E01C 19/48-); Devices or arrangements for forming individual paving elements, e.g. kerbs, in situ
- E01C 19/502
 - {Removable forms or shutterings, e.g. side forms; Removable supporting or anchoring means therefor, e.g. stakes (-for forming individual elements E01C 19/508 ; for grooves or like channels E01C 23/021-)}
- E01C 19/504
 - • {adapted to, or provided with, means to maintain reinforcing or load transfer elements in a required position (-removable supports for positioning reinforcing or load transfer elements in general E01C 23/045-)}
- E01C 19/508
 - {Devices or arrangements for forming individual paving elements in situ, e.g. by sectioning a freshly-laid slab (-permanent forms therefor E01C 9/001 ; imprinting freshly-laid paving to simulate stones E01C 19/43 ; cutting sett paving E01C 23/0906-)}
- U E01C 19/52
 - Apparatus for laying individual preformed surfacing elements, e.g. kerbstones
- E01C 19/526
 - {hand operated (-E01C 19/524 takes precedence-)}
- E01C 21/00**

Apparatus or processes for surface {soil}stabilisation for road building or like purposes, e.g. mixing local aggregate with binder ({ recycling in place or on the road involving soil stabilisation E01C 23/065 } ; stabilising soil under existing surfacing E01C 23/10 ; soil-conditioning or soil-stabilising materials C09K 17/00 ; soil consolidation in general E02D 3/12)
- E01C 21/02
 - Fusing, calcining, or burning soil in situ(-improving soil by thermal means in general E02D 3/11 ; devices for heating foundation or paving E01C 23/14-)}
- E01C 23/00**

Auxiliary devices or arrangements for constructing, repairing, reconditioning, or taking-up road or like surfaces (apparatus for reconditioning of salvaged non-hydraulic compositions{for- in plant recycling of salvaged bituminous mixtures} E01C 19/10)
- E01C 23/01
 - Devices or auxiliary means for setting-out or checking the configuration of new surfacing, e.g. templates, screed {or reference line}supports (-form rails E01C 19/50-); Applications of apparatus for measuring, indicating, or recording the surface configuration of existing surfacing, e.g. profilographs (-E01C 23/07 takes precedence; measuring roughness or irregularity in general G01B-)
- E01C 23/02
 - Devices for making, treating or filling grooves or like channels in not-yet-hardened paving, e.g. for joints or markings (-surface patterning E01C 19/43-); Removable forms therefor (-non-removable forms E01C 11/02-); Devices for introducing inserts or removable insert-supports in not-yet-hardened paving (-E01C 23/04 takes precedence; non-removable {joint} insert supports E01C 11/02-)
- E01C 23/021
 - {Removable, e.g. reusable, forms for grooves or like channels (-E01C 23/028 takes precedence; groove-forming members of groove-making apparatus E01C 23/025 , E01C 23/026-); Installing same prior to placing the paving(-into laid paving E01C 23/026-)}

- E01C 23/023
 - {Removable joint-body supports (~~E01C 23/045~~ take precedence-); Installing joint or like bodies, e.g. waterstops, prior to placing the paving(-into laid paving [E01C 23/026](#) takes precedence-)}
- E01C 23/025
 - {Making or working grooves or like channels in laid paving, e.g. smoothing groove edges (~~E01C 23/026~~ , [E01C 23/028](#) take precedence-)}
- E01C 23/026
 - {Introducing preformed inserts into or filling grooves or like channels in laid paving, with or without concurrent making or working of groove or channel, e.g. filling groove with semi-plastic material (~~E01C 23/028~~ takes precedence-)}
- E01C 23/03
 - Arrangements for curing paving; Devices for applying curing means; Devices for laying prefabricated underlay, e.g. sheets, membranes (~~reinforcing elements [E01C 23/04](#)~~); Protecting paving under construction or while curing, e.g. use of tents (~~road barriers [E01F 13/00](#)~~)
- E01C 23/04
 - Devices for laying {inserting or positioning}reinforcing elements or dowel bars {with or without joint bodies(-installing or inserting joint bodies per se [E01C 23/023](#) , [E01C 23/026](#))}; Removable support for reinforcing {or load transfer}elements (non- removable supports therefor{ [E01C 11/02](#) } [E01C 11/16](#) ; side forms adapted to supporting reinforcement [E01C 19/50](#)); Devices, e.g. removable forms, for making essentially horizontal ducts in paving, e.g. for prestressed reinforcements
- E01C 23/06
 - Devices or arrangements for working the finished surface (~~working freshly laid paving [E01C 19/42](#) to [E01C 19/44](#) , [E01C 23/02](#) ; mining picks [E21C 35/18](#)~~); Devices for repairing {or reconditioning}the surface of damaged paving; {Recycling in place or on the road}
- E01C 23/065
 - {Recycling in place or on the road, i.e. hot or cold reprocessing of paving in situ or on the traffic surface, with or without adding virgin material or lifting of salvaged material; Repairs or resurfacing involving at least partial reprocessing of the existing paving (~~in situ mixing of hydraulic cement concrete [E01C 19/025](#) ; apparatus for in-plant recycling [E01C 19/1004](#) , [E01C 19/1036](#)~~)}
- E01C 23/07
 - Apparatus combining measurement of the surface configuration of paving with application of material in proportion to the measured irregularities (~~measuring means only [E01C 23/01](#) , { [G01B](#) }~~)
- E01C 23/08
 - for roughening or patterning; for removing {the surface down to a predetermined depth}high spots or material bonded to the surface, e.g. markings; {for maintaining earth roads, clay courts or like surfaces by means of surface working tools, e.g. scarifiers, levelling blades} (~~removing matter not bonded to the surface [E01H 1/00](#) ; roughening or detaching ice [E01H 5/12](#)~~)
- U E01C 23/085
 - • using power-driven tools, e.g. vibratory tools
- E01C 23/088
 - • • Rotary tools, e.g. milling drums(~~for forming recesses to receive marking materials [E01C 23/0946](#)~~)
- U E01C 23/09
 - for forming cuts, grooves, or recesses, e.g. for making joints or channels for markings, for cutting-out sections to be removed; for cleaning, treating, or filling cuts, grooves, recesses, or fiddures; for trimming paving edges
- E01C 23/0906
 - • {for forming, opening-out, cleaning, drying or heating cuts, grooves, recesses or, excluding forming, cracks, e.g. cleaning by sand-blasting or air-jet (~~E01C 23/096~~ , [E01C 23/0993](#) take precedence, save for [E01C 23/0946](#)); for trimming paving edges}
- U E01C 23/0926
 - • • {with power-driven tools, e.g. vibrated, percussive cutters}
- U E01C 23/0933
 - • • • {rotary, e.g. circular-saw joint cutters}
- E01C 23/094
 - • • • • {about vertical or inclined axes, e.g. for core sampling (~~E01C 23/0946~~ takes precedence-)}

- E01C 23/0946
 - • • • • {specially for forming recesses to receive marking materials or markers, e.g. cutters for milling traffic line channels, core drills for button-setting (-other tools [E01C 23/0993](#)-)}
- E01C 23/096
 - • • {for forming, opening-out, cleaning, drying or heating and filling (-[E01C 23/0993](#) takes precedence-)}
- E01C 23/0966
 - • • {for filling or priming, with or without working the surface of the filling or applying particulate material thereto, e.g. for filling the joints of stone-sett paving (-[E01C 23/096](#) , [E01C 23/0993](#) take precedence-)}
- E01C 23/0993
 - • • {for forming or installing surface markings or signals in the paving, e.g. grooving for striping or for producing rumble strips, forming marker-receiving recesses (-[E01C 23/0946](#) takes precedence-)}
- E01C 23/10
 - • for raising or levelling sunken paving; for filling voids under paving; for introducing material into substructure (-consolidating soil in general [E02D 3/12](#)-)
- E01C 23/12
 - • for taking-up, tearing-up, or {full-depth}breaking-up paving,{e.g. sett extractor} (adapted to both placing and removing{preformed}paving{elements} [E01C 19/52](#)-)
- E01C 23/121
 - • • {with non-powered tools, e.g. rippers (-rollers with ripping attachments [E01C 19/264](#) , [E01C 19/27](#) , [E01C 19/285](#) ; roughening or patterning using non powered tools [E01C 23/082](#)-)}
- E01C 23/122
 - • • {with power-driven tools, e.g. oscillated hammer apparatus (-hand-held breakers: percussion tools [B25D](#)-)}
- E01C 23/128
 - • • {with hydrojets (-hydraulic cleaning [E01H 1/101](#)-)}
- E01C 23/14
 - for heating or drying foundation, paving, or materials thereon, e.g. paint (-[E01C 23/03](#) takes precedence; heating or drying devices incorporated in the paving [E01C 11/26](#) ; surface {soil} stabilisation by fusing, calcining or burning soil in situ [E01C 21/02](#) ; for street cleaning [E01H 1/08](#) ; melting snow or ice on surfacing [E01H 5/10](#)-)
- E01C 23/16
 - Devices for marking-out, applying, or forming traffic or like markings on finished paving (-[E01C 23/14](#) takes precedence; inserting or forming in not-yet-hardened paving [E01C 23/02](#) , in recesses formed in fully-set paving [E01C 23/09](#) ; marking-out playing courts or playgrounds [A63C 19/06](#) ; applying liquids or other fluent materials to surfaces in general [B05](#) ; road surface markings per se [E01F 9/04](#)-); Protecting fresh markings(-indicating fresh markings [E01F 9/0128](#)-)}
- U E01C 23/20
 - • for forming markings in situ
- E01C 23/22
 - • • by spraying(-[E01C 23/206](#) takes precedence-)}

Project: N/A (E01D)

- U E01D 19/00** **Structural or constructional details of bridges**
- E01D 19/02
 - Piers {([E01D 19/005](#) takes precedence; towers for suspension bridges [E01D 19/14](#)); -Abutments (foundations [E02D](#)); {Protecting same against drifting ice-(against colliding vehicles [E01F 15/00](#))}
- E01D 19/08
 - Damp-proof or other insulating layers; -Drainage arrangements or devices {Bridge deck surfacings-(bridge decks per se [E01D 19/125](#))}
- E01D 19/083
 - • {Waterproofing of bridge decks; Other insulations for bridges, e.g. thermal (insulation for buildings in general [E04B 1/62](#)); Bridge deck surfacings-(road surfacings in general [E01C](#))}
- U E01D 19/10
 - Railings; Protectors against smoke or gases, e.g. of locomotives; Maintenance travellers; Fastening of pipes or cables to bridges ({pipe-line bridges [E01D 18/00](#)); supports for pipes, cables or protective tubing, e.g. hangers, holders, clamps, cleats, clips, brackets, [F16L 3/00](#))

- E01D 19/103
- {Parapets, railings ([E01D 19/005](#) takes precedence; balustrades in general [E04F 11/18](#)); Guard barriers or road-bridges-(in general [E01F 15/00](#))}

Project: N/A (E01F)

- E01F 1/00
- Construction of { station or like} platforms or refuge islands { or like islands in traffic areas, e.g. intersection or filling-station islands} (general arrangement { of filling stations [B60S 5/02](#),} of railway platforms { [B61B 1/02](#), of traffic-channelling island at intersections [E01C 1/02](#))}{ ; Kerbs specially adapted for islands in traffic areas (specially adapted for guiding, marking or signalling [E01F 9/0533](#), for illumination [E01F 9/0536](#); lane separators diverting traffic past safety zones [E01F 9/087](#))}**

- E01F 7/00
- Devices affording protection against snow, sand drifts, side-wind effects, snowslides, avalanches or falling rocks (permanently installed heating or blowing devices for roads [E01C 11/26](#)); -Anti-dazzle arrangements {; Sight-screens for roads, e.g. to mask accident site-([E01F 8/00](#) takes precedence)}**

- E01F 7/06
- Anti-dazzle arrangements ([E01F 8/00](#) takes precedence){Securing anti-dazzle means to crash-barriers-(securing signs or supports therefor to crash-barriers [E01F 9/03](#))}

- U E01F 8/00 Arrangements for absorbing or reflecting air-transmitted noise from road or railway traffic (ground installations for reducing aircraft noise [B64F 1/26](#); general building constructions for absorbing or reflecting noise, noise absorption or reflection for buildings [E04B 1/74](#))**

- E01F 8/02
- specially adapted for sustaining vegetation or for accommodating plants (receptacles for cultivation of plants [A01G 9/02](#); securing slopes or inclines [E02D 17/20](#); retaining or protecting walls [E02D 29/02](#)); {Embankment-type or crib-type noise barriers; Retaining walls specially adapted to absorb or reflect noise-(building elements for planting walls [E04C 1/395](#))}

- U E01F 9/00 Arrangement of road signs or traffic signals (signals, signalling systems [G08](#); signs, attachment thereof to supports [G09F](#)); Arrangements for enforcing caution, e.g. speed bumps**

- U E01F 9/011**
- Upright bodies, e.g. marker posts or bollards; Supports for road signs, { e.g. posts, frames, gantries}({ [E01F 9/045](#), [E01F 9/0533](#), [E01F 13/02](#) take precedence;)} posts or poles in general [E04H 12/00](#); means for attaching signs to a supporting structure in general [G09F 7/18](#))

- E01F 9/012
- • Free-standing, e.g. traffic cones, foldable or inflatable devices; {Portable supports (for barriers [E01F 13/02](#)); Portable traffic signs or signals-(specially adapted for fitting to raised kerbs [E01F 9/0533](#), to portable barriers [E01F 13/02](#), to crash barriers [E01F 9/03](#); normal vehicle equipment portable emergency signal devices to be placed on way [B60Q 7/00](#); portable traffic signalling devices, i.e. hand signals [G08B 5/006](#))}

- E01F 9/0122
- • {-in the form of a three-dimensional body, other than of the relatively thin panel type, or designed to assume such form, e.g. cones, devices expandable or erectable to form a geometric body; Inflatable structures}

- E01F 9/0126
- • {mounted on vehicles, e.g. for rapid change of station, as signal fitting of service vehicle (vehicle aspects [B60P](#), [B62D](#)); Warning vehicles designed to move along with traveling road-maintenance, e.g. remotely controlled-(mobile impact cushioning arrangements [E01F 15/14](#))}

- E01F 9/013
- • intended to be readily removable, e.g. for insertion into road-stud sockets ([E01F 9/012](#) takes precedence); {Base members specially adapted therefor-([E01F 9/018](#), [E01F 13/026](#) take precedence)}

- E01F 9/014
- • Storing, transporting, placing or retrieving portable devices, {e.g. road cones emplacing vehicles-(vehicle aspects [B60P](#), [B62D](#); applying permanent markers, e.g. buttons [E01C 23/18](#))}

- E01F 9/018
 - • specially adapted for breaking, disengaging, collapsing or permanent deformation upon deflection or displacement, e.g. upon vehicle impact; {replaceable couplings-([E01F 9/0118](#), [E01F 9/012](#), [E01F 9/014](#), [E01F 9/016](#), [E01F 9/017](#) take precedence)}
- E01F 9/019
 - • Extensible, collapsible or pivotable, {e.g. telescopic} ([E01F 9/017](#), [E01F 9/018](#) take precedence); {Retractable or otherwise movable to an underground position-([E01F 9/093](#), [E01F 13/046](#), [E01F 13/085](#) take precedence; retractable traffic islands [E01F 1/005](#))}
- U E01F 9/04
 - Road surface markings; Kerbs or road edgings, specially adapted for informing road users, e.g. illuminated (for redirecting vehicles [E01F 15/00](#))
- E01F 9/041
 - • {Selection of materials for road surface marking, e.g. wheel-grip improving additives, reflecting particles (specially adapted for kerbs [E01F 9/053](#), for playing grounds [A63C 19/06](#); reflecting or signal paints [C09D 5/004](#)); Methods of forming, installing or applying markings in, on or to paving-([E01F 9/047](#), [E01F 9/053](#), [E01F 9/06](#) take precedence; devices therefor [E01C](#))}
- U E01F 9/08
 - • Traffic lines, {e.g. edge lines (flush kerbs or edge strips specially adapted for traffic guidance [E01F 9/053](#)); Methods of forming, installing or applying same in, on or to the road (devices therefor [E01C 23/16](#)); Traffic lane separators}
- E01F 9/087
 - • Lane delineators for physically separating traffic lanes and discouraging but not preventing crossing {e.g. low barriers for channelling traffic-([E01F 9/093](#) takes precedence; insurmountable lane-separating barriers [E01F 15/006](#), [E01F 15/02](#))}
- E01F 9/093
 - • movable for repeated use at different locations {e.g. shiftable lines, line location transferable by selective illumination, retractable lane delineating posts-([E01F 15/006](#) takes precedence; retractable posts [E01F 9/019](#))}
- E01F 13/00**

Arrangements for obstructing or restricting traffic, e.g. gates, barricades (for railway crossings [B61L](#)); {Preventing passage of vehicles of selected category or dimensions-([E01F 13/12](#), [E01F 13/126](#) take precedence)}
- U **E01F 15/00**

Safety arrangements for slowing, redirecting or stopping errant vehicles, e.g. guard posts or bollards; Arrangements for reducing damage to roadside structures due to vehicular impact (arrangements for fastening signs or signals to safety barriers or the like [E01F 9/03](#); for forcibly arresting vehicles [E01F 13/00](#); {guard barriers on road-bridges [E01D 19/103](#); fences in general [E04H 17/00](#))}
- E01F 15/006
 - {Lane control by movable lane separating barriers, e.g. shiftable barriers, retractable kerbs ([E01F 15/12](#) takes precedence; by crossable lane separators [E01F 9/093](#)); Apparatus or barriers specially adapted therefor, e.g. wheeled barriers-(wall-type modules [E01F 15/08](#))}
- U E01F 15/02
 - Continuous barriers extending along roads or between traffic lanes (crossable-lane separators {[E01F 9/087](#)})
- E01F 15/04
 - • essentially made of longitudinal beams or rigid strips {supported above ground at spaced points-([E01F 15/10](#), [E01F 15/12](#) take precedence)}
- U E01F 15/08
 - • essentially made of walls or wall-like elements ([E01F 15/10](#), [E01F 15/12](#) take precedence); {Cable-linked blocks}
- E01F 15/081
 - • • {-characterised by the use of a specific material}
- E01F 15/083
 - • • • {-using concrete}
- E01F 15/085
 - • • • {-using metal}
- E01F 15/086
 - • • • {-using plastic, rubber or synthetic materials}
- E01F 15/088
 - • • {-Details of element connection}
- U E01F 15/14
 - specially adapted for local protection, e.g. for bridge piers, for traffic islands
- E01F 15/141
 - • {-for column or post protection}

- E01F 15/143 • • {-Protecting devices located at the ends of barriers ([E01F 15/145](#) takes precedence)}
- E01F 15/145 • • {-Means for vehicle stopping using impact energy absorbers}
- E01F 15/146 • • • {-fixed arrangements}
- E01F 15/148 • • • {-mobile arrangements}

Project: N/A (E01H)

- U E01H 1/00** **Removing undesirable matter from roads or like surfaces, with or without moistening of the surface (for snow or ice [E01H 5/00](#); cleaning tramway rails [E01H 8/00](#); obstruction removers on vehicles [B60R 19/00](#); in combination with application of bitumen or the like [E01C 19/16](#); in combination with application of traffic line [E01C 23/16](#); { Sweeping apparatus, particularly for lawns [A01G 1/12](#); Removing undesirable matter from floors and similar surfaces [A47L 5/00](#) to [A47L 13/00](#))}**
- U E01H 1/08 • Pneumatically dislodging or taking-up undesirable matter { or small objects} ({ [E01H 1/006](#) and [E01H 1/005](#) take precedence;} suction cleaners in general [A47L 5/00](#) to [A47L 9/00](#); { sucking-off liquids or semi-liquids [E01H 1/108](#)}); Drying by heat only or by streams of gas (permanently-installed heating or blowing devices [E01C 11/26](#); heating or drying for road- building or repairing [E01C 23/14](#); { devices for melting snow or ice in situ [E01H 5/10](#), [E01H 8/08](#); for scorching undesirable vegetation [E01H 11/00](#)}); Cleaning by projecting abrasive particles (sand-blasting in general [B24C](#); { roughening of road surfaces [E01C 23/08](#); cleaning of road joints [E01C 23/0906](#)})
- E01H 1/0809 • • {-Loosening or dislodging by blowing (with steam [E01H 1/10](#) combined with suction [E01H 1/0863](#); removing snow by blowing [E01H 5/106](#); removing fog by blowing [E01H 13/00](#); cleaning rails by blowing [E01H 8/105](#), [E01H 8/125](#); cleaning joints in road construction by blowing [E01C 23/0906](#)); Drying by means of gas streams-(by heat only [E01H 1/08](#); combined with snow or ice melting [E01H 5/10](#), [E01H 5/106](#), [E01H 5/108](#))}
- U E01H 1/0827 • • {-Dislodging by suction; Mechanical dislodging-cleaning apparatus with independent or dependent exhaust, e.g. dislodging-sweeping machines with independent suction nozzles (combined with blowing [E01H 1/0872](#)); Mechanical loosening devices working under vacuum}
- E01H 1/0836 • • • {-Apparatus dislodging all of the dirt by suction (liquids or semi-liquids [E01H 1/108](#); combined with loosening by blowing [E01H 1/0863](#); for cleaning rails [E01H 8/105](#), [E01H 8/125](#); removing snow by suction [E01H 5/106](#), [E01H 8/08](#)); Suction nozzles-(independent suction nozzles in mechanical dislodging-cleaning devices [E01H 1/0827](#); suction and blowing nozzles [E01H 1/0863](#))}
- E01H 1/10 • Hydraulically loosening or dislodging undesirable matter (stationary flushing devices [E01H 3/04](#)); -Raking or scraping apparatus (hand implements [E01H 1/12](#)); {Removing liquids or semi-liquids e.g., absorbing water, sliding-off mud-(removing pneumatically [E01H 1/08](#); steam-cleaning [E01H 11/00](#))}
- E01H 1/105 • • {-Raking, scraping or other mechanical loosening devices, e.g. for caked dirt (loosening ice or hard snow [E01H 5/12](#); working the road surface [E01C 23/08](#)); Apparatus for mechanically moving dirt on road surfaces, e.g. wipers for evacuating mud-(wipers as accessories for road washing machines [E01H 1/101](#); of devices for removing liquids or semi-liquids [E01H 1/108](#); of snow scrapers for evacuating wet snow [E01H 5/06](#); wipers for spreading bitumen or the like [E01C 19/16](#), [E01C 19/178](#))}
- U E01H 1/12 • Hand implements, e.g. litter pickers ({blowing or suction instruments [E01H 1/08](#); spraying instruments [E01H 1/101](#)}; rakes [A01D 7/00](#); {brushes or brooms [A46B](#), [A46D](#); floor scrapers [A47L 13/02](#); floor squeegees [A47L 13/11](#))}
- U E01H 2001/122 • • {-Details}

- U E01H 2001/1226 . . . {characterised by way of removing material}
- E01H 2001/1246 {Double or multiple closing means making horizontal sliding movement
(not applied for grabs)}(not applied for grabs)}
- U E01H 5/00 Removing snow or ice from roads or like surfaces; Grading or roughening snow or ice (by applying de-icing agents E01H 10/00; obstruction removers on vehicles B60R 19/00; sand, gravel or salt spreaders E01C 19/20)**
- E01H 5/12 . Apparatus or implements specially adapted for breaking, disintegrating, or loosening layers of ice or hard snow {with or without clearing or removing (E01H 5/10 takes precedence); Roughening ice or hard snow by means of tools (by means of gritting materials E01H 10/00 ; roughening or breaking-up pavements E01C 23/08 , E01C 23/12-)}
- U E01H 8/00 Removing undesirable matter from the permanent way of railways; Removing undesirable matter from tramway rails (E01H 1/00 to E01H 6/00 take precedence; { controlling vegetation E01H 11/00; removing ballast from rails or sleepers E01B 27/023; removing, cleaning the ballast itself E01B 27/04, E01B 27/06})**
- E01H 8/02 . Methods or apparatus for removing ice or snow from railway tracks, e.g. using snow-ploughs {Devices for dislodging snow or ice which are carried or propelled by tramway vehicles} (operating only on rails or flange grooves E01H 8/10); {Moving or removing ballast; -(E01B 27/02, E01B 27/04 take precedence; removing snow or ice in general E01H 5/00)}
- E01H 8/04 . . essentially by non-driven elements {Clearing instruments, e.g. scraping blades, scoop plates (with oscillating or vibrating tools E01H 8/06; with heated instruments or combined with melting E01H 8/10; ballast ploughs E01B 27/025; track clearing devices B61F 19/06)}
- E01H 8/06 . . essentially by driven tools {clearing instruments, e.g. rotary cutting tools or brushes (with heated instruments or combined with melting E01H 8/08; for spreading or redistributing ballast E01B 27/026)}
- U E01H 8/10 . Removing undesirable matter from rails, flange grooves, or the like {railway parts}, e.g. removing ice from contact rails, removing mud from flange grooves (heating, blowing, or fluid-applying devices installed in the track E01B 19/00; built-in draining devices for rails E01B 21/02; removing ballast from rails E01B 27/04)
- U E01H 8/12 . . specially adapted to grooved rails, flange-ways, or like {parts of the permanent way, e.g. level crossings or switches}
- E01H 8/125 . . . {Pneumatically or hydraulically loosening, removing or dislodging undesirable matter, e.g. removing by blowing, suction or flushing (flushing devices incorporated in tramay tracks E01B 21/02); Loosening or removing by means of heat (built-in heating, blowing or liquid applying devices for switches E01B 7/24)}
- U E01H 12/00 Cleaning beaches { or sandboxes}**
- E01H 12/002 . {-Treatment in situ (E01H 12/006 takes precedence)}
- E01H 12/004 . {-using floating devices}
- E01H 12/006 . {-Oil removal}
- E01H 12/008 . {-cleaning sandboxes}

Project: N/A (E02B)

- E02B 1/00 Equipment or apparatus for, or methods of, general hydraulic engineering, {e.g. protection of constructions against ice-strains (protection of offshore constructions against ice-loads E02B 17/0021; ice-structures as artificial islands E02B 17/028)}**

- U E02B 3/00 Engineering works in connection with control or use of streams, rivers, coasts, or other marine sites (barrages or weirs [E02B 7/00](#)); Sealing or joints for engineering works in general**
- U E02B 3/04 · Structures or apparatus for, or methods of, protecting banks, coasts, or harbours (sealings or joints [E02B 3/16](#); {[E02B 1/003](#) takes precedence})
- E02B 3/043 · · {-Artificial seaweed}
- E02B 3/046 · · {-Artificial reefs}
- U E02B 3/06 · · Moles; Piers; Quay walls; Groynes; Breakwaters {Wave dissipating walls; Quay equipment}
- E02B 3/066 · · · {Quays (bulkheads [E02D 5/00](#); caissons [E02D 23/00](#); retaining walls [E02D 29/00](#)-)}
- U E02B 3/10 · · Dams; Dykes; Sluice ways or other structures for dykes, dams, or the like (making embankments or dams in general [E02D 17/18](#))
- E02B 3/102 · · · {-Permanently installed raisable dykes}
- E02B 3/104 · · · · {-with self-activating means}
- E02B 3/106 · · · {-Temporary dykes}
- E02B 3/108 · · · · {-with a filling, e.g. filled by water or sand}
- U E02B 5/00 Artificial water canals, { e.g. irrigation canals}(for water-power plants [E02B 9/02](#); irrigation of soil [E02B 13/00](#))**
- U E02B 5/08 · Details, e.g. gates, screens
- NOTE
This subdivision is limited to closures, devices for arresting waterborne materials and divisors
- E02B 5/082 · · {-Closures (for irrigation conduits [E02B 13/02](#))}
- U E02B 15/00 Cleaning or keeping clear the surface of open water; Apparatus therefor (construction of ships or other waterborne vessels [B63B](#), e.g. vessels specially adapted for collecting pollution from open water [B63B 35/32](#); in swimming or splash baths or pools [E04H 4/16](#))**
- U E02B 15/04 · Devices for cleaning or keeping clear the surface of open water from oil or like floating materials by separating or removing these materials ({stopping water-borne material in artificial water canals [E02B 5/085](#); stopping water-borne material at barrages or weirs [E02B 8/023](#)}; other treatment of water, waste water or sewage [C02F](#); materials for treating liquid pollutants; e.g. oil, gasoline, fat, [C09K 3/32](#); {separation of oil in sewage conduits [E03F 5/16](#)})
- E02B 15/045 · · {-Separating means for recovering oil floating on a surface of open water; [E02B 15/048](#) takes precedence-(separation in general [B01D](#))}
- E02B 15/046 · · {-Collection of oil using vessels, i.e. boats, barges}
- E02B 15/047 · · · {-provided with an oil collecting boom arranged on at least one side of the hull}
- E02B 15/048 · · {-Oil collectors moved over the water skimming the water surface}
- U E02B 15/08 · · Devices for reducing the polluted area { with or} without { additional devices for} removing the material
- E02B 15/0807 · · · {-with stabilising elements}
- E02B 15/0814 · · · {-with underwater curtains}
- E02B 15/0821 · · · {-adapted for protection against fire or extreme heat}
- E02B 15/0828 · · · {-fixed to the side of a boat for containing small leaks in the hull}
- E02B 15/0835 · · · {-fixed to permanent structure, e.g. harbour wall or river bank}
- E02B 15/0842 · · · {-adapted to be towed for operation}

- E02B 15/085 . . . {-Details of connectors}
- E02B 15/0857 . . . {-Buoyancy material}
- E02B 15/0864 {-Air ([E02B 15/0878](#) takes precedence)}
- E02B 15/0871 {-self-inflating barriers}
- E02B 15/0878 {-Air and water}
- E02B 15/0885 {-Foam}
- E02B 15/0892 {-using expanded polystyrene foam}
- U E02B 15/10 . . . Devices for removing the material from the surface {([E02B 15/041](#), [E02B 15/042](#), [E02B 15/06](#) take precedence)}
- E02B 15/101 . . . {-Means floating loosely on the water absorbing the oil (absorbing materials [C02F](#))}
- E02B 15/102 . . . {-Discs}
- E02B 15/103 . . . {-Rotary drums}
- E02B 15/104 . . . {-Conveyors; Paddle wheels; Endless belts ([E02B 15/101](#) takes precedence)}
- E02B 15/105 . . . {-Archimedian screws}
- E02B 15/106 . . . {-Overflow skimmers with suction heads; suction heads}
- E02B 15/107 . . . {-Whirling means forming a vortex in the water; cyclones}
- E02B 15/108 . . . {-Ejection means}
- U **E02B 17/00** **Artificial islands mounted on piles or like supports, e.g. platforms on raisable legs { or offshore constructions}; construction methods therefor ({ construction methods for floating platforms [B63B 9/065](#); anchoring floating platforms [B63B 21/00](#); floating platforms, e.g. anchored, [B63B 35/44](#); { underwater reservoirs [B65D 88/78](#))}**
- U E02B 17/04 . . . Equipment specially adapted for raising, lowering, or immobilising the working platform relative to the supporting construction (platform lifts in general [B66F 7/00](#))
- U E02B 17/08 . . . for raising or lowering
- E02B 17/0818 {-with racks actuated by pinions (lifting jacks [B66F 3/02](#) to [B66F 3/06](#))}

Project: N/A (E02D)

- U **E02D 3/00** **Improving or preserving soil or rock, e.g. preserving permafrost soil (securing of slopes or inclines [E02D 17/20](#); damming or interrupting passage of underground water [E02D 19/12](#); improving soil for agricultural purposes [A01](#); soil stabilisation for road building or like purposes [E01C 21/00](#), [E01C 23/10](#); setting rock anchoring bolts [E21D](#))**
- U E02D 3/02 . . . Improving by compacting ([E02D 3/11](#) takes precedence; compacting soil locally before or while forming foundations [E02D 27/26](#), [E02D 27/28](#))
- U E02D 3/026 . . . by rolling with rollers usable only for or specially adapted for soil compaction, e.g. sheepsfoot rollers (rollers for soil working in agriculture [A01B 29/00](#); rollers for road paving, such rollers usable also for compacting soil [E01C 19/23](#))
- E02D 3/0265 {-Wheels specially adapted therefor; Cleats for said wheels}
- U **E02D 5/00** **Bulkheads, piles, or other structural elements specially adapted to foundation engineering (engineering elements in general [F16](#))**
- U E02D 5/22 . . . Piles (sheet piles, {i.e. elements shaped to mutually lock or mate} [E02D 5/02](#); {pile shoes [E02D 5/72](#); foundations on piles [E02D 27/12](#), [E02D 27/20](#))}
- E02D 5/223 . . . {-Details of top sections of foundation piles ([E02D 5/54](#) takes precedence)}

- U E02D 5/24
 - • Prefabricated piles
 - NOTE
 - Documents covered both by [E02D 5/26](#) to [E02D 5/32](#) and by one or several of the groups [E02D 5/48](#) to [E02D 5/64](#) are classified in all relevant groups unless specific priority rules to the contrary are given
- E02D 5/28
 - • • made of steel {or other metals-[E02D 5/52](#) takes precedence}}
- E02D 5/34
 - • Concrete or concrete-like piles cast in position; {Apparatus for making same-[E02D 5/50](#) takes precedence; moulds [E02D 5/665](#); placing, removing moulds [E02D 7/00](#) to [E02D 11/00](#); placing the concrete [E02D 15/04](#)}}
- E02D 5/48
 - • Piles varying in construction along their length, {i.e. along the body between head and shoe, e.g. made of different materials along their length-[E02D 5/50](#), [E02D 5/52](#) take precedence}}
- U E02D 5/52
 - • Piles composed of separable parts, e.g. telescopic tubes {Piles composed of segments}
- U E02D 5/523
 - • • {composed of segments}
- E02D 5/526
 - • • • {-Connection means between pile segments}
- U E02D 7/00**

Methods or apparatus for placing sheet pile bulkheads, piles, mouldpipes, or other moulds (for both placing and removing [E02D 11/00](#); {accessories for coupling driver to piles or the like [E02D 13/10](#); for trees or other plants [A01G 17/16](#); placing posts [E04H 17/26](#)})
- U E02D 7/02
 - Placing by driving {([E02D 7/18](#) to [E02D 7/24](#) take precedence)}
- U E02D 7/06
 - • Power-driven drivers {(tamperers [E02D 3/061](#))}
- E02D 7/10
 - • • with pressure-actuated hammer, {i.e. the pressure fluid acting directly on the hammer structure-[E02D 7/12](#) takes precedence; vibrating drivers [E02D 7/18](#)}}
- U E02D 7/14
 - • • Components for drivers {inasmuch as not specially for a specific driver construction}
- U E02D 7/16
 - • • • Scaffolds {or supports} for drivers {(guide frames for the elements to be driven per se [E02D 13/04](#); supports of the artificial island type [E02B 17/00](#))}
- E02D 7/165
 - • • • • {-of variable length, e.g. foldable or telescopic}
- U E02D 13/00**

Accessories for placing or removing piles or bulkheads, {e.g. noise attenuating chambers}
- E02D 13/005
 - {-Sound absorbing accessories in piling}
- U E02D 19/00**

Keeping dry foundation sites or other areas in the ground (sheet piles or bulkheads [E02D 5/02](#))
- U E02D 19/02
 - Restraining of open water
- E02D 19/04
 - • by coffer-dams {,e.g. made of sheet piles-[E02D 27/30](#)}}
- U E02D 27/00**

Foundations as substructures
- U E02D 27/01
 - Flat foundations
- E02D 27/013
 - • {-Shuttering specially adapted therefor}
- E02D 27/016
 - • {-made mainly from prefabricated concrete elements}
- U E02D 27/32
 - Foundations for special purposes {(for paving of roads [E01C 3/00](#))}
- U E02D 27/42
 - • Foundations for poles, masts or chimneys {(sockets or holders for poles or masts per se [E04H 12/22](#))}
- E02D 27/425
 - • • {-specially adapted for wind motors masts (wind motors per se [F03D 1/00](#))}

- E02D 27/52
- • Submerged foundations, {i.e. submerged in open water-([E02D 27/12](#) to [E02D 27/24](#) take precedence)}
- E02D 27/525
- • • {-using elements penetrating the underwater ground (sinking work pieces [E02D 15/08](#), sinking caissons [E02D 23/02](#))}
- U E02D 29/00**
- {Independent} underground or underwater structures (underground tanks [B65D 88/76](#); hydraulic engineering, e.g. sealings or joints, [E02B](#); underground garages [E04H 6/00](#); underground air-raid shelters [E04H 9/12](#); burial vaults [E04H 13/00](#)); Retaining walls**
- E02D 29/04
- Making large underground spaces, e.g. for underground plants, { e.g. stations of underground railways}; -Construction or layout thereof ([E02D 29/10](#) takes precedence; { water-supply or sewerage plants [E03](#)}; layout of water power plants [E02B 9/00](#); making large underground chambers by underground methods only [E21D 13/00](#))
- E02D 29/06
- Constructions, or methods of constructing, in water {([E02D 15/00](#) takes precedence; submerged foundations [E02D 27/52](#))}
- E02D 29/08
- Siphons (for sewerage [E03F 5/20](#); siphon weirs [E02B 7/18](#); { siphons in general [F04F 10/00](#))}
- E02D 29/10
- Tunnels or galleries specially adapted to house conduits, e.g. oil pipe-lines, sewer pipes (for pressure water conduits [E02B 9/06](#); { for cables [H02G 9/02](#); layout of tunnels or galleries in general [E21D 9/14](#); road kerbs with housings for pipes or the like [E01C 11/222](#)); -Making conduits in situ, e.g. of concrete (combined with digging of trenches or ditches [E02F 5/10](#); { making or lining tunnels or galleries [E21D](#); constructing tunnels or galleries in open excavations [E02D 29/045](#); in open water [E02D 29/063](#)); -Casings, { i.e. manhole shafts, access or inspection chambers} or coverings of boreholes or narrow wells (wells for drinking water [E03B 3/08](#); boreholes or wells formed by deep drilling [E21B](#); shafts [E21D](#))
- U E02D 29/12**
- Manhole shafts; Other inspection or access chambers; Accessories therefor (for underground tanks [B65D 90/10](#); for sewerage [E03F 5/02](#); { climbing irons or ladders [E06C 9/00](#))}
- E02D 29/121
- • {-characterised by the connection between shaft elements, e.g. of rings forming said shaft}
- E02D 29/122
- • {-Steps or handrails for shafts}
- E02D 29/124
- • {-Shaft entirely made of synthetic material}
- E02D 29/125
- • {-characterised by the lining of the shaft}
- E02D 29/127
- • {-with devices for impeding fall or injuries of persons}
- E02D 29/128
- • {-Repairs of manhole shafts}
- U E02D 29/14**
- • Covers for manholes or the like; Frames for covers {(gully gratings [E03F 5/06](#))}
- E02D 29/1409
- • • {-adjustable in height or inclination}
- E02D 29/1418
- • • {-with implements to assist in lifting, e.g. counterweights, springs (lifting devices for covers [B66F 19/005](#))}
- E02D 29/1427
- • • {-Locking devices (of bayonet type [E02D 29/14](#))}
- E02D 29/1436
- • • {-with overflow or explosion control means, e.g. check or relief valves}
- E02D 29/1445
- • • {-Tools for positioning or removing cover frames}
- E02D 29/1454
- • • {-Non-circular covers, e.g. hexagonal, elliptic}
- E02D 29/1463
- • • {-Hinged connection of cover to frame}
- E02D 29/1472
- • • {-Cover entirely made of synthetic material}
- E02D 29/1481
- • • {-Security devices, e.g. indicating unauthorised opening ([E02D 29/1427](#) takes precedence)}

- E02D 29/149 . . . {-Annular gaskets}
- U E02D 31/00** **Protective arrangements for foundations or foundation structures** **{{(protective casings for piles [E02D 5/60](#))}; Ground foundation measures for protecting the soil or the subsoil water, e.g. preventing or counteracting oil pollution (spillage retaining means for tanks [B65D 90/24](#))}**
- U E02D 31/02 . against ground humidity or ground water **{{(E02D 31/06 takes precedence; arrangements other than according to [E02D 31/04](#); against hydraulic pressure of groundwater [E02D 31/10](#))}**
- E02D 31/025 . {-Draining membranes, sheets or fabric specially adapted therefor, e.g. with dimples}
- U E02D 35/00** **Straightening, lifting, or lowering of foundation structures or of constructions erected on foundations** **{{(foundations for sinking territories with incorporated means for remedying settlement [E02D 27/34](#); lifting or moving buildings [E04G 23/06](#))}**
- E02D 35/005 . {-Lowering or lifting of foundation structures}

Project: N/A (E02F)

- U E02F 3/00** **Dredgers; Soil-shifting machines (for special purposes [E02F 5/00](#); other machines or apparatus for mining [E21C](#); tunnelling [E21D](#))**
- E02F 3/02 . hand-operated; { handheld soil shifting equipment acting by sucking [E02F 3/8891](#)-(spades or rakes for agriculture or gardening purposes [A01B](#))}
- U E02F 3/04 . mechanically-driven
- E02F 3/08 . . with digging elements on an endless chain, { e.g. bucket-type chains-(for digging trenches or ditches [E02F 5/06](#); cutting machines for mining or quarrying [E21C 25/22](#))}
- E02F 3/082 . . . {-including a belt-type conveyer for transporting the excavated material}
- E02F 3/083 . . . {-including a screw-type conveyer for transporting the excavated material}
- E02F 3/085 . . . {-with auxiliary or additional digging elements other than digging elements on an endless chain}
- E02F 3/086 . . . {-vertically shiftable relative to the frame}
- E02F 3/087 . . . {-with digging unit working in a plane inclined to the direction of travel}
- E02F 3/088 . . . {-pivotable relative to the frame}
- U E02F 3/12 . . . Component parts {e.g. bucket troughs}
- U E02F 3/14 Buckets; Chains; Guides for buckets or chains; Drives for chains {not used, see subgroups}
- E02F 3/143 {-chains; chain links; scraper chains (chains or chain guides [E21C 25/28](#))}
- E02F 3/146 {-guides for chains or buckets, e.g. for buckets movable relative to chains (chains or chain guides [E21C 25/28](#))}
- E02F 3/18 . . with digging wheels turning round an axis, { e.g. bucket-type wheels-(for digging trenches [E02F 5/08](#); for laying cables underwater [E02F 5/109](#); cutting machines [E21C 25/00](#); methods or apparatus for making tunnels or galleries [E21D 9/00](#))}
- E02F 3/181 . . . {-including a conveyer}
- E02F 3/183 . . . {-with digging unit shiftable relative to the frame}
- E02F 3/185 . . . {-with digging unit mounted in a plane which is inclined to the direction of travel; with tools digging laterally with respect to the frame}
- E02F 3/186 . . . {-with the axis being substantially parallel to the direction of travel}
- E02F 3/188 . . . {-with the axis being horizontal and transverse to the direction of travel}

- U E02F 3/20
 - • • with tools that only loosen the material, {i.e. mill-type wheels}
- E02F 3/205
 - • • • {-with a pair of digging wheels, e.g. slotting machines (implements for making foundation slots with definition of the walls or foundations [E02D 17/13](#); bulkheads or similar walls made solely of concrete in situ [E02D 5/18](#); with a pair of buckets [E02F 3/475](#))}
- U E02F 3/22
 - • • Component parts
- U E02F 3/24
 - • • • Digging wheels; Digging elements of wheels; Drives for wheels
- E02F 3/248
 - • • • • {-Cleaning the wheels or emptying the digging elements mounted on the wheels, e.g. in combination with spoil removing equipment}
- U E02F 3/28
 - • with digging tools mounted on a dipper- or bucket-arm, {i.e. there is either one arm or a pair of arms}, e.g. dippers, buckets
- E02F 3/283
 - • • {-with a single arm pivoted directly on the chassis (linkage mechanism for it [E02F 3/3405](#))}
- E02F 3/286
 - • • • {-telescopic or slidable (fork-lift trucks with a telescopic boom [B66F 9/0655](#))}
- U E02F 3/30
 - • • with a dipper-arm pivoted on a cantilever beam, {i.e. boom}
- E02F 3/301
 - • • • ~~{with more than two arms (boom included)}~~*{with more than two arms (boom included)}*, e.g. two-part boom with additional dipper-arm
- E02F 3/303
 - • • • {-with the dipper-arm or boom rotatable about its longitudinal axis}
- E02F 3/304
 - • • • {-with the dipper-arm slidably mounted on the boom ([E02F 3/305](#) takes precedence)}
- E02F 3/306
 - • • • {-with telescopic dipper-arm or boom}
- E02F 3/308
 - • • • {-working outwardly}
- U E02F 3/32
 - • • • working downwardly and towards the machine, e.g. with backhoes
- E02F 3/325
 - • • • • {-Backhoes of the miniature type}
- U E02F 3/34
 - • • with bucket-arms { i.e. a pair of arms, e.g. manufacturing processes, form, geometry, material of bucket-arms (with a single arm [E02F 3/283](#))} directly pivoted on the frames of tractors or self-propelled machines
- E02F 3/3402
 - • • • {-the arms being telescopic (fork-lift trucks with a telescopic boom [B66F 9/0655](#))}
- E02F 3/3414
 - • • • • {-the arms being pivoted at the rear of the vehicle chassis, e.g. skid steer loader}
- U E02F 3/36
 - • • Component parts
- E02F 3/3604
 - • • • {-Devices to connect tools to arms, booms or the like}
- E02F 3/3609
 - • • • • {-of the quick acting type, e.g. controlled from the operator seat (quick-acting couplers to connect booms or arms to tractors [E02F 3/627](#); quick-acting couplers for machines mounted on tractor [A01B 59/06](#); couplings of the quick-acting type per se [F16L 37/00](#))}
- E02F 3/3613
 - • • • • • {-with means for absorbing any play therebetween ([E02F 3/364](#) takes precedence)}
- E02F 3/3618
 - • • • • • • {-with two separating hooks}
- E02F 3/3622
 - • • • • • • {-with a hook and a locking element acting on a pin}
- E02F 3/3627
 - • • • • • • {-with a hook and a longitudinal locking element}
- E02F 3/3631
 - • • • • • • {-with a hook and a transversal locking element}
- E02F 3/3636
 - • • • • • • {-using two or four movable transversal pins}
- E02F 3/364
 - • • • • • • {-using wedges}
- E02F 3/3645
 - • • • • • • {-with auto-engagement means for automatic snap-on of the tool coupler part}
- E02F 3/365
 - • • • • • • {-with redundant latching means, e.g. for safety purposes}

- E02F 3/3654 {-with energy coupler, e.g. coupler for hydraulic or electric lines, to provide energy to drive(s) mounted on the tool}
- E02F 3/3659 {-electrically-operated}
- E02F 3/3663 {-hydraulically-operated}
- E02F 3/3668 {-where engagement is effected by a mechanical lever or handle}
- E02F 3/3672 {-where disengagement is effected by a mechanical lever or handle}
- E02F 3/3677 {-allowing movement, e.g. rotation or translation, of the tool around or along another axis as the movement implied by the boom or arms, e.g. for tilting buckets}
- E02F 3/3681 {-Rotators}
- E02F 3/3686 {-using adapters, i.e. additional element to mount between the coupler and the tool}
- E02F 3/369 {-Devices to connect parts of a boom or an arm (devices to connect booms or arms to tractors [E02F 3/627](#))}
- E02F 3/3695 {-Arrangements for connecting dipper-arms to loaders or graders}
- E02F 3/38 Cantilever beams { i.e. booms; e.g. manufacturing processes, forms, geometry or materials used for booms-(for booms with cable suspension arrangements [E02F 9/14](#) takes precedence); -Dipper-arms { e.g. manufacturing processes, forms, geometry or materials used for dipper-arms}; -Bucket-arms {([E02F 3/34](#) takes precedence)}
- E02F 3/382 {-Connections to the frame; Supports for booms or arms (devices to connect booms or arms to tractors or similar machines [E02F 3/627](#); pivot joint assemblies in particular [E02F 9/006](#))}
- E02F 3/388 {-Mechanical locking means for booms or arms against rotation, e.g. during transport of the machine (transporting-cranes [B66C 23/344](#))}
- E02F 3/40 Dippers; -Buckets { Grab device, e.g. manufacturing processes for buckets, form, geometry, material of buckets-(devices to connect tools to arms or booms [E02F 3/3604](#); teeth therefor [E02F 9/28](#))}
- U E02F 3/413 with grabbing device ({ [E02F 3/404](#) takes precedence; with grab buckets moved by cables or hoisting ropes [E02F 3/47](#);} grab equipment for cranes [B66C](#))
- E02F 3/4136 {-with grabs mounted on a slidable or telescopic boom or arm}
- U E02F 3/42 Drives for dippers, buckets, dipper-arms or bucket-arms
- E02F 3/427 {-with mechanical drives (by cables or hoisting ropes [E02F 3/46](#) take precedence)}
- E02F 3/46 with reciprocating digging or scraping elements moved by cables or hoisting ropes; { Drives or control devices therefor-([E02F 3/205](#), [E02F 3/905](#) take precedence)}
- U E02F 3/47 with grab buckets (grab equipment for cranes [B66C](#))
- E02F 3/475 {-for making foundation slots (slotting machines with a pair of digging wheels [E02F 3/205](#))}
- E02F 3/627 Devices to connect beams or arms to tractors or similar self-propelled machines, { e.g. drives therefor-(Connection of beams or booms or arms to the frame per se [E02F 3/382](#); connection of scraper bowls to the vehicle main body [E02F 3/653](#); connecting devices for agriculture tractors [A01B 59/06](#))}
- E02F 3/6276 {-on one side of the frame}
- U E02F 3/64 Buckets cars, i.e. having scraper bowls {(for cable scrapers [E02F 3/54](#) takes precedence; soil working machines in agriculture [A01B](#))}
- E02F 3/6409 {-Self-propelled scrapers}

- E02F 3/6418 {-with rotatable scraper bowls for dumping the soil (with only elements of the scraper bowls being pivotable [E02F 3/6427](#))}
- E02F 3/6427 {-with elements of the scraper bowls being pivotable for dumping the soil ([E02F 3/6445](#) take precedence; with an ejector having translational movement [E02F 3/6436](#))}
- E02F 3/6436 {-with scraper bowls with an ejector having translational movement for dumping the soil ([E02F 3/6445](#) takes precedence)}
- E02F 3/6445 {-with conveying means for emptying the scraper bowl}
- E02F 3/6454 {-Towed (*i.e. pulled or pushed*) scrapers}{~~(i.e. pulled or pushed) scrapers~~}
- E02F 3/6463 {-with rotatable scraper bowls for dumping the soil (with only elements of the scraper bowls being pivotable [E02F 3/6472](#))}
- E02F 3/6472 {-with elements of the scraper bowls being pivotable for dumping the soil ([E02F 3/649](#) takes precedence; with an ejector having translational movement [E02F 3/6481](#))}
- E02F 3/6481 {-with scraper bowls with an ejector having translational movement for dumping the soil ([E02F 3/649](#) takes precedence)}
- E02F 3/649 {-with conveying means for emptying the scraper bowl}
- U E02F 3/65 Component parts, e.g. drives, control devices
- E02F 3/651 {-Hydraulic or pneumatic drives; Electric or electro-mechanical control devices ([E02F 3/652](#), [E02F 3/653](#) take precedence)}
- E02F 3/652 {-Means to adjust the height of the scraper bowls, e.g. suspension means, tilt control, earth damping control}
- E02F 3/653 {-Connection mechanisms to the main body of the machine (connection of tools to dipper-arms, booms, bucket-arms [E02F 3/3604](#); connection of beams or booms or arms to tractors in general [E02F 3/627](#))}
- E02F 3/654 {-Scraper bowls and components mounted on them}
- E02F 3/655 {-Loading or elevator mechanisms (Loading devices for excavators in general [E02F 7/04](#))}
- E02F 3/656 {-Ejector or dumping mechanisms (for buckets mounted on a dipper-arm or bucket arms [E02F 3/407](#))}
- E02F 3/657 {-Means to prevent the spilling of dredged material, e.g. apron, baffle}
- E02F 3/658 {-Cutting edge (for graders or bulldozer blades [E02F 3/8152](#), [E02F 3/8155](#); teeth per se [E02F 9/28](#))}
- E02F 3/659 {-Conveying means for emptying scraper bowls (conveying equipment for excavators in general [E02F 7/02](#))}
- U E02F 3/76 Graders, bulldozers, or the like with scraper plates or ploughshare-like elements (soil-working [A01B](#)); Levelling { scarifying} devices {(street cleaning [E01H](#); construction of roads [E01C 19/00](#), [E01C 23/00](#))}
- E02F 3/7695 {-Graders, bulldozers or the like comprising elevators or conveyers}
- U E02F 3/78 with rotating digging elements
- E02F 3/783 {-having a horizontal axis of rotation}
- E02F 3/786 {-having a vertical axis of rotation}
- U E02F 3/80 Component parts
- E02F 3/815 Blades; -Levelling {or scarifying}tools{(E02F 3/40 takes precedence)}
- E02F 3/8152 {-Attachments therefor, e.g. wear resisting parts, cutting edges ([E02F 3/8155](#), [E02F 3/8157](#) take precedence; teeth per se [E02F 9/28](#))}
- U E02F 3/84 Drives or control devices therefor, { e.g. hydraulic drive systems}

- E02F 3/841 {-Devices for controlling and guiding the whole machine, e.g. by feeler elements and reference lines placed exteriorly of the machine (construction of roads [E01C 19/008](#))}
- U E02F 3/88 . . with arrangements acting by a sucking or forcing effect, e.g. suction dredgers (pumps in general [F04](#))
- E02F 3/8808 . . . {-Stationary installations, e.g. installations using spuds or other stationary supports (spuds on floating substructures per se [E02F 9/062](#); cleaning the beds of waterways [E02B 3/02](#))}
- E02F 3/8833 . . . {-Floating installations (floating substructures per se [E02F 9/06](#))}
- U E02F 3/90 . . . Component parts {e.g. arrangement or adaptation of pumps}
- E02F 3/902 {-for modifying the concentration of the dredged material, e.g. relief valves preventing the clogging of the suction pipe}
- E02F 3/905 {-Manipulating or supporting suction pipes or ladders; Mechanical supports or floaters therefor; pipe joints for suction pipes (for heave compensation [E02F 9/067](#) takes precedence; pipelines per se [E02F 7/10](#); joints for pipes in general [F16L](#))}
- E02F 3/907 {-Measuring or control devices, e.g. control units, detection means or sensors ([E02F 3/902](#) takes precedence)}
- U E02F 3/92 Digging elements, e.g. suction heads
- E02F 3/9206 {-Digging devices using blowing effect only, like jets or propellers ([E02F 5/107](#) takes precedence; passive suction heads with jets [E02F 3/925](#); active suction heads with jets [E02F 3/9262](#); drilling by jets [E21B 7/18](#); slitting by jets [E21C 25/60](#))}
- E02F 3/9212 {-Mechanical digging means, e.g. suction wheels, i.e. wheel with a suction inlet attached behind the wheel ([E02F 3/9287](#) takes precedence; Active suction heads [E02F 3/9256](#))}
- E02F 3/9218 {-with jets}
- E02F 3/9225 {-with rotating cutting elements}
- E02F 3/9231 {-Suction wheels with axis of rotation parallel to longitudinal axis of the suction pipe}
- E02F 3/9237 {-Suction wheels with axis of rotation in transverse direction of the longitudinal axis of the suction pipe}
- E02F 3/9243 {-Passive suction heads with no mechanical cutting means ([E02F 5/108](#) takes precedence)}
- E02F 3/9256 {-Active suction heads; Suction heads with cutting elements, i.e. the cutting elements are mounted within the housing of the suction head ([E02F 5/108](#) takes precedence)}
- E02F 3/94 Apparatus for separating stones from the dredged material, {i.e. separating or treating dredged material-(screening plants mounted on dredger therefor [E02F 7/06](#))}
- U E02F 3/96 . . with arrangements for alternate { or simultaneous} use of different digging elements {([E02F 3/7604](#), [E02F 3/769](#), [E02F 3/78](#) take precedence; quick-acting devices to connect tools to arms or booms [E02F 3/3609](#), for arms to tractors or the like [E02F 3/627](#))}
- E02F 3/961 . . . {-with several digging elements or tools mounted on one machine (for backhoes [E02F 3/964](#) takes precedence)}
- E02F 3/963 . . . {-Arrangements on backhoes for alternate use of different tools (backhoes per se [E02F 3/30](#); quick-acting devices to connect tools to arms [E02F 3/3609](#), for arms to tractors or the like [E02F 3/627](#))}
- E02F 3/964 {-of several tools mounted on one machine ([E02F 3/962](#) takes precedence)}

- E02F 3/965
 - • • {of metal-cutting or concrete-crushing implements (shearing devices [B23D 17/00](#); wrecking of buildings, e.g. tools therefor, [E04G 23/08](#))}
- E02F 3/966
 - • • {of hammer-type tools (arrangements for breaking-up hard ground [E02F 5/305](#); percussion -type rippers [E02F 5/323](#))}
- E02F 3/967
 - • • {of compacting-type tools (compacting tools in combination with special-purpose dredges or soil-shifting machines [E02F 5/30](#))}
- U E02F 5/00**
 - Dredgers or soil-shifting machines for special purposes**
- E02F 5/006
 - {adapted for working ground under water not otherwise provided for ([E02F 3/081](#), [E02F 3/4131](#), [E02F 3/8833](#), [E02F 5/104](#), [E02F 5/125](#), [E02F 7/005](#), [E02F 7/023](#), [E02F 7/065](#), [E02F 9/026](#), [E02F 9/045](#), [E02F 9/06](#) take precedence)}
- U E02F 5/02
 - for digging trenches or ditches ({ machines for making foundation slots [E02F 3/205](#), [E02F 3/475](#) take precedence); agricultural ploughs for working ridges [A01B 13/02](#))
- E02F 5/027
 - • {with coulters, ploughs, scraper plates, or the like ([E02F 5/102](#), [E02F 5/103](#), [E02F 5/106](#) take precedence)}
- U E02F 5/10
 - • with arrangements for reinforcing trenches or ditches; with arrangements for making or assembling conduits or for laying conduits or cables (laying pipes per se [F16L 1/00](#), making pipes in situ [F16L 1/038](#); laying electric cables per se [H02G 1/06](#); { drainage device- laying apparatus [E02B 11/02](#))}
- U E02F 5/104
 - • • {for burying conduits or cables in trenches under water (floating substructures per se [E02F 9/06](#))}
- E02F 5/106
 - • • • {using ploughs, coulters, rippers}
- E02F 5/107
 - • • • {using blowing-effect devices, e.g. jets (digging devices using a blowing effect per se [E02F 3/9206](#))}
- E02F 5/108
 - • • • {using suction-effect devices (suction heads per se [E02F 3/9243](#), [E02F 3/9256](#))}
- E02F 5/109
 - • • • {using rotating digging elements (rotating digging elements per se [E02F 3/18](#))}
- U E02F 5/28
 - for cleaning watercourses or other ways {(stream regulation [E02B 3/02](#))}
- E02F 5/287
 - • {with jet nozzles (digging devices with blowing effect per se [E02F 3/9206](#))}
- U E02F 5/30
 - Auxiliary apparatus, e.g. for tawing, craking, blowing-up, or other preparatory treatment of the soil
- E02F 5/305
 - • {Arrangements for breaking-up hard ground ([E02F 5/32](#) takes precedence; hammer-type tools [E02F 3/966](#); breaking-up paving of roads or the like [E01C 23/12](#); breaking-up subaqueous rock [E02B 3/02](#))}
- U E02F 9/00**
 - Component parts of dredgers or soil-shifting machines, not restricted to one of the kinds covered by groups [E02F 3/00](#) to [E02F 7/00](#) (laying-out or take-up devices for trailing electric cables [B66C](#))**
- E02F 9/02
 - Travelling-gear, e.g. associated with slewing gears ({drives therefor [E02F 9/20](#)}; for motor vehicles [B60B](#), ~~[B60G](#)~~; undercarriages for locomotives or rail-road cars [B61F](#); track-laying vehicles [B62D](#); for cranes [B66C 23/18](#))
- U E02F 9/08
 - Superstructures; Supports for superstructures {(arrangements for travelling gear, e.g. undercarriages for wheels, crawlers, caterpillars [E02F 9/02](#); for motor vehicles [B62D 25/00](#), [B62D 33/00](#))}
- E02F 9/0808
 - • {Improving mounting or assembling, e.g. frame elements, disposition of all the components on the superstructures (for disposition of specific components, [E02F 9/0858](#))}
- E02F 9/0816
 - • • {Welded frame structure}
- E02F 9/0825
 - • • {Cast frame structure}

- E02F 9/0833
 - • {-Improving access, e.g. for maintenance, steps for improving driver's access, handrails}
- E02F 9/085
 - • {-Ground-engaging fitting for supporting the machines while working, e.g. outriggers, legs (for vehicles in general [B60S 9/00](#), for cranes [B66C 23/78](#))}
- E02F 9/0858
 - • {-Arrangement of component parts installed on superstructures not otherwise provided for, e.g. electric components, fenders, air-conditioning units ([E02F 9/16](#), [E02F 9/18](#) take precedence)}
- E02F 9/0866
 - • • {-Engine compartment, e.g. heat exchangers, exhaust filters, cooling devices, silencers, mufflers, position of hydraulic pumps in the engine compartment}
- E02F 9/0875
 - • • {-Arrangement of valve arrangements on superstructures (arrangement of hydraulic hoses [E02F 9/2275](#) takes precedence; valves per se [E02F 9/2267](#))}
- E02F 9/0883
 - • • {-Tanks, e.g. oil tank, urea tank, fuel tank (for vehicles in general [B60K 15/00](#))}
- E02F 9/0891
 - • • {-Lids or bonnets or doors or details thereof (doors for cabins [E02F 9/163](#) takes precedence; for motor vehicles [B62D 25/10](#))}
- U E02F 9/10
 - • Supports for movable superstructures mounted on travelling or walking gears or on other superstructures
- U E02F 9/12
 - • • Slewing or traversing gears (roller and ball bearings [F16C](#))
- E02F 9/121
 - • • • {-Turntables, i.e. structure rotatable about 360°}
- E02F 9/123
 - • • • • {-Drives or control devices specially adapted therefor ([E02F 9/125](#) and [E02F 9/128](#) take precedence)}
- E02F 9/125
 - • • • • {-Locking devices}
- E02F 9/126
 - • • • • {-Lubrication systems}
- E02F 9/128
 - • • • • {-Braking systems}
- E02F 9/14
 - Booms { only for booms with cable suspension arrangements (for booms or manipulators with cable suspensions for suction pipes [E02F 3/905](#) takes precedence; for booms per se [E02F 3/38](#); [E02F 3/34](#) for bucket-arms)}; -Cable suspensions
- U E02F 9/16
 - Cabins, platforms, or the like, for drivers ({ for motor vehicles in general [B62D 33/06](#)}, for cranes [B66C 13/54](#))
- E02F 9/163
 - • {-Structures to protect drivers, e.g. cabins, doors for cabins; Falling object protection structure (FOPS); Roll over protection structure (ROPS) (for handrails mounted on cabins [E02F 9/0833](#) takes precedence; for vehicles in general [B60R 21/11](#), [B60R 21/13](#), for fork-lift trucks [B66F 9/07545](#))}
- E02F 9/166
 - • {-movable, tiltable or pivoting, e.g. movable seats, dampening arrangements of cabins (seats for vehicles in general [B60N 2/00](#))}
- U E02F 9/20
 - Drives; Control devices (gearings in general [F16H](#); controlling in general [G05](#); electric multi-motor drives [H02K](#), [H02P](#))
- U E02F 9/2004
 - • {Control mechanisms, e.g. control levers (control levers per se [G05G](#))}
- E02F 9/2008
 - • • {-Control mechanisms in the form of the machine in the reduced scale model}
- E02F 9/2012
 - • • {-Setting the functions of the control levers, e.g. changing assigned functions among operations levers, setting functions dependent on the operator or seat orientation}
- E02F 9/2016
 - • {-Winches (winches per se [B66D](#))}
- E02F 9/202
 - • {-Mechanical transmission, e.g. clutches, gears (clutches per se [F16D](#), gears per se [F16H](#))}

- E02F 9/2025
 - • {Particular purposes of control systems not otherwise provided for ([E02F 3/16](#), [E02F 3/26](#), sub-groups of [E02F 3/43](#), [E02F 3/651](#), sub-groups of [E02F 3/84](#), [E02F 3/907](#), [E02F 5/145](#) take precedence)}
- E02F 9/2029
 - • • {-Controlling the position of implements in function of its load, e.g. modifying the attitude of implements in accordance to vehicle speed (control for hydraulic or pneumatic drives [E02F 9/2203](#), [E02F 9/2221](#) and [E02F 9/2253](#) take precedence)}
- E02F 9/2033
 - • • {-Limiting the movement of frames or implements, e.g. to avoid collision between implements and the cabin (sub-groups of [E02F 3/431](#) of [E02F 3/435](#) take precedence; for turntables [E02F 9/123](#))}
- E02F 9/2041
 - • • {-Automatic repositioning of implements, i.e. memorising determined positions of the implement (for dipper-arms or bucket-arms [E02F 3/434](#), [E02F 3/437](#), [E02F 3/438](#), [E02F 3/439](#) take precedence)}
- E02F 9/2045
 - • • {-Guiding machines along a predetermined path (for graders [E02F 3/841](#); machines for construction of roads [E01C 19/004](#))}
- E02F 9/205
 - • • {-Remotely operated machines, e.g. unmanned vehicles ([E02F 3/8866](#) takes precedence)}
- E02F 9/2054
 - • • {-Fleet management}
- E02F 9/2058
 - • {-Electric or electro-mechanical or mechanical control devices of vehicle sub-units (for vehicles in general [B60W](#))}
- E02F 9/2062
 - • • {-Control of propulsion units (for control of the prime mover depending on the load in a hydraulic or pneumatic drive [E02F 9/2246](#))}
- E02F 9/2066
 - • • • {-of the type combustion engines}
- E02F 9/207
 - • • • {-of the type electric propulsion units, e.g. electric motors or generators}
- E02F 9/2075
 - • • • {-of the hybrid type (for vehicles in general [B60W 20/00](#))}
- E02F 9/2079
 - • • {-Control of mechanical transmission (for hydrostatic transmission or hydraulic torque converter [E02F 9/2253](#))}
- E02F 9/2083
 - • • {-Control of vehicle braking systems}
- E02F 9/2087
 - • • {-Control of vehicle steering (for steering with hydraulic or pneumatic drives [E02F 9/225](#))}
- E02F 9/2091
 - • • • {-Control of energy storage means for electrical energy, e.g. battery or capacitors (energy recovery arrangements in hydraulic or pneumatic drives [E02F 9/2217](#))}
- E02F 9/2095
 - • • • {-Control of electric, electro-mechanical or mechanical equipment not otherwise provided for, e.g. ventilators, electro-driven fans (control of hydraulic driven equipment [E02F 9/22](#))}
- U E02F 9/22
 - • Hydraulic or pneumatic drives {(for dipper or bucket arm position control [E02F 3/43](#), for blade position control for graders [E02F 3/844](#); for turntables [E02F 9/121](#); for fork-lift trucks [B66F 9/22](#))}
- E02F 9/2203
 - • • • {-Arrangements for controlling the attitude of actuators, e.g. speed, floating function}
- E02F 9/2221
 - • • • {-Control of flow rate; Load sensing arrangements ([E02F 9/2203](#) take precedence over [E02F 9/2221](#))}
- E02F 9/2246
 - • • • {-Control of prime movers, e.g. depending on the hydraulic load of work tools}
- E02F 9/2253
 - • • • {-Controlling the travelling speed of vehicles, e.g. adjusting travelling speed according to implement loads, control of hydrostatic transmission}
- E02F 9/226
 - • • • {-Safety arrangements, e.g. hydraulic driven fans, preventing cavitation, leakage, overheating}
- E02F 9/2264
 - • • • {-Arrangements or adaptations of elements for hydraulic drives}

- E02F 9/2267
 - • • • {-Valves or distributors (position of valves arrangements on upper-structures [E02F 9/0875](#))}
- E02F 9/2271
 - • • • {-Actuators and supports therefor and protection therefor}
- E02F 9/2275
 - • • • {-Hoses and supports therefor and protection therefor}
- E02F 9/2278
 - • • {-Hydraulic circuits (not used)}
- E02F 9/2282
 - • • • {-Systems using center bypass type changeover valves}
- E02F 9/2285
 - • • • {-Pilot-operated systems}
- E02F 9/2289
 - • • • {-Closed circuit}
- E02F 9/2292
 - • • • {-Systems with two or more pumps}
- E02F 9/2296
 - • • • {-Systems with a variable displacement pump}
- E02F 9/24
 - Safety devices {e.g. for preventing overload-([E02F 9/226](#) takes precedence)}
- U E02F 9/26
 - Indicating devices {([E02F 5/145](#) takes precedence)}
- E02F 9/261
 - {-Surveying the work-site to be treated}
- E02F 9/262
 - • • {-with follow-up actions to control the work tool, e.g. controller}
- E02F 9/264
 - {-Sensors and their calibration for indicating the position of the work tool}
- E02F 9/265
 - • • {-with follow-up actions (*e.g. control signals sent to actuate the work tool*)}~~{e.g. control signals sent to actuate the work tool}~~
- E02F 9/267
 - {-Diagnosing or detecting failure of vehicles}
- E02F 9/268
 - • • {-with failure correction follow-up actions}
- E02F 9/28
 - Small metalwork for digging elements, e.g. teeth {scraper bits-(ploughs for agriculture [A01B 15/00](#); teeth of harrows [A01B 23/02](#))}
- E02F 9/2866
 - {-for rotating digging elements (for milling machines [B28D 1/186](#); for mining machines [E21C 35/18](#))}
- E02F 9/2883
 - • {-Wear elements for buckets or implements in general}

Project: N/A (E03B)

- E03B 1/00** **Methods or layout of installations for water supply** ([E03B 3/00](#), [E03B 9/00](#) take precedence)
- U E03B 1/04
 - for domestic or like local supply
 - E03B 1/041
 - • {-Greywater supply systems}
 - E03B 1/042
 - • • {-Details thereof, e.g. valves or pumps}
 - E03B 1/044
 - • • • {-Switch valves in waste pipes}
 - E03B 1/048
 - {-Systems for collecting not used fresh water}
 - U **E03B 7/00** **Water main or service pipe systems (pipes or tubes in general [F16L](#))**
 - E03B 7/003
 - {-Arrangement for testing of watertightness of water supply conduits}
 - E03B 7/006
 - {-Arrangements or methods for cleaning or refurbishing water conduits}
 - U E03B 7/04
 - Domestic or like local pipe systems (domestic plumbing [E03C 1/02](#))
 - E03B 7/045
 - • {-diverting initially cold water in warm water supply}
 - U E03B 7/07
 - Arrangement of devices, e.g. filters, flow controls, measuring devices, siphons, valves, in the pipe systems (devices per se, see the relevant classes for these devices)
 - E03B 7/071
 - • {-Arrangement of safety devices in domestic pipe systems, e.g. devices for automatic shut-off}
 - E03B 7/072
 - • {-Arrangement of flowmeters}
 - E03B 7/074
 - • {-Arrangement of water treatment devices}
 - E03B 7/075
 - • {-Arrangement of devices for control of pressure or flow rate}

- E03B 7/077
 - E03B 7/078
 - U E03B 7/09
 - E03B 7/095
 - U E03B 9/00
 - U E03B 9/02
 - E03B 9/025
 - E03B 9/027
- • {-Arrangement of backflow preventing devices}
 - • {-Combined units with different devices; Arrangement of different devices with respect to each other}
 - Component parts or accessories (tools for cleaning pipes [B08B 9/02](#); devices for preventing contamination of drinking water pipes for domestic use [E03C 1/10](#); devices for preventing damage in case of bursts of pipes [F16L](#); heating of pipes in general [F16L 53/00](#))
 - • {-Component holders or housings, e.g. boundary boxes}
 - Methods or installations for drawing-off water (domestic water-drawing devices [E03C](#); taps or valves per se [F16K](#))**
 - Hydrants; Arrangements of valves therein; Keys for hydrants
 - • {-Taps specially designed for outdoor use, e.g. wall hydrants, sill cocks}
 - • • {-with features preventing frost damage}

Project: N/A (E03C)**E03C****DOMESTIC PLUMBING INSTALLATIONS FOR FRESH WATER OR WASTE WATER (not connected to either water-supply main or to waste pipe [A47K](#); devices of the kind used in the ground [E03B](#), [FE03F](#)); -SINKS**

- U E03C 1/00
 - U E03C 1/02
 - E03C 1/025
 - U E03C 1/04
 - U E03C 1/0401
 - E03C 1/0402
 - U E03C 1/0404
 - E03C 1/0405
 - E03C 1/0407
 - E03C 1/041
 - E03C 1/0411
 - E03C 1/0412
 - U E03C 1/06
 - E03C 1/063
 - E03C 1/066
 - U E03C 1/10
 - E03C 1/102
 - E03C 1/104
 - E03C 1/106
 - E03C 1/108
- Domestic plumbing installations for fresh water or waste water; Sinks {(work tops [A47B 77/022](#))}**
 - Plumbing installations for fresh water
 - • {-Water supply lines as such, e.g. shower hoses}
 - • Water-basin installations specially adapted to wash-basins or baths (valves, faucets, mixing valves, taps [F16K](#))
 - • • {-Fixing a tap to the sanitary appliance or to an associated mounting surface, e.g. a countertop}
 - • • • {-with mounting from only one side}
 - • • {-Constructional or functional features of the spout}
 - • • • {-enabling multiple spray patterns}
 - • • • {-Spouts for unpressurized outflow of water}
 - • • {-having provisions against scalding, e.g. temperature limiting devices, external covers}
 - • • {-Taps specially designed for dispensing boiling water}
 - • • {-Constructional or functional features of the faucet handle (valve actuating members as such [F16K 31/60](#))}
 - • Devices for suspending or supporting the supply pipe or supply hose of a shower-bath {(showers per se [A47K 3/28](#))}
 - • • {-with reciprocating mechanisms (reciprocating mechanisms for massage, other than showers [A61H 2201/1669](#))}
 - • • {-allowing height adjustment of shower head}
 - • Devices for preventing contamination of drinking-water pipes, e.g. means for aerating self-closing flushing valves (vacuum-breakers in general [F16K](#), [F16L](#))
 - • • {-using an air gap device}
 - • • {-using a single check valve}
 - • • {-using two or more check valves}
 - • • {-having an aerating valve}

- U E03C 1/12
 - Plumbing installation for waste water; Basins or fountains connected thereto (drainage devices in floors [E03F 5/04](#)); Sinks {(wash-basins not connected to the waste-pipe [A47K 1/04](#))}
- U E03C 1/122
 - • Pipe-line systems for waste water in building (pipe-line systems in general [F17D](#))
- E03C 1/1222
 - • • {-Arrangements of devices in domestic waste water pipe-line systems}
- E03C 1/1225
 - • • • {-of air admittance valves (structural details of air admittance valves [F16K 24/06](#))}
- E03C 1/1227
 - • • • {-of pumps for facilitating drawing off}
- U E03C 1/22
 - • Outlet devices mounted in basins, baths, or sinks (stoppers [A47K 1/14](#))
- U E03C 1/23
 - • • with mechanical closure mechanisms
- E03C 1/2302
 - • • • {-the actuation force being transmitted to the plug via rigid elements}
- E03C 1/2304
 - • • • {-the actuation force being transmitted to the plug via flexible elements, e.g. chain, Bowden cable}
- E03C 1/2306
 - • • • {-the plug being operated by hand contact}
- U E03C 1/28
 - • Odour seals
- E03C 1/281
 - • • {-using other sealants than water}
- U E03C 1/32
 - • Holders or supports for basins
- U E03C 1/33
 - • • Fastening sinks or basins in an apertured support
- E03C 1/335
 - • • • {-the fastening means comprising a screw}

Project: N/A (E03D)

- U E03D 1/00
 - Water flushing devices with cisterns; {Setting up a range of flushing devices or water-closets; Combinations of several flushing devices}**
- U E03D 1/01
 - Shape or selection of material for flushing cisterns
- U E03D 1/012
 - • Details of shape of cisterns, e.g. for connecting to wall, for supporting or connecting flushing-device actuators {(mounting frames with incorporated cisterns [E03D 11/146](#))}
- E03D 1/0125
 - • • {-of built-in cisterns}
- U E03D 1/02
 - High-level flushing systems
- U E03D 1/04
 - • Cisterns with bell siphons
- U E03D 1/05
 - • • with movable siphon bells
- E03D 1/056
 - • • • {-providing an air lock}
- E03D 1/30
 - Valves for high or low level cisterns; -Their arrangement (inlet valves, valves in general [F16K](#)){Flushing mechanisms in the cistern, optionally with provisions for a pre-or a post- flushing and for cutting off the flushing mechanism in case of leakage-(flushing valves [E03D 1/142](#), [E03D 1/186](#), [E03D 1/266](#), [E03D 1/286](#))}
- U E03D 5/00
 - Special constructions of flushing devices (in motor vehicles or trailers [B60R 15/00](#); in railway carriages [B61D 35/00](#); in ships [B63B 29/14](#); in aircraft [B64D 11/02](#)), {e.g. closed flushing system}**
- U E03D 5/003
 - {Grey water flushing systems}
- E03D 5/006
 - • {-Constructional details of cisterns for using greywater}
- E03D 5/02
 - operated mechanically or hydraulically ([E03D 5/01](#), [E03D 5/12](#) take precedence){(or pneumatically){(or pneumatically)} also details such as push buttons, levers and pull-card therefor}
- E03D 5/022
 - • {-Operating automatically ([E03D 5/10](#) takes precedence)}
- E03D 5/028
 - • {-Pusher plates and actuating mechanisms for built-in cisterns}

- U E03D 5/10
- operated electrically ([E03D 5/01](#), [E03D 5/12](#) take precedence), {e.g. by a photo-cell; also combined with devices for opening or closing shutters in the bowl outlet and/or with devices for raising/or lowering seat and cover and/or for swiveling the bowl}
- E03D 5/105
- {-touchless, e.g. using sensors}
- E03D 9/00**
- Sanitary or other accessories for lavatories (hand tools for cleaning the toilets bowl [A47K 11/10](#); seats or covers for closets [A47K 13/00](#); body supports, other than seats for closets [A47K 17/02](#); devices for preventing contamination of drinking-water pipes [E03C 1/10](#)){Devices for cleaning or disinfecting the toilet room or the toilet bowl; Devices for eliminating smells-(cleaning, disinfecting or deodorising the seat [A47K 13/30](#))}**
- U E03D 9/08
- Devices in the bowl producing upwardly-directed sprays; Modifications of the bowl for use with such devices (showers [A47K 3/28](#); bathing devices for special therapeutic or hygienic purposes [A61H 33/00](#), for specific parts of the body [A61H 35/00](#)); { Bidets; Combinations of bowls with urinals or bidets; Hot-air or other devices mounted in or on the bowl, urinal or bidet for cleaning or disinfecting}
- E03D 9/085
- {-Hand-held spray heads for bidet use or for cleaning the bowl}
- U E03D 11/00**
- Other component parts of water-closets (pipe-joints or couplings in general [F16L](#)){e.g. noise-reducing means in the flushing system (noise-reducing means in combination with flushing valves [E03D 9/14](#)), flushing pipes mounted in the bowl, seals for the bowl outlet, devices preventing overflow of the bowl contents; devices forming a water seal in the bowl after flushing, devices eliminating obstructions in the bowl outlet or preventing backflow of water and excrements from the waterpipe}**
- E03D 11/02
- Water-closet bowls (auxiliary chambers with connections to flushing water for bowl-cleaning utensils [E03D 9/06](#); modified for using upwardly-directed sprays [E03D 9/08](#); seats or covers [A47K 13/00](#)){Bowls with a double odour seal optionally with provisions for a good siphonic action; siphons as part of the bowl-(parts or details of bowls [E03D 11/13](#))}
- U E03D 11/12
- Swivel-mounted bowls, e.g. for use in restricted spaces { slidably or movably mounted bowls; combinations with flushing and disinfecting devices actuated by the swiveling or sliding movement of the bowl}
- E03D 11/125
- {-Height adjustable bowls}
- U E03D 13/00**
- Urinals (without flushing devices [A47K 11/00](#)){Means for connecting the urinal to the flushing pipe and the wastepipe; Splashing shields for urinals}**
- E03D 13/002
- {-intended for use by women}
- E03D 13/005
- {-Accessories specially adapted for urinals}

Project: N/A (E03F)

- U E03F 1/00**
- Methods, systems, or installations for draining-off sewage or storm water**
- E03F 1/002
- {-with disposal into the ground, e.g. via dry wells}
- U E03F 1/006
- {Pneumatic sewage disposal systems; accessories specially adapted therefore}
- E03F 1/007
- {-for public or main systems}
- E03F 1/008
- {-Temporary fluid connections for emptying mobile sewage holding tanks, e.g. of trailers, boats}
- U E03F 3/00**
- Sewer pipe-line systems**
- U E03F 3/04
- Pipes or fittings specially adapted to sewers (manufacture of concrete tubes [B28](#); pipes or pipe fittings in general [F16L](#))
- E03F 3/043
- {-Partitioned to allow more than one medium to flow through}

- U E03F 5/00 Sewerage structures**
- U E03F 5/02 · Manhole shafts or other inspection chambers (in general [E02D 29/12](#)); snow-filling openings; accessories (covers or frames for manholes or the like [E02D 29/14](#))
- E03F 5/021 · · {-Connection of sewer pipes to manhole shaft}
- E03F 5/022 · · {-Partitioned to allow more than one medium to flow through}
- E03F 5/024 · · {-made of plastic material}
- E03F 5/025 · · {-provided with a liner}
- E03F 5/027 · · {-The bottom made of prefabricated segments}
- U E03F 5/04 · Gullies {inlets, road sinks, floor drains} with or without odour seals or sediment traps
- E03F 5/0401 · · {-Gullies for use in roads or pavements}
- E03F 5/0402 · · · {-provided with flushing means for cleaning or emptying}
- E03F 5/0403 · · · {-with a sediment trap}
- E03F 5/0404 · · · {-with a permanent or temporary filtering device; Filtering devices specially adapted therefor}
- E03F 5/0405 · · · {-with an odour seal}
- E03F 5/0406 · · · · {-the odour seal being easily accessible for cleaning}
- E03F 5/0407 · · {-Floor drains for indoor use}
- E03F 5/0408 · · · {-specially adapted for showers}
- E03F 5/0409 · · · {-Devices for preventing seepage around the floor drain}
- E03F 5/041 · · {-Accessories therefor}
- E03F 5/0411 · · · {-Devices for temporarily blocking inflow into a gully}
- U E03F 5/10 · Collecting-tanks; Equalising-tanks for regulating the run-off; Laying-up basins {(sewage settling installations **85C3E**, **85C6A**; sand traps **85C6A2**; emptying sewage settling installations **85C6E**; settling installations in general [B01D 21/00](#))}
- E03F 5/101 · · {-Dedicated additional structures, interposed or parallel to the sewer system}
- E03F 5/102 · · {-using already existing parts of the sewer system for runoff-regulation}
- E03F 5/103 · · {-Naturals or landscape retention bodies, e.g. ponds}
- E03F 5/105 · · {-Accessories, e.g. flow regulators or cleaning devices}
- E03F 5/106 · · · {-Passive flow control devices, i.e. not moving during flow regulation}
- E03F 5/107 · · · {-Active flow control devices, i.e. moving during flow regulation}
- E03F 5/108 · · · {-Cleaning devices providing a flushing surge}
- U E03F 5/12 · Emergency outlets
- E03F 5/125 · · {-providing screening of overflowing water}
- U E03F 7/00 Other installations or implements for operating sewer systems, e.g. for preventing or indicating stoppage; Emptying cesspools**
- U E03F 7/10 · Wheeled apparatus for emptying sewers or cesspools
- E03F 7/103 · · {-with a tank featuring one or more partition walls}
- E03F 7/106 · · {-Accessories, e.g. hose support}

E03F 9/00 Arrangements or fixed installations {methods or devices} for cleaning {or clearing} sewer pipes, e.g. by flushing (sediment traps, rakes, screens, or the like, arranged in sewer lines [E03F 5/14](#); cleaning pipes in general, devices for cleaning pipes [B08B 9/02](#); gullies provided with flushing means for cleaning or emptying [E03F 5/0402](#); devices to remove obstructions in waste-pipes or sinks [E03C 1/30](#))

E03F 9/007 · {-Devices providing a flushing surge}

Project: N/A (E04B)

E04B 1/00 Constructions in general; -Structures which are not restricted either to walls, e.g. partitions, or floors or ceilings or roofs (scaffolds, shutterings [E04G](#); structures specially adapted for buildings for special purposes, general layout of buildings, e.g. modular co-ordination, [E04H](#); the particular parts of buildings, see the relevant groups for those parts)

E04B 1/003 · {-Balconies; Decks}

U E04B 1/02 · Structures consisting primarily of load-supporting, block-shaped, or slab-shaped elements ([E04B 1/32](#) to [E04B 1/36](#) take precedence)

U E04B 1/04 · · the elements consisting of concrete, e.g. reinforced concrete, or other stone-like material

U E04B 1/043 · · · {Connections specially adapted therefor}

E04B 1/046 · · · · {-using reinforcement loops protruding from the elements}

U E04B 1/18 · Structures comprising elongated load-supporting parts, e.g. columns, girders, skeletons ([E04B 1/32](#) to [E04B 1/36](#) take precedence; elongated load-supporting parts as elements, trusses, truss-like structures [E04C 3/00](#))

U E04B 1/19 · · Three-dimensional framework structures {folded structures and grid-like formations acting as shell structures [E04B 7/10](#)}

E04B 1/1903 · · · {-Connecting nodes specially adapted therefor}

U E04B 1/26 · · the supporting parts consisting of wood

E04B 1/2604 · · · {-Connections specially adapted therefor (shear dowels [E04B 1/486](#), [E04B 1/49](#))}

U E04B 1/343 · Structures characterised by movable, separable, or collapsible parts, e.g. for transport (movable roof parts [E04B 7/16](#); floatable buildings [B63B](#); small prefabricated buildings, transportable as a whole [E04H 1/12](#); small garages [E04H 6/02](#); tents or canopies, in general [E04H 15/00](#)){containers [B65G](#)}

U E04B 1/346 · · Rotary buildings; buildings with rotary units, e.g. rooms

E04B 1/3465 · · · {-with adapted utilities connections, e.g. for water or electricity}

U E04B 1/35 · Extraordinary methods of construction, e.g. lift-slab, jack-block ([E04B 1/34](#) takes precedence; falsework, shuttering for shaping walls, floors, ceilings or roofs in situ [E04G 11/04](#); conveying or assembling of building materials [E04G 21/00](#); working measure on existing buildings [E04G 23/00](#))

E04B 1/3555 · · {-Constructions using straw bales}

U E04B 1/38 · Connections for building structures in general

NOTE

Connections specially adapted for particular building parts or for particular building structures are classified in the groups for those parts or structures, e.g. in groups [E04B 1/21](#), [E04B 2/00](#), [E04B 5/00](#), [E04B 7/00](#) or [E04B 9/00](#). Joints not specially adapted for building construction, or of more general application, are classified in the appropriate subclasses, e.g. [F16B](#).

- E04B 1/40
- • Separate connecting elements (for forms, falsework, or shutterings [E04G 17/00](#); releasable clips or clamps, hooks, wedges, wall-dowels, nails, bolts, rivets, screws, wood-screws [F16B](#))
- WARNING
- Group [E04B 1/40](#) is no longer used for the classification of new documents. The backlog of this group is in the process of being reorganised to group [E04B 1/41](#) and subgroups
- U E04B 1/48
- • • Dowels, i.e. members adapted to penetrate the surfaces of two parts and to take the shear stresses
- E04B 1/483
- • • • {-Shear dowels to be embedded in concrete}
- E04B 1/486
- • • • {-Shear dowels for wood ([E04B 1/49](#) takes precedence)}
- E04B 1/54
- • Joints substantially without separate connecting elements, e.g. jointing by inter-engagement (welded, glued, or the like joints, in general [F16B](#))
- U E04B 1/62
- Insulation or other protection; Elements or use of specified material therefor (chemical compositions [C01](#) to [C11](#); implements for applying insulation or sealings [E04F 21/00](#); buildings to withstand or to provide protection against external undesired influences [E04H 9/00](#); sealing pipes in walls or partitions [F16L 5/02](#); shielding against dangerous radiation [G21F](#); constructions of particular parts of buildings, see the relevant groups for those parts)
- E04B 1/625
- • {-Sheets or foils allowing passage of water vapor but impervious to liquid water; house wraps}
- U E04B 1/66
- • Sealings ({damp-proof courses [E04B 1/644](#); fire-proof sealings [E04B 1/948](#); additions of anti-leak properties to plaster [C04B](#); bituminous sealing masses [C08L 95/00](#); sealings for hydraulic engineering work in general [E02B 3/16](#); against ground humidity or ground water [E02D 31/02](#); coverings against rain or other precipitations of the atmosphere [E04D](#); composition of material or manufacture of sealing foils, see the relevant classes for these foils)
- E04B 1/665
- • • {-Sheets or foils impervious to water and water vapor}
- U E04B 1/70
- • Drying or keeping dry, e.g. by air vents ({using damp-proof courses [E04B 1/644](#); using sealings, e.g. sealing masses or foils, [E04B 1/66](#)}; during erection [E04G 21/28](#))
- E04B 1/7007
- • • {-by using electricity, e.g. electro-osmosis (electrochemical desalination or re-alkalisation of reinforced concrete [C04B 41/00](#))}
- E04B 1/703
- • • {-Evacuating water from walls made from hollow bricks}
- E04B 1/7038
- • • {-Evacuating water from cavity walls, e.g. by using weep holes}
- E04B 1/7046
- • • • {-using trays}
- E04B 1/7053
- • • • {-Grills for weep holes}
- E04B 1/7061
- • • • {-Devices for preventing blockage of weep holes, e.g. a blockage caused by falling mortar}
- U E04B 1/74
- • Heat, sound or noise insulation, absorption, or reflection (forms of, or arrangements in, rooms for influencing or directing sound [E04B 1/99](#)). Other building methods affording favourable thermal or acoustical conditions, e.g. accumulating of heat within walls (fire protection [E04B 1/94](#); elements chiefly adapted for structural purposes [E04C 1/00](#) to [E04C 3/00](#); chiefly adapted for surface covering [E04F 13/00](#); as underlayers for floor coverings [E04F 15/18](#); closures for wall or like openings [E06B](#))
- U E04B 1/76
- • • specifically with respect to heat only (heat insulation in general [F16L 59/00](#))
- E04B 1/762
- • • • {-Exterior insulation of exterior walls}
- E04B 1/7625
- • • • • {-Details of the adhesive connection of the insulation to the wall}
- E04B 1/7629
- • • • • {-Details of the mechanical connection of the insulation to the wall}

- E04B 1/7633 {-Dowels with enlarged insulation retaining head}
- E04B 1/7637 {-Anchoring of separate elements through the lining to the wall}
- E04B 1/7641 {-Elements for window or door openings, or for corners of the building}
- E04B 1/7645 {-with ventilation means for the insulation}
- E04B 1/765 {-Bottom edge finishing profile}
- E04B 1/7675 {-Insulating linings for the interior face of exterior walls}
- U E04B 2/00 Walls, e.g. partitions, for buildings; Wall construction with regard to insulation; Connections specially adapted to walls (connections for building structures in general [E04B 1/38](#); insulation for buildings in general [E04B 1/62](#); building elements of relatively thin form for parts of buildings [E04C 2/00](#))**
- U E04B 2/74 Removable non-load-bearing partitions; Partitions with a free upper edge (framed panels [E04C 2/38](#)){modular coordination}
- U E04B 2/7407 {assembled using frames with infill panels or coverings only; made-up of panels and a support structure incorporating posts ([E04B 2/78](#) and [E04B 2/80](#) take precedence)}
- U E04B 2/7409 {special measures for sound or thermal insulation, including fire protection}
- E04B 2/7411 {-Details for fire protection}
- E04B 2/7412 {-Posts or frame members specially adapted for reduced sound or heat transmission}
- E04B 2/7414 {-Posts or frame members with projections for holding sound or heat insulating fillings}
- U E04B 2/7453 {with panels and support posts, extending from floor to ceiling}
- E04B 2/7457 {-with wallboards attached to the outer faces of the posts, parallel to the partition ([E04B 2/7459](#) takes precedence)}
- E04B 2/7459 {-with telescoping posts to compensate for floor or ceiling irregularities}
- U E04B 2/76 with framework or posts of metal {(details of connections, thresholds or skirtings [E04B 2/82](#))}
- U E04B 2/766 {T-connections}
- U E04B 2/767 {Connections between wall studs and upper or lower locating rails}
- E04B 2/768 {-allowing vertical movement of upper rail with respect to the stud, e.g. by using slots in the rail or stud}
- E04B 2/78 characterised by special cross-section of the frame-members {as far as important for securing wall panels to a framework with or without the help of cover-strips (separate connecting means, e.g. clip [E04B 2/74](#); connections between uprights and cross-members [E04B 2/76](#))}
- U E04B 2/7809 {of single or multiple tubular form}
- U E04B 2/7818 {of substantially rectangular form}
- E04B 2/7827 {-with all four sides of the profiles having substantially similar undercut grooves or connecting projections}
- E04B 2/7836 {-with only two sides of the profiles having substantially similar undercut grooves or connecting projections}
- U E04B 2/7854 {of open profile}
- E04B 2/789 {-of substantially U- or C- section}
- U E04B 2/82 characterised by the manner in which edges are connected to the building; Means therefor; Special details of easily-removable partitions {as far as related to the connection with other parts of the building}

- E04B 2/821
 - • • ~~{Connections between two opposed surfaces (i.e floor and ceiling)}~~*{Connections between two opposed surfaces (i.e floor and ceiling)}* by means of a device offering a restraining force acting in the plane of the partition}
- E04B 2/825
 - • • {the connection between the floor and the ceiling being achieved without any restraining forces acting in the plane of the partition}
- E04B 2/828
 - • • {-Connections between partitions and structural walls}
- U E04B 2/84
 - Walls made by casting, pouring, or tamping in situ ([E04B 2/02](#), [E04B 2/56](#) take precedence; forms therefor [E04G 11/06](#); working of concrete or similar masses able to be cast or poured in situ [E04G 21/02](#))
- E04B 2/842
 - {-by projecting or otherwise applying hardenable masses to the exterior of a form leaf}
- E04B 2/845
 - • • {the form leaf comprising a wire netting, lattice or the like}
- E04B 2/847
 - • • {the form leaf comprising an insulating foam panel}
- U E04B 2/86
 - • made in permanent forms
- E04B 2/8658
 - • • {-using wire netting, a lattice or the like as form leaves}
- U E04B 2/88
 - Curtain walls {(fixing of glass panes [E06B 3/54](#))}
- U E04B 2/96
 - • comprising panels attached to the structure through mullions or transoms {([E04B 2/885](#) takes precedence)}
- E04B 2/962
 - • • {-with angles or corners in the curtain wall}
- U E04B 5/00**

Floors; Floor construction with regard to insulation; Connections specially adapted therefor (elements for floors, e.g. bricks, stones, filling bodies, girders, [E04C](#); flooring as finishing work, insulation of flooring, sectional false floors, e.g. for computers [E04F 15/00](#))
- U E04B 5/02
 - Load-carrying floor structures formed substantially of prefabricated units ([E04B 5/43](#) to [E04B 5/48](#) take precedence)
- E04B 5/023
 - • {-Separate connecting devices for prefabricated floor-slabs}
- E04B 5/026
 - • {-with beams or slabs of plastic}
- U E04B 5/04
 - • with beams { or slabs} of concrete or other stone-like material, e.g. asbestos cement ([E04B 5/08](#), [E04B 5/14](#) take precedence)
- E04B 5/043
 - • • {-having elongated hollow cores}
- E04B 5/046
 - • • {-with beams placed with distance from another}
- E04B 5/06
 - • • {-with beams} placed against one another { optionally with pointing-mortar}
- E04B 5/12
 - • with wooden beams ([E04B 5/14](#) takes precedence){also means for supporting beams; -(shores or struts [E04G 25/00](#))}
- U E04B 5/16
 - Load-carrying floor structures wholly or partly cast or similarly formed in situ ([E04B 5/43](#) to [E04B 5/48](#) take precedence; floors merely characterised by the prefabricated elements [E04C](#))
- U E04B 5/17
 - • Floor structures partly formed in situ
- U E04B 5/23
 - • • with stiffening ribs or other beam-like formations wholly or partly prefabricated (with all load-carrying parts substantially consisting of prefabricated units [E04B 5/02](#)){beams built-up by elements joined in line [E04C 3/22](#)}
- U E04B 5/26
 - • • • with filling members between the beams ([E04B 5/28](#) takes precedence)
- E04B 5/261
 - • • • • {-Monolithic filling members}
- E04B 5/263
 - • • • • • {-with a flat lower surface ([E04B 5/265](#) takes precedence)}
- E04B 5/265
 - • • • • • • {-with one or more hollow cores}
- E04B 5/266
 - • • • • • • {-Filling members covering the undersurface of the beams}

- E04B 5/268 {-End filling members to be placed between the floor and the wall, e.g. thermal breaks}
- U E04B 5/32 . . Floor structures wholly cast in situ with or without form units or reinforcements
- E04B 5/326 . . . {-with hollow filling elements}
- E04B 5/328 {-the filling elements being spherical}
- U E04B 7/00** **Roofs; Roof construction with regard to insulation (structures for roofs as well as for floors [E04B 5/00](#); ceilings [E04B 9/00](#); greenhouses [A01G 9/14](#); large containers having floating covers [B65D 88/34](#); roof trusses, trusslike structures, joists [E04C 3/02](#); roof covering [E04D](#))**
- U E04B 7/02 . . with plane sloping surfaces, e.g. saddle roofs {(canopies [E04F 10/00](#))} ([E04B 7/12](#) takes precedence)
- E04B 7/026 . . {-consisting of prefabricated modules, e.g. box-like or cell-like units ([E04B 7/24](#) takes precedence)}
- U E04B 7/04 . . supported by horizontal beams or the equivalent resting on the walls ([E04B 7/06](#) takes precedence)
- E04B 7/045 . . . {-with connectors made of sheet metal for connecting the roof structure to the supporting wall (connectors made of sheet metal for wooden elongated load-supporting elements in general [E04B 1/2608](#))}
- U E04B 7/16 . . Roof structures with movable roof parts (buildings for special purposes [E04H](#))
- E04B 7/163 . . {-characterised by a pivoting movement of the movable roof parts ([E04B 7/166](#) takes precedence)}
- E04B 7/166 . . {-characterised by a translation movement of the movable roof part, with or without additional movements}
- U E04B 9/00** **Ceilings; Construction of ceilings, e.g. false ceilings; Ceiling construction with regard to insulation (ceilings used as forms for making floors [E04B 5/00](#); coverings or linings for ceilings [E04F 13/00](#))**
- U E04B 9/02 . . having means for ventilation or vapour discharge
- E04B 9/023 . . {-comprising drainage gutters for condensed water or grease}
- U E04B 9/04 . . comprising slabs, { panels,} sheets or the like
- E04B 9/0407 . . {-being stiff and curved}
- E04B 9/0414 . . {-being foldable, curvable or rollable}
- E04B 9/0421 . . {-comprising ducts}
- E04B 9/0428 . . {-having a closed frame around the periphery}
- E04B 9/0435 . . {-having connection means at the edges}
- E04B 9/0442 . . {-having a honeycomb core}
- E04B 9/045 . . {-being laminated}
- E04B 9/0457 . . {-having closed internal cavities}
- E04B 9/0464 . . {-having irregularities on the faces, e.g. holes, grooves}
- E04B 9/0471 . . {-having a trapezoidal cross section}
- E04B 9/0478 . . {-of the tray type}
- E04B 9/0485 . . . {-containing a filling element}
- U E04B 9/06 . . characterised by constructional features of the supporting construction, { e.g. cross section or material of framework members}
- E04B 9/061 . . {-supporting construction for curved ceilings}
- E04B 9/064 . . {-comprising extruded supporting beams}
- E04B 9/065 . . {-comprising supporting beams having a folded cross-section}
- E04B 9/067 . . . {-with inverted T-shaped cross-section}

- E04B 9/068
 - • • {-with double web}
- U E04B 9/12
 - • Connections between non-parallel members of the supporting construction ([E04B 9/08](#) takes precedence)
- U E04B 9/122
 - • • {one member passing through the other member, both members laying at least partly in the same plane}
- E04B 9/125
 - • • {-both members being continuous members}
- U E04B 9/18
 - Means for suspending the supporting construction
- E04B 9/183
 - • {-having a lower side adapted to be connected to a channel of the supporting construction}
- U E04B 9/20
 - • adjustable
- E04B 9/205
 - • • {-by means of a resilient clip}
- U E04B 9/22
 - Connection of slabs, { panels,} sheets or the like to the supporting construction
- E04B 9/225
 - • {-with the slabs, panels, sheets or the like hanging at a distance below the supporting construction}
- U E04B 9/24
 - • with the slabs, { panels,} sheets or the like positioned on { the upperside of}, or held against { the underside of the} horizontal flanges of the supporting construction { or accessory means connected thereto}
- E04B 9/241
 - • • {-with the slabs, { panels,} sheets or the like positioned on the upperside of the horizontal flanges of the supporting construction}
- E04B 9/242
 - • • • {-with separate retaining elements}
- E04B 9/244
 - • • • {-comprising sealing means between the supporting construction and the slabs, panels, sheets or the like}
- U E04B 9/30
 - characterised by edge details of the ceiling; e.g. securing to an adjacent wall
- U E04B 9/303
 - • {for flexible tensioned membranes}
- E04B 9/306
 - • • {-Tensioning hand tools therefor}

Project: N/A (E04C)

- U E04C 1/00
 - Building elements of block or other shape for the construction of parts of buildings (of relatively thin form [E04C 2/00](#); structural elongated elements designed for load-supporting [E04C 3/00](#), e.g. columns or pillars [E04C 3/30](#); manufacture or material of building bricks, stones, or the like [B28](#), [C03](#), [C04](#); paving elements [E01C](#); general building constructions [E04B](#), e.g. walls [E04B 2/00](#), floors [E04B 5/00](#), roofs [E04B 7/00](#), ceilings [E04B 9/00](#); {roof coverings [E04D](#); coverings for walls or ceilings [E04F 13/00](#); floorings [E04F 15/00](#)} structural elements specially designed for built-in conduit shafts [E04F 17/00](#); {elements for buildings for particular purposes [E04H 7/00](#)}; special elements for building ovens or furnaces [F24B](#), [F27D](#))**
- E04C 1/24
 - Elements for building-up floors, ceilings, roofs, arches, or beams ([E04C 1/39](#) to [E04C 1/42](#) take precedence; flooring [E04F 15/00](#))
- E04C 1/34
 - • designed for use as filling elements
- E04C 1/36
 - • • between joists or girders
- E04C 1/38
 - • • in ribbed or cross-ribbed floors, ceilings, or roofs consisting of reinforced concrete
- U E04C 2/00
 - Building elements of relatively thin form for the construction of parts of buildings, e.g. sheet materials, slabs, or panels (materials or manufacture, see the relevant subclasses, e.g. [B27N](#), [D21J](#); made in situ [E04B](#); specially designed for insulation or other protection [E04B 1/62](#); load-carrying floor structures [E04B 5/02](#), [E04B 5/16](#); roofs consisting of self-supporting slabs [E04B 7/20](#); roof or like covering elements [E04D 3/00](#); for lining or finishing [E04F 13/00](#))**

- U E04C 2/30 · characterised by the shape or structure (translucent [E04C 2/54](#))
- E04C 2/40 · · composed of a number of smaller components rigidly or movably connected together, e.g. interlocking, hingedly connected {of particular shape, e.g. not rectangular of variable shape or size, e.g. flexible or telescopic panels-([E04C 2/041](#) takes precedence)}
- E04C 2/44 · characterised by the purpose
- E04C 2/46 · · specially adapted for making walls ([E04C 2/52](#), [E04C 2/54](#) take precedence; structure of slab-shaped elements [E04B 1/02](#); walls of elements of relatively thin form [E04B 2/72](#))
- E04C 2/48 · · as high as or higher than the room, i.e. having provisions concerning the connection with at least two floors ([E04C 2/52](#) and [E04C 2/54](#) take precedence)
- E04C 2/50 · · Self-supporting slabs specially adapted for making floors ceilings, or roofs, e.g. able to be loaded ([E04C 2/52](#), [E04C 2/54](#) take precedence; structures of slab-shaped elements [E04B 1/02](#); floor structures [E04B 5/00](#); { roofs consisting of self-supporting slabs [E04B 7/20](#);} ceilings [E04B 9/00](#); roof coverings [E04D](#); floor coverings [E04F 15/00](#))
- U E04C 3/00 **Structural elongated elements designed for load-supporting (as building aids [E04G](#))****
- U E04C 3/02 · Joists; Girders, trusses, or trusslike structures, e.g. prefabricated; Lintels; Transoms; {Braces}([E04C 3/38](#) takes precedence; for structures characterised by movable, separable, or collapsible parts [E04B 1/343](#); {braced purlins [E04B 7/024](#)})
- U E04C 3/04 · · of metal ([E04C 3/29](#) takes precedence; as reinforcing elements [E04C 5/06](#); manufacture [B21](#))
- U E04C 2003/0404 · · · {beams, girders, or joists characterised by cross-sectional aspects }
- U E04C 2003/0443 · · · · {characterised by substantial shape of the cross-section }
- U E04C 2003/0452 · · · · · {H- or I-shaped }
- E04C 2003/0456 · · · · · · {-hollow flanged, i.e. "dogbone" metal beams}
- U E04C 3/06 · · · with substantially solid, i.e. unapertured, web ([E04C 3/10](#), [E04C 3/11](#) take precedence){honeycomb girders [E04C 3/083](#)}
- E04C 3/065 · · · · {-with special adaptations for the passage of cables or conduits through the web}
- U E04C 3/08 · · · with apertured web, e.g. with a web consisting of bar-like components; Honeycomb girders ([E04C 3/10](#), [E04C 3/11](#) take precedence)
- U E04C 3/083 · · · · {Honeycomb girders; Girders with apertured solid web}
- E04C 3/086 · · · · · {-of the castellated type}
- U E04C 3/12 · · of wood, e.g. with reinforcements, with tensioning members ([E04C 3/292](#) takes precedence)
- E04C 3/122 · · · {-Laminated }
- E04C 3/125 · · · {-End caps therefor}
- E04C 3/127 · · · {-with hollow cross section}
- U E04C 3/14 · · · with substantially solid, i.e. unapertured, web ({ [E04C 3/127](#),} [E04C 3/17](#), [E04C 3/18](#) take precedence)
- E04C 3/145 · · · · {-with special adaptations for the passage of cables or conduits through the web, e.g. reinforcements}
- U E04C 3/28 · · of other materials not covered by groups [E04C 3/40](#) - [E04C 3/44](#)
- E04C 3/285 · · · {-of glass}
- U E04C 3/29 · · built-up from parts of different material, {i.e. composite structures}

- E04C 3/291 . . . {-with apertured web}
- U E04C 5/00 Reinforcing elements, e.g. for concrete; Auxiliary elements therefor**
{(methods or devices for making reinforcing materials [B21D](#)); material composition {[C04B](#)}, [C21](#), [C22](#); arrangements of reinforcing elements, see the relevant subclasses)}
- NOTES**
- In this group, the following terms or expressions are used with the meanings indicated:
- "reinforcing" means increasing any physical strength characteristic of the end product, e.g. compressive or flexural strength;
 - "elements" includes relatively large bodies, e.g. steel bars, as well as relatively small discrete bodies of any form, e.g. glass fibres.
- Discrete reinforcing elements, which are small compared with the reinforced building element, only characterised by their composition are classified in [C04B](#), e.g. steel fibres [C04B 14/48](#), plastic elements with a shape other than granular or fibrous [C04B 16/12](#)
- U E04C 5/01 . Reinforcing elements of metal, e.g. with non-structural coatings {([E04C 5/08](#) takes precedence)}
- U E04C 5/06 . . of high bending resistance, i.e. of essentially three-dimensional extent, e.g. lattice girders {(anchorage devices specially adapted for balconies [E04B 1/0038](#); supporting devices for connector reinforcing rods for concrete walls [E04G 21/125](#))}
- U E04C 5/065 . . . Light-weight girders, e.g. with precast parts (light-weight girders in general [E04C 3/08](#), [E04C 3/294](#))
- E04C 5/0653 . . . {-with precast parts}
- E04C 5/0656 . . . {-with lost formwork}
- U E04C 5/07 . Reinforcing elements of material other than metal, e.g. of glass, of plastics, or not exclusively made of metal (metal elements with non-structural coatings [E04C 5/01](#))
- U E04C 5/073 . {-Discrete reinforcing elements, e.g. fibres}
- E04C 5/076 . . {-Specially adapted packagings therefor, e.g. for dosing}
- U E04C 5/08 . Members specially adapted to be used in prestressed constructions {(production of reinforced objects in general [B28B 23/00](#); prestressed structures produced in situ [E04G 21/12](#))}
- E04C 5/085 . {-Tensile members made of fiber reinforced plastics}
- U E04C 5/12 . Anchoring devices (tools or methods for tensioning {in situ} [E04G 21/12](#))
- E04C 5/127 . . {-The tensile members being made of fiber reinforced plastics}
- U E04C 5/16 . Auxiliary parts for reinforcements, e.g. connectors, spacers, stirrups {([E04C 5/06](#) takes precedence; } tools connecting reinforcing elements [E04G 21/12](#))}
- E04C 5/161 . {-Protective caps for the ends of reinforcing bars}
- E04C 5/18 . {-Spacers} of metal or substantially of metal {([E04C 5/168](#) takes precedence)}
- U E04C 5/20 . of material other than metal or with only additional metal parts, e.g. concrete or plastics spacers with metal binding wires {([E04C 5/168](#) takes precedence)}
- E04C 5/201 . . {-Spacer blocks with embedded separate holding wire or clips}
- E04C 5/203 . . {-Circular and spherical spacers}
- E04C 5/205 . . {-Ladder or strip spacers}
- E04C 5/206 . . {-Spacers having means to adapt the spacing distance}

E04C 5/208

- · · {-Spacers especially adapted for cylindrical reinforcing cages}

Project: N/A (E04D)**U E04D 1/00**

Roof covering by making use of tiles, slates, shingles, or other small roofing elements (roofing supports {and underlayers} [E04D 12/00](#))

U E04D 1/02

- Grooved or vaulted roofing elements ([E04D 1/28](#), [E04D 1/30](#) take precedence)

E04D 1/025

- · {-Diamond shaped and installed in diagonal lines}

U E04D 1/08

- · of plastics;{of asphalt; } of fibrous materials

E04D 1/085

- · · {-of wood}

U E04D 1/12

- Roofing elements shaped as plain tiles or shingles, i.e. with flat outer surface ([E04D 1/28](#), [E04D 1/30](#) take precedence)

E04D 1/125

- · {-Diamond shaped and installed in diagonal lines}

U E04D 1/20

- · of plastics;{of asphalt; } of fibrous materials

E04D 1/205

- · · {-of wood}

U E04D 1/26

- Strip-shaped roofing elements appearing as a row of shingles

E04D 1/265

- · {-the roofing elements being rigid, e.g. made of metal, wood or concrete}

U E04D 1/36

- Devices for sealing the spaces or joints between roof-covering elements (sealing joints not restricted to roof-covering elements [E04B 1/68](#); {channels at the intersection of roof surfaces [E04D 13/0445](#)})

E04D 1/365

- · {-Sealing strips between lateral sides of roof-covering elements}

U E04D 3/00

Roof covering by making use of flat or curved slabs or stiff sheets ([E04D 1/00](#) takes precedence; built-up roofs [E04D 11/02](#))

U E04D 3/36

- Connecting; Fastening

U E04D 3/3601

- · {of roof covering supported by the roof structure with interposition of a insulating layer ([E04D 3/3607](#), [E04D 3/3608](#), [E04D 3/361](#) to [E04D 3/369](#) take precedence)}

E04D 3/3602

- · · {-The fastening means comprising elongated profiles installed in or on the insulation layer}

U E04D 3/361

- · by specially-profiled marginal portions of the slabs or sheets

E04D 3/364

- · · by folding of the edges

U E04D 5/00

Roof covering by making use of flexible material, e.g. supplied in roll form (using stiff sheets [E04D 3/00](#); gravelling of flat roofs [E04D 7/00](#); {granulated roof covering [E04D 7/005](#)}; built-up roofs [E04D 11/02](#))

NOTE

Group [E04D 5/12](#) takes precedence over groups [E04D 5/02](#) to [E04D 5/10](#)

U E04D 5/14

- Fastening means therefor

U E04D 5/144

- · {Mechanical fastening means}

E04D 5/146

- · · {-Linear fastening means, e.g. strips}

U E04D 11/00

Roof covering, as far as not restricted to features covered by only one of groups [E04D 1/00](#) to [E04D 9/00](#); Roof covering in ways not provided for by groups [E04D 1/00](#) to [E04D 9/00](#), {e.g. built-up roofs, elevated load-supporting roof coverings}

E04D 11/005

- {-Supports for elevated load-supporting roof coverings [M1207]}

E04D 11/007

- · {-Height-adjustable spacers}

- U E04D 13/00 Special arrangements or devices in connection with roof coverings; {Protection against birds}; Roof drainage; {Sky-lights}{ventilation tiles [E04D 1/30](#); ventilation slabs [E04D 3/40](#); internal channels [E04F 17/00](#); elements therefor, see the relevant groups}**
- E04D 13/006 · {-Provisions for detecting water leakage}
 - E04D 13/008 · {-Provisions for reducing rain noise}
 - U E04D 13/03 · Sky-lights; Domes; Ventilating sky-lights ([E04D 13/14](#) takes precedence; structures therefor, {e.g. dormer windows} [E04B 7/18](#); {saw-tooth roofs with light-transmission [E04B 7/12](#)})
 - E04D 13/033 · · {provided with means for controlling the light-transmission or the heat-reflection, *(e.g. shields, reflectors, cleaning devices)*}; ~~{e.g. shields, reflectors, cleaning devices}~~
 - U E04D 13/035 · · characterised by having movable parts {(preventing the spread of fire [A62C 3/00](#); roof structures with movable roof parts [E04B 7/16](#); operating mechanisms for sky-lights [E05F 11/00](#); automatically acting closers [E05F 17/00](#))}
 - U E04D 13/0351 · · · {the parts pivoting about a fixed axis}
 - E04D 13/0355 · · · · {-The parts being of vaulted shape}
 - U E04D 13/04 · Roof drainage; Drainage fittings in flat roofs, {balconies or the like}{gutter tiles [E04D 1/30](#); gutter slabs [E04D 3/40](#); {vessels for collecting rainwater [E03B 3/03](#);} street gullies [E03F 5/04](#)}
 - U E04D 13/064 · · Gutters {drainage channels on the roof surface [E04D 13/0445](#); gutters for greenhouses [A01G 9/1476](#)}
 - E04D 13/0641 · · · {-Gutter ends}
 - E04D 13/0643 · · · {-Gutter corners}
 - E04D 13/0645 · · · {-Connections between gutter and down pipe}
 - E04D 13/0646 · · · {-made of concrete or stone-like material}
 - E04D 13/0648 · · · {-comprising provisions for heat insulation, e.g. an insulation layer}
 - U E04D 13/072 · · · Hanging means (in combination with means for fastening gutter parts together {[E04D 13/0685](#)})
 - E04D 13/0722 · · · · {-extending mainly under the gutter}
 - E04D 13/0725 · · · · {-situated above or inside the gutter}
 - E04D 13/0727 · · · · {-situated mainly at the rear side of the gutter}
 - U E04D 13/076 · · Devices or arrangements for removing snow, ice or debris from gutters or for preventing accumulation thereof
 - E04D 13/0762 · · · {-De-icing devices or snow melters}
 - E04D 13/0767 · · · {-Strainers at connection between gutter and down pipe}
 - U E04D 13/10 · Snow traps; {Removing snow from roofs; Snow melters}
 - E04D 13/103 · · {-De-icing devices or snow melters (for drainage outlets [E04D 13/0409](#), for gutters [E04D 13/0762](#), for down pipes [E04D 13/08](#))}
 - E04D 13/106 · · {-Snow removing devices (for gutters [E04D 13/076](#))}
 - U E04D 13/14 · Junctions of roof sheathings to chimneys or other parts extending above the roof
 - U E04D 13/147 · · specially adapted for inclined roofs {trays for cavity walls [E04B 1/70](#)}
 - E04D 13/1471 · · · {-using a hinge mechanism for adaptation to the inclined roof}
 - E04D 13/1473 · · · {-specially adapted to the cross-section of the parts extending above the roof}
 - E04D 13/1475 · · · · {-wherein the parts extending above the roof have a generally rectangular cross-section}

- E04D 13/1476
 - • • {-wherein the parts extending above the roof have a generally circular cross-section}
- E04D 13/1478
 - • • {-Junctions to walls extending above the roof}
- E04D 13/15
 - Trimming strips; -Edge strips; -Fascias; {Expansion joints for roofs-(wall copings [E04D 3/405](#); drainage borders [E04D 13/0459](#); joints in general [E04B 1/68](#))}
- E04D 13/152
 - • with ventilating means {in soffits or fascias; -(on the eaves of the roof [E04D 13/178](#))}
- U E04D 13/16
 - Insulating devices or arrangements in so far as the roof covering is concerned, {e.g. characterised by the material or composition of the roof insulating material or its integration in the roof structure}
- E04D 13/1606
 - • {-Insulation of the roof covering characterised by its integration in the roof structure (self-supporting insulating slabs [E04B 7/22](#), [E04B 7/225](#)-)}
- E04D 13/1612
 - • • {-the roof structure comprising a supporting framework of roof purlins or rafters}
- E04D 13/1643
 - • • {-the roof structure being formed by load bearing corrugated sheets, e.g. profiled sheet metal roofs}
- E04D 13/1656
 - • • • {-Closure strips or elements filling the spaces between the corrugated sheets and a supporting wall}
- E04D 13/1662
 - • • {-Inverted roofs or exteriorly insulated roofs}
- E04D 13/1681
 - • • {-Insulating of pre-existing roofs with or without ventilating arrangements}
- U E04D 13/17
 - Ventilation of roof coverings not otherwise provided for (ventilation of rooms or spaces [F24F](#))
- E04D 13/172
 - • {-Roof insulating material with provisions for or being arranged for permitting ventilation of the roof covering}
- U E04D 13/174
 - • {on the ridge of the roof}
- E04D 13/176
 - • • {-formed by flexible material suitable to be rolled up}
- U E04D 15/00 Apparatus or tools for roof working**
- E04D 15/006
 - {-for cleaning the roof (for cleaning gutters [E04D 13/0765](#); for removing snow from roofs [E04D 13/106](#))}
- U E04D 15/02
 - for roof coverings comprising tiles, shingles, or like roofing elements {(E04D 15/003 takes precedence)}
- E04D 15/025
 - • {-Templates, gauges or spacers for installing roof tiles or roof laths (templates for rafters [E04G 21/1891](#))}

Project: N/A (E04F)

- E04F 10/00 Sunshades, {e.g. Florentine blinds or jalousies; Outside screens-([E06B 9/26](#) takes precedence)}; -Awnings {or baldachins (for caravans [B60P 3/343](#))}; (trailer awnings [E04H 15/08](#); for tents [E04H 15/58](#))**
- U E04F 10/02
 - of flexible canopy materials, e.g. canvas; {Baldachins}
- U E04F 10/06
 - • comprising a roller-blind with means for holding the end away from a building
- E04F 10/0603
 - • • {-with telescopic arms}
- E04F 10/0607
 - • • {-with guiding-sections for supporting the movable end of the blind}
- E04F 10/0611
 - • • {-with articulated arms supporting the movable end of the blind for deployment of the blind}
- E04F 10/0614
 - • • • {-whereby the pivot axis of the articulation is parallel to the roller}
- E04F 10/0618
 - • • • {-whereby the pivot axis of the articulation is perpendicular to the roller}

- E04F 10/0622
 - {-whereby the plane defined by three consecutive articulation points of an articulated arm is not parallel to the rotation axis of the roller, e.g. to create a saddle type roof construction or to prevent contact between the cloth and the arm sections}
- E04F 10/0625
 - {-whereby the roller is installed on the articulated arms}
- E04F 10/0629
 - {-whereby the arm is of the lazy tong type}
- E04F 10/0633
 - . . . {-Arrangements for fastening the flexible canopy material to the supporting structure (fastening roller shutters to rollers [E06B 9/171](#))}
- E04F 10/0637
 - . . . {-with mechanisms for adjusting the inclination of the blind}
- E04F 10/064
 - {-whereby the mechanism changes the inclination of the blind during unrolling}
- E04F 10/0644
 - . . . {-with mechanisms for unrolling or balancing the blind}
- E04F 10/0648
 - {-acting on the roller tube}
- E04F 10/0651
 - {-acting on the arms}
- E04F 10/0655
 - {-acting on the movable end, e.g. front bar}
- E04F 10/0659
 - {-Control systems therefor}
- E04F 10/0662
 - . . . {-with arrangements for fastening the blind to the building}
- E04F 10/0666
 - . . . {-Accessories}
- E04F 10/067
 - {-acting as intermediate support of the flexible canopy}
- E04F 10/0674
 - {-acting as separate supporting bar}
- E04F 10/0677
 - {-acting as centre bearing}
- E04F 10/0681
 - {-Support posts for the movable end of the blind}
- E04F 10/0685
 - . . . {-Covers or housings for the rolled-up blind}
- E04F 10/0688
 - {-with the housing taking up the articulated arms}
- E04F 10/0692
 - . . . {-Front bars}
- E04F 10/0696
 - {-with means to attach an auxiliary screen}
- U E04F 10/08
 - . of a plurality of similar rigid parts, e.g. slabs, lamellae {([E04F 10/005](#) takes precedence)}
- E04F 10/10
 - . . collapsible {or extensible; metallic Florentine blinds; awnings with movable parts such as louvres; -(shutters [E06B 9/04](#); louvre windows [E06B 7/08](#))}
- U E04F 11/00

Stairways, ramps, or like structures (mounting or marking-off stairways [E04F 21/26](#); of temporary { use during building} construction [E04G 27/00](#); means for facilitating access to swimming pools [E04H 4/144](#); { means for facilitating access to swimming pools [E04H 4/144](#); appliances for aiding patients or disabled persons to walk [A61H 3/00](#)}); Balustrades; Handrails (ladders permanently attached to fixed structures [E06C 9/00](#))
- E04F 11/002
 - . {-Ramps}
- E04F 2011/005
 - . . {-collapsible, e.g. folding, telescopic}
- E04F 2011/007
 - . . {-characterised by the supporting structure}
- U E04F 11/02
 - . Stairways; Layouts thereof
- E04F 11/0201
 - . . {-Space-saving stairways, e.g. having half steps}
- U E04F 11/022
 - . . characterised by the supporting structure
- E04F 11/0223
 - . . . {-Cantilevered stairways ([E04F 11/032](#) takes precedence)}
- E04F 11/0226
 - . . . {-Stairways having treads supported by balusters}
- U E04F 11/025
 - . . . Stairways having stringers {([E04F 11/035](#) takes precedence)}
- E04F 11/0255
 - {-having adjustable gradient ([E04F 11/1041](#) takes precedence)}

- U E04F 11/04
 - • Movable stairways, e.g. of loft ladders which may or may not be concealable or extensible (ship ladders [B63B](#); stairs for aircraft [B64F](#); escalators or moving walkways [B66B](#))
- U E04F 11/06
 - • • collapsible, e.g. folding, telescopic
- E04F 11/062
 - • • • {-folding}
- E04F 11/064
 - • • • • {-with stringers overlapping when folded}
- E04F 11/066
 - • • • • {-folding like scissors or accordions}
- E04F 11/068
 - • • • {-telescopic}
- U E04F 11/104
 - • Treads
- E04F 11/1041
 - • • {-having means to adjust the height, the depth and/or the slope of the stair steps ([E04F 11/1042](#) to [E04F 11/116](#) take precedence)}
- E04F 11/1042
 - • • {-with an upper layer of fibres or chips, e.g. bonded with synthetic resins}
- E04F 11/1043
 - • • {-with an upper layer of organic plastics with or without reinforcements or filling materials}
- E04F 11/1045
 - • • {-composed of several layers, e.g. sandwich panels (layered products in general [B32B](#); producing decorative panels or veneers [B44C 5/04](#))}
- U E04F 11/16
 - • • Surfaces thereof; Protecting means for edges or corners thereof ({ loosely laid coverings,} floor fabrics, fastenings therefor [A47G 27/00](#))
- E04F 11/163
 - • • • {-Protecting means for edges or corners}
- E04F 11/166
 - • • • • {-with means for fixing a separate edging strip}
- U E04F 11/17
 - • • • Surfaces {(guard covers of stairs [E04G 21/30](#))}
- E04F 11/175
 - • • • • {-Covering panels for tread restoration}
- U E04F 11/18
 - Balustrades; Handrails (guard-rails on ships [B63B](#); for bridges [E01D 19/10](#); for roads [E01F 13/00](#), [E01F 15/00](#); fences [E04H 17/00](#); { safety measures for persons during the construction of buildings [E04G 21/32](#))
- E04F 11/1802
 - • {-Handrails mounted on walls, e.g. on the wall side of stairs}
- E04F 11/1804
 - • • {-Details of anchoring to the wall}
- E04F 11/1808
 - • • {-Handrail members; Connections between handrail members}
- E04F 11/181
 - • {-Balustrades}
- E04F 11/1812
 - • • {-Details of anchoring to the wall or floor}
- E04F 11/1814
 - • • • {-Covers for the base portions of the balustrade posts}
- E04F 11/1817
 - • • {-Connections therefor ([E04F 11/1812](#) and [E04F 11/1836](#) take precedence)}
- E04F 2011/1819
 - • • • {-between balustrade posts and horizontal or sloping balustrade members}
- E04F 2011/1821
 - • • • • {-between balustrade posts and handrails}
- E04F 2011/1823
 - • • • {-between balustrade filling members, e.g. balusters or panels, and horizontal or sloping balustrade members}
- E04F 2011/1825
 - • • • • {-between balustrade filling members, e.g. balusters or panels, and handrails}
- E04F 2011/1827
 - • • • • • {-between balusters and handrails}
- E04F 2011/1829
 - • • • • • {-between filling panels and handrails}
- E04F 2011/1831
 - • • • {-between balustrade filling members, e.g. panels, and balustrade posts}
- E04F 11/1836
 - • • {-Handrails of balustrades; Connections between handrail members}
- E04F 11/1838
 - • • • {-Laterally displaced handrail}
- U E04F 11/1842
 - • • {Balusters; Grille-type elements}
- E04F 11/1844
 - • • • {-Grille-type elements}

- E04F 11/1846
 - E04F 11/1848
 - E04F 11/1851
 - E04F 11/1853
 - E04F 11/1855
 - E04F 11/1857
 - E04F 11/1859
 - E04F 11/1861
 - E04F 11/1865
 - U E04F 13/00** **Coverings or linings, e.g. for walls or ceilings (flooring [E04F 15/00](#); decoration of surfaces, mosaic work [B44](#), e.g. paper-hanging [B44C 7/00](#); made of webs, e.g. of fabrics or wallpaper, { as such, or their manufacturing} [D03D](#), [D04G](#), [D04H](#), [D06N](#), [D21H](#); construction of { false} ceilings [E04B 9/00](#); roofings or similar water-tight coverings against precipitation [E04D](#))**
 - E04F 13/002
 - E04F 13/005
 - E04F 13/007
 - U E04F 13/02**
 - U E04F 13/04**
 - E04F 13/042
 - E04F 13/047
 - U E04F 13/06**
 - E04F 2013/061
 - E04F 2013/063
 - E04F 2013/065
 - E04F 2013/066
 - E04F 13/068
 - U E04F 13/07**
 - U E04F 13/072**
 - U E04F 13/073**
 - E04F 13/0733
 - E04F 13/0736
 - U E04F 13/08**
 - E04F 13/0801
- {-Balusters with means for fixing to the floor}
 - {-Separate means for spacing balusters apart}
 - . . . {-Filling panels, e.g. concrete, sheet metal panels}
 - {-Glass panels}
 - {-Wire mesh panels}
 - {-Flexible panels or nets}
 - . . . {-Wire cables or the like filling elements}
 - . . . {-with additional safety means for children, e.g. nets or fillings between balusters}
 - . . {-Collapsible or portable balustrades}
 - . {-made of webs, e.g. of fabrics, or wallpaper, used as coverings or linings (of a number of similar elements carried by a common web [E04F 13/0862](#); paperhanging, tapestry work [B44C 7/00](#))}
 - . . {-Stretched foil- or web-like elements attached with edge gripping devices}
 - . {-Outer coverings for walls with ventilating means}
 - . of plastic materials hardening after applying, e.g. plaster (surface treatment in painting technique [B44D](#); inorganic or bituminous masses [C04B](#); organic plastics [C08L](#)){implements for applying plasticised materials [E04F 21/02](#)}
 - . . Bases for plaster (sub-ceilings with plaster-carrying means [E04B 9/06](#))
 - . . . {-Joint tapes}
 - . . . {-Plaster carrying meshes}
 - . . . Edge-protecting borders {(borders for joints between plaster layers and window or door frames or like [E06B 1/62](#))}
 - {-for arched or curved edges}
 - {-for corners}
 - {-for lower edges of outer insulation layers}
 - {-for expansion joints between two plaster layers}
 - {-combined with mesh material or the like to allow plaster to bond therewith}
 - . composed of covering or lining elements; Sub-structures therefor; Fastening means therefor
 - . . composed of specially adapted, structured or shaped covering or lining elements
 - . . . for particular building parts, e.g. corners or columns
 - {-for corners}
 - {-for columns}
 - . . composed of a plurality of similar covering or lining elements, ([E04F 13/072](#) takes precedence; borders, skirtings [E04F 19/02](#); { of webs or fabrics [E04F 13/002](#); fixing strips [E04F 19/06](#); separate provisional spacers between adjacent tiles [E04F 21/0092](#); implements or means for setting tiles [E04F 21/18](#))}
 - . . . {-Separate fastening elements ([E04F 13/088](#), [E04F 13/0885](#) take precedence)}

- E04F 13/0803 {with load-supporting elongated furring elements between wall and covering elements}
- E04F 13/0805 {with additional fastening elements between furring elements and the wall}
- E04F 13/0807 {adjustable perpendicular to the wall}
- E04F 13/0808 {adjustable in several directions one of which is perpendicular to the wall}
- E04F 13/081 {with additional fastening elements between furring elements and covering elements}
- E04F 13/0812 {fixed by means of spring action}
- E04F 13/0814 {fixed by means of clamping action}
- E04F 13/0816 {the additional fastening elements extending into the back side of the covering elements ([E04F 13/083](#) takes precedence)}
- E04F 13/0817 {extending completely through the covering elements}
- E04F 13/0819 {inserted into grooves in the back side of the covering elements}
- E04F 13/0821 {the additional fastening elements located in-between two adjacent covering elements}
- E04F 13/0823 {piercing the side faces of the covering elements}
- E04F 13/0825 {engaging side holes preformed into the covering elements}
- E04F 13/0826 {engaging side grooves running along the whole length of the covering elements}
- E04F 13/0828 {engaging the outer surface of the covering elements, e.g. at the corners}
- E04F 13/083 {Hooking means on the back side of the covering elements}
- E04F 13/0832 {without load-supporting elongated furring elements between wall and covering elements}
- E04F 13/0833 {not adjustable ([E04F 13/0857](#) takes precedence; not used, see subgroups)}
- E04F 13/0835 {the fastening elements extending into the back side of the covering elements ([E04F 13/0851](#) takes precedence)}
- E04F 13/0837 {extending completely through the covering elements}
- E04F 13/0839 {the fastening elements situated at the corners of the covering elements, not extending through the covering}
- E04F 13/0841 {the fastening elements engaging the outer surface of the covering elements, not extending through the covering ([E04F 13/0839](#) and [E04F 13/0846](#) take precedence)}
- E04F 13/0842 {specially adapted for thin sheet-like materials, e.g. sheet-metal or plastics}
- E04F 13/0844 {with means piercing the side faces of the covering elements}
- E04F 13/0846 {the fastening elements engaging holes or grooves in the side faces of the covering elements ([E04F 13/0835](#) and [E04F 13/0839](#) take precedence)}
- E04F 13/0848 {specially adapted for thin sheet-like materials, e.g. sheet-metal or plastics}
- E04F 13/085 {with means piercing the side faces of the covering elements}
- E04F 13/0851 {Hooking means on the back side of the covering elements}
- E04F 13/0853 {adjustable perpendicular to the wall}
- E04F 13/0855 {adjustable in several directions, one of which is perpendicular to the wall}

- E04F 13/0857 {-Supporting consoles, e.g. adjustable only in a direction parallel to the wall ([E04F 13/0853](#) takes precedence)}
- E04F 13/0858 {-fixed by means of spring action}
- E04F 13/086 {-fixed by means of clamping action}
- E04F 13/0862 . . . {-composed of a number of elements which are identical or not, e.g. carried by a common web, support plate or grid}
- E04F 13/0864 . . . {-composed of superposed elements which overlap each other and of which the flat outer surface includes an acute angle with the surface to cover}
- E04F 13/0866 . . . {-composed of several layers, e.g. sandwich panels or layered panels (layered products as such in general [B32B](#); producing decorative panels or veneers [B44C 5/04](#); [E04F 13/0864](#), [E04F 13/0875](#) take precedence)}
- E04F 13/0867 . . . {-having acoustic absorption means on the visible surface}
- E04F 13/0869 . . . {-having conduits for fluids}
- E04F 13/0871 . . . {-having an ornamental or specially shaped visible surface ([E04F 13/0867](#) takes precedence)}
- E04F 13/0873 {-the visible surface imitating natural stone, brick work, tiled surface or the like ([E04F 13/105](#), [E04F 13/123](#), [E04F 13/147](#), [E04F 13/165](#), [E04F 13/185](#) take precedence)}
- E04F 13/0875 . . . {-having a basic insulating layer and at least one covering layer}
- E04F 13/0876 {-the covering layer comprising mutual alignment or interlocking means}
- E04F 13/0878 {-the basic insulating layer comprising mutual alignment or interlocking means}
- E04F 13/088 . . . {-fixed directly to the wall by means of magnets, hook and loop-type or similar fasteners, not necessarily involving the side faces of the covering element}
- E04F 13/0882 {-by hook and loop-type fasteners}
- E04F 13/0883 {-by magnets}
- E04F 13/0885 . . . {-specially adapted for being adhesively fixed to the wall; Fastening means therefor; Fixing by means of plastics materials hardening after application}
- E04F 13/0887 {-Adhesive means specially adapted therefor, e.g. adhesive foils or strips}
- E04F 13/0889 . . . {-characterised by the joints between neighbouring elements, e.g. with joint fillings or with tongue and groove connections}
- E04F 13/0891 {-with joint fillings}
- E04F 13/0892 {-with means for aligning the outer surfaces of the covering elements ([E04F 13/0894](#) takes precedence)}
- E04F 13/0894 {-with tongue and groove connections}
- E04F 13/0896 {-with adhesive joining strips ([E04F 13/0894](#), [E04F 13/0898](#) take precedence)}
- E04F 13/0898 {-with sealing elements between coverings (sealings of joints between building constructions in general [E04B 1/68](#))}
- E04F 13/10 of wood { or with an outer layer of wood-([E04F 13/0864](#) takes precedence)}
- E04F 13/105 {-with an outer layer imitating natural stone, brick work, tiled surface or the like}
- E04F 13/12 of metal { or with an outer layer of metal or enameled metal-([E04F 13/0864](#) takes precedence)}
- E04F 13/123 {-with an outer layer imitating natural stone, brick work, tiled surface or the like}
- E04F 13/126 {-with an outer layer of wire mesh, wire grid or the like, e.g. gabions}

- E04F 13/14
- • • stone or stone-like materials, e.g. ceramics { concrete,-}; -of glass { or with an outer layer of stone or stone-like materials or glass-([E04F 13/0864](#) takes precedence; producing shaped elements from concrete, ceramic compositions or other stone-like materials [B28B](#); prefabricated panels in general [E04C 2/00](#))}
- E04F 13/141
- • • • {-with an outer layer of concrete ([E04F 13/147](#) takes precedence)}
- E04F 13/142
- • • • {-with an outer layer of ceramics or clays}
- E04F 13/144
- • • • {-with an outer layer of marble or other natural stone}
- E04F 13/145
- • • • {-with an outer layer of glass}
- E04F 13/147
- • • • {-with an outer layer imitating natural stone, brick work or the like}
- E04F 13/148
- • • • {-with an outer layer of asbestos cement or the like}
- E04F 13/15
- • • • characterised by the use of glass elements { , i.e. wherein an outer layer is not of glass-([E04F 13/145](#) takes precedence)}
- E04F 13/16
- • • of fibres or chips, e.g. bonded with synthetic resins {, or with an outer layer of fibres or chips-([E04F 13/0864](#) takes precedence)}
- E04F 13/165
- • • • {-with an outer layer imitating natural stone, brick work, tiled surface or the like}
- E04F 13/18
- • • of organic plastics with or without reinforcements or filling materials (of plastic-bound fibres or chips [E04F 13/16](#)){ or with an outer layer of organic plastics with or without reinforcements or filling materials; plastic tiles-([E04F 13/0864](#) takes precedence)}
- E04F 13/185
- • • • {-with an outer layer imitating natural stone, brick work, tiled surface or the like}
- U E04F 15/00**
- Flooring (stair treads [E04F 11/104](#); coverings not specially adapted for floors [E04F 13/00](#); borders, skirtings [E04F 19/02](#); { implements for laying flooring [E04F 21/20](#);} gratings for cleaning soles of footwear [A47L 23/24](#); { built-in gratings [E04F 19/10](#); removing floor coverings [E04G 23/00](#); carpets [A47G 27/00](#);} of similar materials to roads [E01C](#); basic or rough floors { , structural floors} [E04B 5/00](#))**
- U E04F 15/02
- Flooring or floor layers composed of a number of similar elements (of webs [E04F 15/16](#))
- U E04F 15/02005
- • {Construction of joints, e.g. dividing strips ([E04F 15/024](#), [E04F 15/04](#), [E04F 15/06](#), [E04F 15/10](#) and [E04F 15/14](#) take precedence; Separate provisional spacers [E04F 21/0092](#))}
- E04F 15/02011
- • • {-with joint fillings integrated in the flooring elements}
- E04F 15/02016
- • • {-with sealing elements between flooring elements (sealings of joints between building constructions in general [E04B 1/68](#))}
- E04F 15/02022
- • • {-with means for aligning the outer surfaces of the flooring elements ([E04F 15/02038](#) takes precedence)}
- E04F 15/02027
- • • {-Means for spacing the flooring from an adjoining wall}
- E04F 15/02033
- • • {-Joints with beveled or recessed upper edges}
- E04F 15/02038
- • {-characterised by tongue and groove connections between neighbouring flooring elements}
- E04F 15/02044
- • {-Separate elements for fastening to an underlayer ([E04F 15/02133](#), [E04F 15/0215](#) take precedence)}
- E04F 15/02133
- • {-fixed directly to an underlayer by means of magnets, hook and loop-type or similar fasteners, not necessarily involving the side faces of the flooring elements}
- E04F 15/02138
- • • {-by hook and loop-type fasteners}
- E04F 15/02144
- • • {-by magnets}

- E04F 15/0215
 - • {specially adapted for being adhesively fixed to an underlayer; Fastening means therefor; Fixing by means of plastics materials hardening after application}
- E04F 15/02155
 - • • {-Adhesive means specially adapted therefor, e.g. adhesive foils or strips}
- E04F 15/02161
 - • {-Floor elements with grooved main surface}
- E04F 15/02166
 - • • {-wherein the grooves are filled with inserts}
- E04F 15/02172
 - • {-Floor elements with an anti-skid main surface, other than with grooves}
- E04F 15/02177
 - • {-Floor elements for use at a specific location (not used, see subgroups)}
- E04F 15/02183
 - • • {-for outdoor use, e.g. in decks, patios, terraces, verandas or the like}
- E04F 15/02188
 - • • {-for use in wet rooms}
- E04F 15/02194
 - • {-Flooring consisting of a number of elements carried by a non-rollable common support plate or grid ([E04F 15/022](#) takes precedence)}
- U E04F 15/024
 - • Sectional false floors, e.g. computer floors {(height-adjustable supports for terrace roof coverings [E04D 11/00](#); underfloor heating using water [F24D 3/142](#), using air [F24D 5/10](#); installation of cables, lines or protective tubing in floors [H02G 3/28](#))}
- U E04F 15/02405
 - • • {Floor panels}
- E04F 15/02417
 - • • • {-made of box-like elements}
- E04F 15/02423
 - • • • • {-filled with core material}
- E04F 15/02429
 - • • • • • {-the core material hardening after application}
- U E04F 15/02435
 - • • • {Sealing joints}
- E04F 15/02441
 - • • • • {-Sealing strips integrated with the floor panels}
- U E04F 15/02447
 - • • {Supporting structures}
- E04F 15/02452
 - • • • {-Details of junctions between the supporting structures and the panels or a panel-supporting framework}
- E04F 15/02464
 - • • • • {-Height adjustable elements for supporting the panels or a panel-supporting framework}
- E04F 15/02488
 - • • • • • {-filled with material hardening after application}
- E04F 15/02494
 - • • • • {-with a plurality of base plates or like, each base plate having a plurality of pedestals upstanding therefrom to receive the floor panels}
- U E04F 15/04
 - • only of wood { or with a top layer of wood}, e.g. with wooden { or metal} connecting members (rollable parquet [E04F 15/16](#))
- E04F 15/041
 - • • {-with a top layer of wood in combination with a lower layer of other material}
- E04F 15/042
 - • • • {-the lower layer being of fibrous or chipped material, e.g. bonded with synthetic resins}
- E04F 15/043
 - • • • • {-the lower layer being of organic plastic with or without reinforcements or filling materials}
- E04F 15/045
 - • • {-Layered panels only of wood}
- E04F 15/046
 - • • • {-Plywood panels}
- E04F 15/047
 - • • {-with a butcher-block like top surface}
- E04F 15/048
 - • • {-with a top surface of assembled elongated wooden strip type}
- E04F 15/08
 - • only of stone or stone-like material, e.g. { ceramics}, concrete; -of glass { or with a top layer of stone or stone-like material, e.g. ceramics, concrete or glass- ([E04F 15/02005](#) takes precedence)}
- E04F 15/082
 - • • {-with a top layer of stone or stone-like material, e.g. ceramics, concrete or glass in combination with a lower layer of other material}

- E04F 15/085
 - • • {-The lower layer being of fibrous or chipped material, e.g. bonded with synthetic resins}
- E04F 15/087
 - • • {-The lower layer being of organic plastic with or without reinforcements or filling materials}
- U E04F 15/10
 - • of other materials, e.g. fibrous or chipped materials, organic plastics, magnesite { tiles}, hardboard {, or with a top layer of other materials}
- E04F 15/102
 - • • {-of fibrous or chipped materials, e.g. bonded with synthetic resins}
- E04F 15/105
 - • • {-of organic plastics with or without reinforcements or filling materials}
- E04F 15/107
 - • • {-composed of several layers, e.g. sandwich panels (layered products in general [B32B](#); producing decorative panels or veneers [B44C 5/04](#))}
- U E04F 15/12
 - Flooring or floor layers made of masses in situ, e.g. seamless magnesite floors, terrazzo {gypsum floors}{inorganic or bituminous masses [C04B](#); organic plastic masses [C08L](#)}
- E04F 15/123
 - • {-Lost formworks for producing hollow floor screed layers, e.g. for receiving installations, ducts, cables (structural floors [E04B 5/00](#); filling elements for building-up floors [E04B 5/26](#); installation of cables, lines or protective tubing in floors [H02G 3/28](#))}
- E04F 15/126
 - • {-Terrazzo floors}
- U E04F 15/14
 - • Construction of joints, e.g. dividing strips ({ [E04F 15/02005](#) takes precedence;}) sealing joints not restricted to flooring [E04B 1/68](#), { construction of joints in roads or airfields [E01C 11/02](#))}
- E04F 15/142
 - • • {-Dividing strips or boundary strips}
- E04F 15/145
 - • • • {-adjustable in height}
- E04F 15/147
 - • • • {-interconnected to form a grid-like structure}
- U E04F 15/16
 - Flooring, e.g. parquet on flexible web, laid as flexible webs; Webs specially adapted for use as flooring; { Parquet on flexible web}{resiliently-mounted floors, e.g. sprung floors, [E04F 15/22](#); linoleum [D06N](#); { carpets [A47G 27/00](#))}
- E04F 15/163
 - • {-Webs specially adapted for use as finishing layers}
- E04F 15/166
 - • {-Flooring consisting of a number of elements carried by a common flexible web, e.g. rollable parquet }
- U E04F 15/18
 - Separately-laid insulating layers; Other additional insulating measures; Floating floors (insulating of buildings in general [E04B 1/62](#))
- E04F 15/181
 - • {-Insulating layers integrally formed with the flooring or the flooring elements}
- E04F 15/182
 - • {-Underlayers coated with adhesive or mortar to receive the flooring}
- E04F 15/183
 - • • {-for areas prone to frost damage, e.g. for balconies or terraces}
- E04F 15/185
 - • {-Underlayers in the form of studded or ribbed plates}
- E04F 15/186
 - • {-Underlayers covered with a mesh or the like}
- E04F 15/187
 - • {-Underlayers specially adapted to be laid with overlapping edges}
- E04F 15/188
 - • {-Edge insulation strips, e.g. for floor screed layers (boundary strips in layers made of masses in situ [E04F 15/142](#))}
- U E04F 15/20
 - • for sound insulation
- E04F 15/203
 - • • {-Separately-laid layers for sound insulation}
- E04F 15/206
 - • • {-Layered panels for sound insulation}
- U E04F 15/22
 - Resiliently-mounted floors, e.g. sprung floors (laid as webs [E04F 15/16](#))
- E04F 15/225
 - • {-Shock absorber members therefor}
- U E04F 17/00
 - **Vertical ducts; Channels, e.g. for drainage (pipes in general [F16L](#); pipe-line systems [F17D](#); { drainage devices in floors [E03F 5/04](#); roof drainage [E04D 13/04](#))}**

- U E04F 17/10
 - Arrangements in buildings for the disposal of refuse (refuse bins, gathering or removal of refuse [B65F](#))
- U E04F 17/12
 - • Chutes
- E04F 17/123
 - • • {Cleaning or disinfecting thereof}
- E04F 17/126
 - • • • {with water flushing}
- U E04F 19/00**
 - Other details of constructional parts for finishing work on buildings (ladders, e.g. climbing irons, [E06C 9/04](#))**
- E04F 19/005
 - {Chimney mantel pieces}
- U E04F 19/02
 - Borders; Finishing strips, e.g. beadings; Light covers (for protecting edges of plaster [E04F 13/06](#))
- U E04F 19/04
 - • for use between floor or ceiling and wall, e.g. skirtings
- U E04F 19/0459
 - • • {characterised by the fixing method (not used, see subgroups)}
- E04F 19/0472
 - • • • {Plinths fixed by means of magnets, hook and loop-type or similar fasteners}
- E04F 19/0477
 - • • • {Plinths fixed by means of adhesive}
- E04F 19/0481
 - • • {Skirtings or crown mouldings with a separate cladding strip}
- E04F 19/06
 - • specially designed for securing panels {or masking the edges of wall- or floor-covering elements-[E04F 19/022](#), [E04F 19/026](#) and [E04F 19/04](#) take precedence)}
- E04F 19/062
 - • • {used between similar elements (separate provisional spacers [E04F 21/0092](#))}
- E04F 19/063
 - • • • {for simultaneously securing panels having different thicknesses}
- E04F 19/064
 - • • • {in corners}
- E04F 19/065
 - • • {Finishing profiles with a T-shaped cross-section or the like}
- E04F 19/066
 - • • • {fixed onto a base profile by means of a separate connector}
- E04F 19/067
 - • • • {with means preventing a tipping movement}
- E04F 19/068
 - • • • {with means allowing a tipping movement}
- U E04F 19/08
 - Built-in cupboards; Masks of niches; Covers of holes enabling access to installations ({ inspection openings in bathtub aprons [A47K 3/1615](#); covers for electrical distribution boxes [H02G 3/14](#); movable ceiling parts [E04B 9/003](#); removable wall partitions [E04B 2/74](#); } clean-out doors of chimneys [F23J](#))
- E04F 19/083
 - • {Covers with fixing means providing for snap locking}
- E04F 19/086
 - • {Covers with magnetic fixing means}
- U E04F 21/00**
 - Implements for finishing work on buildings (for working or treating building elements of stone or stone-like material [B28D](#); designed specifically for special details provided for in the other groups of this subclass, see the relevant groups for the details { working measures on existing buildings [E04G 23/00](#); measuring angles or linear dimensions in general [G01B](#), [G01C](#); measuring inclination, e.g. by clinometers or levels [G01C 9/00](#); reference lines, planes or sectors, generated by active optical means [G01C 15/004](#))**
- E04F 21/0007
 - {for mounting doors, windows or frames; their fitting ([door-lifters](#) [B66F 15/00](#))}
- E04F 21/0015
 - • {for mounting frames}
- E04F 21/0023
 - • {for mounting door leaves, window sashes or the like}
- E04F 21/0038
 - {for fitting sealing strips or like}
- E04F 21/0046
 - {for reshaping butt joints between adjacent panels, e.g. drywall panels ([E04F 21/165](#) takes precedence)}
- E04F 21/0053
 - {for installing edge-protecting borders}
- E04F 21/0061
 - • {with crimping means}

- E04F 21/0076 • {-for marking and cutting tiles}
- E04F 21/0092 • {-Separate provisional spacers used between adjacent floor or wall tiles ([E04F 13/0889](#), [E04F 15/02005](#) takes precedence)}
- U E04F 21/02 • for applying plasticised masses to surfaces, e.g. plastering walls ({wall covering made of hardening materials [E04F 13/02](#); specially for flooring [E04F 21/20](#); implements for painting or decorating [B44](#); applying liquids or other fluent materials to surfaces, in general [B05](#))}
- E04F 21/023 • • {-for applying adhesive, e.g. glue or mortar, on the covering elements, in particular tiles}
- E04F 21/026 • • {-for applying adhesive or joint compound to joint tapes, in particular drywall tapes (joint tapes [E04F 13/042](#); drywall taper tools [E04F 21/1657](#))}
- U E04F 21/16 • • Implements for after-treatment of plaster or the like { before it has hardened or dried}, e.g. smoothing-tools, profile trowels {([E04F 21/04](#), [E04F 21/165](#) take precedence)}
- E04F 21/161 • • • {-Trowels}
- E04F 21/162 • • • • {-with a blade having a notched or toothed edge}
- E04F 21/163 • • • • {-with exchangeable blades}
- U E04F 21/165 • for finishing joints, e.g. implements for raking or filling joints, jointers (bricklayers' tools [E04G 21/16](#); repairing, e.g. filling cracks, [E04G 23/02](#); { wallpaper scrapers or the like [B44C 7/02](#); implements for cleaning joints [A47L 13/10](#))}
- E04F 21/1652 • • {-for smoothing and shaping joint compound to a desired contour}
- E04F 21/1655 • • {-for finishing corner joints}
- E04F 21/1657 • • {-for applying tape to joints, e.g. drywall taper tools}
- U E04F 21/18 • for setting wall or ceiling slabs or plates (tools for mosaic work [B44C](#))
- U E04F 21/1805 • • {Ceiling panel lifting devices}
- E04F 21/1833 • • • {-spring-force actuated}
- U E04F 21/1838 • • {-for setting a plurality of similar elements ([E04F 21/1805](#) and [E04F 21/1894](#) take precedence; separate provisional spacers [E04F 21/0092](#))}
- U E04F 21/1844 • • • {by applying them one by one}
- E04F 21/1861 • • • • {-for setting insulating panels}
- E04F 21/1866 • • • • {-using magnets, hook and loop-type fastener or similar means}
- E04F 21/1872 • • • • {-using suction-cups}
- E04F 21/1877 • • • {-Leveling devices}
- U E04F 21/20 • for laying flooring (made of similar material to roads or pavements [E01C](#); { arrangements for removing of previously fixed floor covering [E04G 23/00](#))}
- E04F 21/22 • • of single elements, e.g. flooring cramps; {flexible webs-(cutting tiles [B28D 1/225](#))}
- U E04F 21/24 • • of masses made in situ, e.g. smoothing tools {([E04F 21/04](#) takes precedence; finishing of concrete roads or pavings [E01C 19/40](#); devices for levelling concrete floors [E04G 21/10](#); devices for solidifying concrete floors by vibrating [E04G 21/066](#))}
- E04F 21/241 • • • {-Elongated smoothing blades or plates, e.g. screed apparatus}
- E04F 21/242 • • • • {-with vibrating means, e.g. vibrating screeds}
- E04F 21/244 • • • • {-with means to adjust the working angle of the leveling blade or plate}
- E04F 21/245 • • • {-Rotary power trowels, i.e. helicopter trowels}
- E04F 21/247 • • • • {-used by an operator sitting on the trowel, i.e. ride-on power trowels}
- E04F 21/248 • • • • {-used by an operator walking behind the trowel, i.e. walk-behind power trowels}

Project: N/A (E04G)

- U E04G 1/00 Scaffolds primarily resting on the ground**
WARNING
- New subgroups [E04G 1/17](#) and [E04G 1/38](#), corresponding to IPC8, are not complete. Documents from main groups [E04G 1/00](#) respectively [E04G 1/00](#) and [E04G 3/00](#) are in the process of being reorganised to these new subgroups
- U E04G 1/36
- Scaffolds for particular parts of buildings or buildings of particular shape, e.g. for stairs, cupolas, domes {(scaffolding usable on slipways and in dry docks [B63C 5/02](#))}
- E04G 1/362
- • {-specially adapted for tanks, silos or similar vessels}
- E04G 1/365
- • {-specially adapted for staircases or stairs}
- E04G 1/367
- • {-specially adapted for elevator shafts}
- U E04G 3/00 Scaffolds essentially supported by building constructions, e.g. adjustable in height ([E04G 1/00](#) takes precedence { and [E04G 21/3204](#) takes precedence})**
- U E04G 3/24
- specially adapted for particular parts of buildings or for buildings of particular shape, e.g. chimney stacks or pylons ([E04G 3/28](#) takes precedence; { [E04G 1/362](#), [E04G 3/305](#) take precedence; scaffolding usable on slipways and in dry docks [B63C 5/02](#))}
- E04G 3/243
- • {-following the outside contour of a ([E04G 3/26](#) takes precedence)}
- E04G 3/246
- • {-following the inside contour of a building}
- U E04G 3/26
- • specially adapted for working on roofs {(devices or arrangements allowing walking on the roof or in the gutter [E04D 13/12](#))}
- E04G 3/265
- • • {-with means to adapt it to a variable pitch of the roof}
- U E04G 3/28
- Mobile scaffolds; Scaffolds with mobile platforms {(movable inspection or maintenance platforms for bridges [E01D 19/106](#), lifting devices for movable platforms e.g. on vehicles [B66F 11/04](#))}
- U E04G 3/30
- • suspended by flexible supporting elements, e.g. cables
- E04G 3/305
- • • {-specially adapted for tanks, silos or similar vessels ([E04G 3/24](#) takes precedence)}
- U E04G 3/32
- • • Hoisting devices; Safety devices
- E04G 3/325
- • • • {-Safety devices for stabilising the mobile platform e.g. to avoid it swinging in the wind}
- U E04G 5/00 Component parts or accessories for scaffolds (connections [E04G 7/00](#))**
- E04G 5/001
- {-Safety or protective measures against falling down relating to scaffoldings ([E04G 5/14](#) takes precedence)}
- E04G 5/002
- • {-Protections or covers for scaffolding connections}
- E04G 5/003
- {-Devices for storing material on the scaffold}
- E04G 5/004
- {-Storage and transport racks for scaffolding components}
- E04G 5/005
- {-Devices for cleaning or repairing scaffold tubes}
- E04G 5/006
- {-Scaffold with cantilevered sections e.g. to accommodate overhangs or recesses in the facade}
- E04G 5/007
- {-Devices and methods for erecting scaffolds, e.g. automatic scaffold erectors}
- U E04G 5/02
- Scaffold feet, e.g. with arrangements for adjustment
- E04G 5/025
- • {-Foot load distribution plates}
- U E04G 5/04
- Means for fastening, supporting, or bracing scaffolds on or against building constructions (fastenings in general [F16B](#))

- E04G 5/041
 - E04G 5/043
 - E04G 5/045
 - E04G 5/046
 - E04G 5/048
 - U E04G 5/06
 - E04G 5/061
 - E04G 5/062
 - E04G 5/064
 - E04G 5/067
 - U E04G 5/14
 - E04G 5/141
 - E04G 5/142
 - E04G 5/144
 - E04G 5/145
 - E04G 5/147
 - U E04G 5/16
 - E04G 5/165
 - U E04G 9/00**
 - U E04G 9/02
 - E04G 9/021
 - U E04G 9/06
 - E04G 9/065
 - U E04G 9/08
 - E04G 9/083
 - E04G 9/086
 - U E04G 11/00**
 - U E04G 11/04
 - E04G 11/045
 - E04G 11/36
 - E04G 11/365
 - E04G 13/00**
 - U E04G 13/02
 - E04G 13/028
- {-for fastening scaffolds on roof frameworks or on roofs}
 - • {-for fastening scaffolds on gutters}
 - {-for fastening scaffoldings on profiles, e.g. I or H profiles}
 - {-for fastening scaffoldings on walls}
 - • {-with hooks to be attached on the wall's crown}
 - Consoles; Brackets {(E04G 3/00 takes precedence)}
 - {-specially adapted for attachment to scaffolds}
 - {-specially adapted for attachment to building walls}
 - {-specially adapted for attachment to building floors}
 - {-specially adapted for attachment to posts (E04G 5/061 takes precedence)}
 - Railings
 - {-with an access door or the like therefor}
 - {-extensible or telescopic}
 - {-specific for the lateral i.e. short side of a scaffold}
 - {-Toe boards therefor}
 - {-specially adapted for mounting prior to the mounting of the platform}
 - Struts or stiffening rods, e.g. diagonal rods
 - {-Lintel for scaffoldings}
 - Forming or shuttering elements for general use {(for prefabrication of concrete elements in a plant B28B 7/00)}**
 - Forming boards or similar elements (E04G 9/08, E04G 9/10 take precedence)
 - {-the form surface being of cardboard}
 - • the form surface being of metal
 - • {-the form surface being of wire mesh}
 - Forming boards or similar elements, which are collapsible, foldable, or able to be rolled up
 - {-which are foldable}
 - {-which are specially adapted to be degradable in time e.g. by moisture or water}
 - Forms, shutterings, or falsework for making walls, floors, ceilings, or roofs {(for prefabrication of concrete elements in a plant B28B 7/00)}**
 - for structures of spherical, spheroid or similar shape, or for cupola structures of circular or polygonal horizontal or vertical section; Inflatable forms (connection of valves to inflatable elastic bodies B60C 29/00; {(structures made from masses cast in situ with permanent forms E04B 1/16)})
 - {-Inflatable forms}
 - for floors, ceilings, or roofs of plane or curved surfaces { end formpanels for floor shutterings-(floors with lost forms E04B 5/32)}
 - {-Stop-end shutterings (end panels for walls E04G 11/085)}
 - Falsework, forms, or shutterings for particular parts of buildings, e.g. stairs, steps, cornices, balconies { foundations, sills (E04G 11/365 takes precedence; flat foundations e.g. with lost forms E02D 27/01; removable forms or shutterings for road-building purposes E01C 19/50)}**
 - for columns or like pillars; Special tying or clamping means therefor {(columns, pillars of concrete with permanent forms E04C 3/34)}
 - {-for columns' capital}

- U E04G 13/06
- for stairs, steps, cornices, balconies, or other parts corbelled out of the wall {(moulds for making prefabricated stair units [B28B 7/225](#); stairways with permanent forms [E04F 11/02](#))}
- E04G 13/062
- • {-for stairs or steps}
- E04G 13/064
- • {-for chimney crowns}
- E04G 13/066
- • {-for overhangs}
- E04G 13/068
- • {-for window or door sills}
- U E04G 15/00
- Forms or shutterings for making openings, cavities, slits, or channels (forming part of shuttering for walls [E04G 11/06](#), { e.g. double walls [E04G 11/18](#); prefabricated elements with elements wholly or partly embedded therein [B28B 23/00](#); core or mandrels for the prefabrication of concrete elements [B28B 7/28](#)})**
- E04G 15/04
- Cores for anchor holes or the like { around anchors embedded in the concrete-(means in or on the building element for connecting to handling apparatus [E04G 21/142](#))}
- U E04G 15/06
- for cavities or channels in walls of floors, e.g. for making chimneys
- E04G 15/061
- • {-Non-reusable forms (positioning means without forming function [E04G 21/185](#); electric distribution boxes [H02G 3/08](#))}
- U E04G 17/00
- Connecting or other auxiliary members for forms, falsework structure, or shutterings**
- E04G 17/004
- {-Strips for creating a chamfered edge}
- E04G 17/005
- {-Strips for covering joints between form sections e.g. to avoid burring or spilling of laitance}
- E04G 17/007
- {-Plugs to close openings in forms' surface}
- E04G 17/04
- Connecting or fastening means for metallic forming or stiffening elements, {e.g. for connecting metallic elements to non-metallic elements-([E04G 17/001](#) takes precedence)}
- E04G 17/06
- Tying means; -Spacers; { Devices for extracting or inserting wall ties-([E04G 17/047](#) takes precedence; permanent forms for walls e.g. with ties [E04B 2/86](#))}
- U E04G 19/00
- Auxiliary treatment of forms, e.g. dismantling; Cleaning devices (lubricating compositions [C10M](#))**
- E04G 19/003
- {-Arrangements for stabilising the forms or for moving the forms from one place to another (lifting of articles in general [B66C 1/00](#))}
- U E04G 21/00
- Preparing, conveying, or working-up building materials or building elements in situ; Other devices or measures for constructional work (conveying in general [B65G](#); lifting devices [B66](#); working stone-like materials [B28D](#); measuring instruments [G01](#))**
- E04G 21/005
- {-Mortar boards}
- U E04G 21/02
- Conveying or working-up concrete or similar masses able to be heaped or cast (in connection with finishing work [E04F](#); construction and surfacing of floorings made of similar material to roads or pavements [E01C](#); in connection with barrages [E02B 7/00](#); in connection with foundations [E02D 15/00](#); composition of concrete [C04B](#); working concrete in general, e.g. mixing machines [B28C](#))
- U E04G 21/04
- • Devices for both conveying and distributing (concrete pumps [F04](#))
- E04G 21/0418
- • • {-with distribution hose}
- E04G 21/0427
- • • • {-on a static support e.g. crane}
- E04G 21/0436
- • • • {-on a mobile support e.g. truck}
- E04G 21/0445
- • • • {-with booms}

- E04G 21/0454 {-with boom vibration damper mechanisms}
- E04G 21/0463 {-with boom control mechanisms, e.g. to automate concrete distribution}
- E04G 21/0472 {-Details of connection of the hose to the formwork, e.g. inlets}
- E04G 21/0481 . . . {-Concrete chutes}
- U E04G 21/06 . . Solidifying concrete, e.g. by application of vacuum before hardening (devices for solidifying also soil [E02D 3/02](#); for road building [E01C 19/00](#); { for producing shaped articles [B28B 1/00](#)})
- E04G 21/08 . . . Internal vibrators, {e.g. needle vibrators-(combined with vacuum [E04G 21/061](#))}
- U E04G 21/12 . . Mounting of reinforcing inserts; Prestressing (shell tubes for prestressing members [E04C 5/10](#); anchoring means [E04C 5/12](#); connections of reinforcing elements and spacers [E04C 5/16](#))
- U E04G 21/122 . . {Machines for joining reinforcing bars}
- E04G 21/123 . . . {-Wire twisting tools (bundling articles by twisting e.g. wire [B65B 13/28](#); bundling rods, sticks, or like elongated objects with e.g. wire [B65B 27/10](#); tying devices for hops, vines or trees with e.g. wire [A01G 17/08](#))}
- E04G 21/125 . . {-Reinforcement continuity box}
- E04G 21/126 . . . {-for cable loops}
- U E04G 21/14 . . Conveying or assembling building elements (roofing [E04D](#); finishing work [E04F](#))
- U E04G 21/142 . . {Means in or on the elements for connecting same to handling apparatus ([E04B 1/38](#) takes precedence)}
- E04G 21/145 . . . {-specific for hollow plates}
- E04G 21/147 . . . {-specific for prefabricated masonry wall elements}
- U E04G 21/16 . . Tools or apparatus (devices for erecting fences [E04H 17/26](#))
- E04G 21/163 . . . {-Jacks specially adapted for working-up building elements (jacks in general [B66F 3/00](#))}
- E04G 21/164 . . . {-specially adapted for working-up chimneys}
- E04G 21/165 . . . {-specially adapted for in-situ prefabricated building elements to be tilted up in position}
- E04G 21/166 . . . {-Landings, receiving platforms}
- E04G 21/167 . . . {-specially adapted for working-up plates, panels or slab shaped building elements}
- E04G 21/168 {-used for tilting, e.g. from horizontal to vertical position or vice versa}
- E04G 21/169 . . . {-specially adapted for working-up reinforcement mats}
- U E04G 21/18 . . . Adjusting tools; Templates; {(workshop marking tools [B25H](#); for coverings or linings [E04F 21/18](#))}
- U E04G 21/1841 {Means for positioning building parts or elements (strutting means for wall parts [E04G 21/26](#))}
- E04G 21/1858 {-Templates for window or door openings e.g. in a masonry wall ([E04G 15/02](#) takes precedence)}
- E04G 21/1866 {-for making arches}
- E04G 21/1875 {-for making curved walls ([E04G 11/06](#) takes precedence)}
- E04G 21/1883 {-Spacers, e.g. to have a constant spacing between courses of masonry}
- U E04G 21/20 . . . for applying mortar
- E04G 21/201 {-Trowels}
- E04G 21/202 {-Hoses specially adapted therefor}

- E04G 21/203
 - • • • {Prepared mortar strips, pouches or the like to be applied between masonry courses}
- E04G 21/204
 - • • • {Mortar sledges}
- E04G 21/205
 - • • • {with closable mortar opening}
- E04G 21/206
 - • • • {Devices to apply thin-bed mortar joints}
- E04G 21/207
 - • • • {Static templates for applying a predefined layer of mortar}
- U E04G 21/24
 - Safety or protective measures preventing damage to building parts or finishing work during construction (as auxiliary structures for scaffolds [E04G](#), {[E04G 5/12](#)})
- E04G 21/241
 - • {for temporarily closing door or window openings}
- E04G 21/242
 - • {for temporarily covering the whole worksite, e.g. building, trench}
- E04G 21/243
 - • {for creating a temporary partition in a closed room}
- E04G 21/245
 - • {for temporarily protecting wall crowns}
- E04G 21/246
 - • {specially adapted for curing concrete in situ, e.g. by covering it with protective sheets}
- E04G 21/247
 - • {specific for protecting windows or doors leaves}
- U E04G 21/32
 - Safety or protective measures for persons during the construction of buildings (relating to scaffolds [E04G 5/00](#); climbing tools, e.g. climbing irons for masts [A63B 27/00](#); ropes or belts for life saving [A62B 1/16](#), [A62B 35/00](#))
- U E04G 21/3204
 - • {against falling down}
- E04G 21/3209
 - • • • {Temporary tunnels specially adapted against falling objects}
- U E04G 21/3223
 - • • {Means supported by building floors or flat roofs, e.g. safety railings}
- E04G 21/3228
 - • • • {Folding railings for flat roof edge, e.g. to hide the railings from view when not in use}
- U E04G 21/3233
 - • • • {without permanent provision in the floor or roof}
- E04G 21/3238
 - • • • • {using counterweights}
- E04G 21/3242
 - • • • • {using clamps}
- E04G 21/3247
 - • • {Storey high safety barrier hung from the facade and sliding up from level to level as work progresses}
- E04G 21/3252
 - • • {Protections, e.g. cover, caps, against impaling on starter reinforcement bars}
- E04G 21/3261
 - • {Safety-nets; Safety mattresses; Arrangements on buildings for connecting safety-lines (jumping-sheets, jumping-mattresses [A62B 1/22](#))}
- E04G 21/3266
 - • • {Safety nets}
- E04G 21/3271
 - • • {Safety mattresses}
- E04G 21/3276
 - • • {Arrangements on buildings for connecting safety-lines (fastening devices for devices for lowering persons from buildings [A62B 1/04](#))}
- E04G 21/328
 - • • • {fastened to the roof covering or insulation}
- E04G 21/3285
 - • • • • {fastened to standing seams of the roof covering}
- E04G 21/329
 - • • • {with measures for dampening the fall}
- E04G 21/3295
 - • • {Guide tracks for safety lines (arrangements for bypassing safety track supports without life line disconnection [A62B 35/0087](#))}

- U E04G 23/00** Working measures on existing buildings, ({ domestic cleaning of walls or floors [A47L 11/00](#); grinding floors or walls [B24B 7/18](#); removing of wall coverings [B44C 7/00](#); removing of paint from surfaces [B44D 3/16](#); electrochemical desalination or re-alkalisation [C04B 41/00](#)); on foundations [E02D 35/00](#), [E02D 37/00](#); in connection with insulations [E04B](#); subsequent or finishing work [E04F](#))
- NOTE
In addition to the subject matter referred out in this group, subject matter relating to working measures on existing buildings which are analogous to those used in constructing new buildings, are classified in the appropriate construction groups.
- U E04G 23/002 • {Arrangements for cleaning building facades}
- E04G 23/004 • • {-with arrangements for collecting waste water or cleaning products}
- E04G 23/008 • {-Working measures on existing vertical ducts e.g. chimneys, garbage chutes}
- U E04G 23/02 • Repairing, e.g. filling cracks; Restoring; Altering; Enlarging {(compositions of filling material [C04B](#); strengthening, widening, repairing of bridges [E01D 22/00](#); drying damp layers by temporary mechanical ventilation [E04B 1/7092](#))}
- U E04G 23/0203 • • {Arrangements for filling cracks or cavities in building constructions}
- E04G 23/0207 • • • {-in hollow structures e.g. cavity walls}
- E04G 23/0211 • • • {-using injection}
- E04G 23/0214 • • • {-using covering strips}
- U E04G 23/0218 • • {Increasing or restoring the load-bearing capacity of building construction elements ([E04G 23/0203](#) and [E04G 23/0266](#) take precedence)}
- E04G 23/0225 • • • {-of circular building elements e.g. by circular bracing}
- E04G 23/0229 • • • {-of foundations or foundation walls}
- E04G 23/0233 • • • {-of vaulted or arched building elements}
- E04G 23/024 • • • {-of basement floors}
- E04G 23/0244 • • • {-of beams at places of holes, e.g. drilled in them}
- U E04G 23/0266 • • {Enlarging}
- E04G 23/027 • • • {-Loft conversion by truss modification}
- E04G 23/0274 • • {-Temporary shoring of wall opening}
- E04G 23/0277 • • {-Repairing or restoring window or door frames (door frames [E06B 1/00](#)), window frames [E06B 3/00](#)}
- E04G 23/0281 • • {-Repairing or restoring roofing or roof covering (roof covering [E04D 3/00](#))}
- E04G 23/0285 • • {-Repairing or restoring flooring (flooring [E04F 15/00](#))}
- E04G 23/0288 • • {-Repairing or restoring floor slabs (floors [E04B 5/00](#))}
- E04G 23/0292 • • {-Repairing or restoring balconies (balcony structures [E04B 1/003](#))}
- E04G 23/0296 • • {-Repairing or restoring facades (covering or linings e.g. for walls [E04F 13/00](#))}
- U E04G 23/06 • Separating, lifting, removing of buildings; Making a new sub-structure
- E04G 23/065 • • {-Lifting of buildings ([E04G 21/163](#) takes precedence)}
- U E04G 23/08 • Wrecking of buildings (of fences [E04H 17/26](#); {Demolition agents based on cementitious or like materials [C04B 41/0009](#))}
- E04G 23/081 • • {-using hydrodemolition}
- E04G 23/082 • • {-using shears, breakers, jaws and the like (metal-cutting or concrete-crushing implements mounted on backhoes [E02F 3/965](#))}
- E04G 23/083 • • {-using vaporising wire technique (particular applications of blasting techniques [F42D 3/00](#))}

- E04G 23/084 · · {-using breaker balls or the like}
- U E04G 25/00 Shores or struts (specially designed for use in mines [E21D 15/00](#) { ; [E04G 21/26](#), [E04G 23/04](#) take precedence); Chocks**
- U E04G 25/04 · telescopic {(locking of telescopic systems in general [F16B 7/10](#))}
- U E04G 25/06 · · with parts held together by positive means
- E04G 25/061 · · · {-by pins}
- E04G 25/063 · · · · {-with safety devices to avoid the accidental loss or unlocking of the pin, e.g. chains attaching the pin to the prop}
- E04G 25/065 · · · {-by a threaded nut}
- E04G 25/066 · · · {-by a wedge}
- E04G 25/068 · · · {-by a cam}

Project: N/A (E04H)

- U E04H 4/00 Swimming or splash baths or pools (wave-producers for baths [A47K 3/10](#); separation [B01D](#); treatment of water [C02F](#); wave-producing pumps [F04D 35/00](#))**
- E04H 4/0018 · {-Easily movable or transportable swimming pools}
- E04H 4/0031 · · {-with shell type elements}
- E04H 4/0037 · · · {-Mono-shell type}
- E04H 4/0043 · · {-mainly made of panels ([E04H 4/0031](#) takes precedence)}
- E04H 4/005 · · · {-characterised by the framework for supporting the panels}
- E04H 4/0056 · · {-with a framework combined with a water retaining bag}
- E04H 4/0062 · · {-characterised by stacked planks or staves}
- U E04H 4/12 · Devices or arrangements for circulating water, {i.e. devices for removal of polluted water, cleaning baths or for water treatment}
- U E04H 4/1209 · · {Treatment of water for swimming pools (filters [B01D](#))}
- U E04H 4/1218 · · · {Devices for removal of polluted water; Circumferential gutters}
- E04H 4/1227 · · · · {-Circumferential gutters}
- E04H 4/1236 · · · {-Bottom drains}
- E04H 4/1254 · · · {-Arm-mounted debris traps or flow diverters}
- E04H 4/1272 · · · {-Skimmers integrated in the pool wall}
- U E04H 4/14 · Parts, details or accessories not otherwise provided for
- E04H 4/148 · · {-Lighting means}
- U E04H 4/16 · · specially adapted for cleaning (cleaning devices peculiar to vessels [B63B 59/00](#))
- U E04H 4/1618 · · · {Hand-held powered cleaners}
- U E04H 4/1636 · · · · {Suction cleaners}
- E04H 4/1645 · · · · · {-Connections to the pool water circulation system}
- U E04H 4/1654 · · · {Self-propelled cleaners}
- E04H 4/1672 · · · · {-Connections to the pool water circulation system}
- U E04H 6/00 Buildings for parking cars, rolling stock, aircraft, vessels or like vehicles, e.g. garages (tents for use as garages [E04H 15/00](#); bicycle stands [B62H](#); storing of vessels on land [B63C 15/00](#); construction of ground-supported surfaces [E01C](#); marking of parking areas on the ground [E01F 9/00](#); building construction in general [E04B 1/00](#))**
- U E04H 6/08 · Garages for many vehicles

- U E04H 6/12
 - • with mechanical means for shifting or lifting vehicles
- U E04H 6/18
 - • • with means for transport in vertical direction only or independently in vertical and horizontal directions ([E04H 6/14](#) takes precedence)
- E04H 6/22
 - • • • characterised by the use of movable platforms for horizontal transport, {i.e. cars being permanently parked on palettes-([E04H 6/20](#) takes precedence)}
- E04H 6/24
 - • • • characterised by the use of dollies for horizontal transport, {i.e. cars being permanently parked on wheeled platforms-([E04H 6/20](#) takes precedence)}
- U E04H 9/00**

Buildings, or groups of buildings, or shelters adapted to withstand or provide protection against abnormal external influences, e.g. war-like action, earthquake, extreme climate (floatable buildings [B63B](#); foundation aspects [E02D](#); building constructions in general [E04B](#); bearings or like supports allowing movement [E04B 1/36](#); special details in regard to insulation or other protection [E04B 1/62](#); supporting structures for endangered or damaged existing buildings or parts thereof [E04G 23/04](#); doors, windows [E06B 5/00](#); air-conditioning, ventilation [F24F](#); camouflage [F41H 3/00](#); cells or rooms shielded against dangerous radiation [G21F 7/00](#))
- U E04H 9/02
 - withstanding earthquake or sinking of ground (foundations [E02D 27/34](#); {making use of active or passive dynamic mass damping systems [E04B 1/985](#)})
- E04H 9/024
 - • {-Structures with steel columns and beams}
- E04H 9/025
 - • {-Structures with concrete columns}
- E04H 9/027
 - • {-Preventive constructional measures against earthquake damage in existing buildings}
- E04H 9/028
 - • {-Earthquake withstanding shelters}
- E04H 9/029
 - • • {-arranged inside of buildings ([E04H 9/06](#) takes precedence)}
- U E04H 12/00**

Towers; Masts, poles; Chimney-stacks; Water-towers; Methods of erecting such structures (cooling-towers [E04H 5/12](#); devices for erecting masts or poles [B66F](#); foundation piles [E02D 5/22](#); foundations for masts, poles, chimneys [E02D 27/42](#); structural elongated members in general [E04C 3/00](#); fixed climbing irons [E06C 9/04](#); derricks for oil drilling [E21B 15/00](#))
- U E04H 12/02
 - Structures made of specified materials ([E04H 12/16](#), [E04H 12/18](#) take precedence)
- U E04H 12/08
 - • of metal
- E04H 12/085
 - • • {-Details of flanges for tubular masts}
- U E04H 12/34
 - Arrangements for erecting or lowering towers, masts, poles, chimney stacks, or the like
- E04H 12/341
 - • {-Arrangements for casting in situ concrete towers or the like}
- E04H 12/342
 - • {-Arrangements for stacking tower sections on top of each other ([E04H 12/344](#) takes precedence)}
- E04H 12/344
 - • {-Arrangements for lifting tower sections for placing additional sections under them}
- E04H 12/345
 - • {-Arrangements for tilting up whole structures or sections thereof ([E04H 12/347](#) takes precedence)}
- E04H 12/347
 - • {-Arrangements for setting poles in the ground}
- E04H 12/348
 - • {-Arrangements for demolition towers or the like}
- U E04H 15/00**

Tents or canopies, in general
- U E04H 15/003
 - {Bathing or beach cabins}
- E04H 15/005
 - • {-Wind breakers, i.e. fabric stretched between posts anchored in the ground}

- U E04H 15/32 · Parts, components, construction details, accessories, interior equipment, specially adapted for tents, e.g. guy-line equipment, skirts, thresholds
- U E04H 15/34 · · Supporting means, e.g. frames
- U E04H 15/36 · · · arch-shaped type ([E04H 15/42](#) takes precedence; { arches connected with lazy-tongues [E04H 15/505](#)})
- U E04H 15/40 · · · · flexible
- U E04H 15/405 · · · · · {-flexible and foldable}
- U E04H 15/44 · · · collapsible, e.g. breakdown type {having connecting nodes}([E04H 15/42](#) takes precedence; building structures having collapsible parts in general [E04B 1/343](#))
- U E04H 15/48 · · · · foldable, i.e. having pivoted or hinged means ({ [E04H 15/405](#) and} [E04H 15/46](#) takes precedence)
- U E04H 15/50 · · · · · lazy-tong type
- U E04H 15/505 · · · · · · {-characterised by connecting arches with lazy-tongues}
- U E04H 15/64 · · Tent or canopy cover fastenings
- U E04H 15/642 · · · {-with covers held by elongated fixing members locking in longitudinal recesses of a frame}
- U E04H 15/644 · · · · {-the fixing members being a beading}
- U E04H 15/646 · · · · {-the fixing members being locked by an additional locking member}
- U E04H 15/648 · · · · {-the longitudinal recesses being made from two clamping members}
- U E04H 17/00 **Fencing, e.g. fences, enclosures, corrals (features peculiar to electrified fences [A01K 3/00](#), [H05C](#); means for allowing passage through fences, barriers, or the like [E06B 11/00](#))**
- U E04H 17/003 · {-Anti-climbing devices, e.g. fixed or rotary spikes}

Project: N/A (E05B)

- U E05B 1/00 **Knobs or handles for wings ({ specially adapted for vehicle doors [E05B 85/10](#)}; for furniture [A47B 95/02](#)); Knobs, handles or press buttons for locks or latches on wings ([E05B 5/00](#), [E05B 7/00](#) take precedence)**
- U E05B 1/0038 · {Sliding handles, e.g. push buttons ([E05B 13/105](#) takes precedence)}
- U E05B 1/0046 · · {-sliding parallel to the plane of the wing}
- U E05B 1/0069 · · · {-Sanitary doorknobs or handles, e.g. comprising a disinfectant}
- U E05B 1/0084 · · · · {-Handles or knobs with displays, signs, labels pictures, or the like (displays on locks [E05B 17/226](#); displays on keys [E05B 19/0088](#))}
- U E05B 3/00 **Fastening { knobs or} handles to lock or latch parts {([E05B 79/06](#) takes precedence)}**
- U E05B 3/06 · by means arranged in or on the rose {or escutcheon}
- U E05B 3/065 · · {-with spring biasing means for moving the handle over a substantial distance, e.g. to its horizontal position}
- U E05B 5/00 **Handles completely let into the surface of the wing {([E05B 85/10](#) takes precedence)}**
- U E05B 5/006 · {-essentially defining a completely closed surface together with the wing}
- U E05B 9/00 **Lock casings or latch-mechanism casings; {-Fastening locks or fasteners or parts thereof to the wing}(padlock casings [E05B 67/02](#); for vehicles [E05B 79/04](#), [E05B 85/02](#))**
- U E05B 9/02 · {Casings} of latch-bolt { or deadbolt} locks

- E05B 9/04
 - {-Casings} of cylinder locks {(details specific for pin or ball tumbler cylinder locks [E05B 27/0014](#); details specific for plate tumbler cylinder locks [E05B 29/00](#))}
- E05B 9/041
 - • {-Double cylinder locks ([E05B 9/045](#), [E05B 9/048](#) take precedence)}
- E05B 9/042
 - • • {-Stators consisting of multiple parts being assembled together ([E05B 9/045](#) takes precedence)}
- E05B 9/048
 - • {-Stator reinforcements (for drill protection [E05B 15/1614](#))}
- U E05B 9/08
 - Fastening {locks or fasteners or parts thereof, e.g.} the casings of latch-bolt locks or cylinder locks to the wing {(on glass wings [E05B 65/0025](#))}
- U E05B 9/084
 - • {-Fastening of lock cylinders, plugs or cores}
- E05B 9/086
 - • • {-Fastening of rotors, plugs or cores to an outer stator}
- E05B 9/088
 - • • • {-Means for preventing loss of tumblers during mounting or removal}
- U E05B 9/10
 - Coupling devices for the two halves of double cylinder locks { e.g. devices for coupling the rotor with the locking cam ([E05B 47/0611](#) takes precedence)}
- E05B 9/105
 - • {-including disengagement means, e.g. opening from one side being still possible even if the key is inserted from the other side}
- U E05B 13/00**
 - Devices preventing the key or the handle or both from being used {(covers or guards for keyholes [E05B 17/14](#))}**
- E05B 13/001
 - {-Covers preventing access to handles or keys}
- E05B 13/002
 - {-locking the handle ([E05B 13/10](#), [E05B 47/0657](#) take precedence)}
- E05B 13/007
 - {-Handles which are locked or blocked in the open position}
- E05B 13/008
 - {-A single handle being used for actuation of several wings, e.g. simultaneously}
- U E05B 15/00**
 - Other details of locks; Parts for engagement by bolts of fastening devices (fastening devices for wings other than locks or associated with locks [E05C](#))**
- E05B 15/0006
 - {-Devices for aligning wing and frame; Anti-rattling devices (for vehicle doors [E05B 83/367](#))}
- E05B 15/0026
 - {-Adaptors cooperating with and acting on keys inserted in an existing lock, e.g. for transformation of a key actuated lock to handle actuation}
- E05B 15/0033
 - {-Spindles for handles, e.g. square spindles}
- E05B 15/0053
 - {-means providing a stable, i.e. indexed, position of lock parts}
- E05B 15/006
 - • {-Spring-biased ball or roller entering a notch}
- E05B 15/0073
 - • {-magnetically operated}
- E05B 15/008
 - • {-friction type}
- E05B 15/0093
 - {-Weight arrangements in locks; gravity activated lock parts ([E05B 65/5292](#), [E05B 77/06](#) take precedence)}
- U E05B 15/02
 - Striking-plates; Keepers; Bolt staples; Escutcheons{(keyhole finders[E05B 15/08](#); escutcheons made of hard materials[E05B 15/1614](#); finger-plates[E06B 7/285](#))}
- U E05B 15/0205
 - • {-Striking-plates, keepers, staples (means for reducing friction [E05B 17/007](#); electric strikers [E05B 47/0046](#); staples for padlocks [E05B 67/383](#); strikers for espagnolettes [E05C 9/1808](#))}
- E05B 15/022
 - • • {-movable, resilient or yieldable (adjustable into different discrete positions [E05B 15/024](#); yieldable striker for emergency opening [E05B 65/1026](#))}
- E05B 15/0295
 - • • {-specially adapted for forked or bifurcated bolts (for vehicles [E05B 85/045](#))}

- U E05B 17/00 Accessories in connection with locks (buffers [E05F 5/00](#); means for preventing rattling of wings [E05F 7/04](#); means for taking the weight of the wing [E05F 7/06](#))**
- U E05B 17/0004 • {Lock assembling or manufacturing (making locksmith`s goods of sheet metal [B21D 53/38](#); assembling in general [B23P 21/00](#))}
- E05B 17/0008 • • {-Lock parts made by extrusion process}
- E05B 17/002 • {-Weather or dirt protection ([E05B 15/029](#), [E05B 17/14](#) take precedence; for vehicle locks [E05B 77/34](#))}
- E05B 17/0025 • {-Devices for forcing the wing firmly against its seat or to initiate the opening of the wing ([E05B 15/022](#), [E05B 65/0817](#), [E05B 81/20](#), [E05C 19/14](#) take precedence)}
- E05B 17/0029 • • {-motor-operated (for vehicles [E05B 81/20](#))}
- E05B 17/0041 • {-Damping means (for vehicles [E05B 77/42](#); time locks with retarders [E05B 43/00](#))}
- E05B 17/0045 • {-Silencing devices; Noise reduction (resilient strikers [E05B 15/022](#); for vehicles [E05B 77/36](#))}
- U E05B 17/0054 • {Fraction or shear lines; Slip-clutches, resilient parts or the like for preventing damage when forced or slammed}
- E05B 17/0058 • • {-with non-destructive disengagement ([E05B 17/045](#) takes precedence)}
- U E05B 17/0062 • • {with destructive disengagement}
- E05B 17/0066 • • • {-Handles with destructible elements}
- E05B 17/0079 • {-Locks with audio features ([E05B 45/00](#) takes precedence)}
- E05B 17/0083 • • {-Sound emitting devices, e.g. loudspeakers}
- E05B 17/0087 • • {-Sound receiving devices, e.g. microphones}
- E05B 17/0091 • {-including protruding or recessed symbols in a surface for tactile indication/information, e.g. Braille symbols}
- E05B 17/04 • {-Devices for coupling the turning cylinder of a single or a double cylinder lock with the bolt operating member}
- E05B 17/042 • • {-using toothed wheels or geared sectors ([E05C 9/023](#), [E05C 9/041](#) take precedence)}
- E05B 17/044 • • {-Clutches, disengageable couplings}
- E05B 17/045 • • • {-for keeping the rotor disconnected from the bolt actuating member, when being turned, e.g. forcefully, without the proper key}
- E05B 17/046 • • • {-disengaged manually from inside}
- E05B 17/047 • • {-with rotating output elements forming part of cylinder locks, e.g. locking cams of double cylinder locks}
- E05B 17/048 • • {-with sliding output elements forming part of cylinder locks, e.g. in the form of pins or cams}
- E05B 17/049 • • • {-sliding essentially in the axial direction of the cylinder lock}
- E05B 17/06 • {-Templates for marking the position of apertures in fittings of wings { or frames; Apparatus for installation of a lockset (drill jigs [B23B 47/28](#); mortised work [B27F 5/12](#); templates for hinges [E05D 11/0009](#))}}
- U E05B 17/20 • Means independent of the locking mechanism, { i.e. other than the tumblers or detents} for preventing unauthorised opening, e.g. for securing the bolt in the fastening position {([E05B 63/12](#) takes precedence)}
- E05B 17/2007 • • {-Securing, deadlocking or "dogging" the bolt in the fastening position ([E05B 15/0046](#), [E05B 15/0086](#), [E05B 67/383](#) take precedence)}
- E05B 17/2019 • • • {-elastic, i.e. the dog or detent being formed or carried by a spring}
- E05B 17/2026 • • • {-automatic, i.e. actuated by a closed door position sensor}

- U E05B 17/22
- Means for operating or controlling lock or fastening device accessories, i.e. other than the fastening members, e.g. switches, indicators ({[E05B 39/00](#) to [E05B 45/00](#) take precedence)}
- E05B 17/223
- • {-preventing lock actuation after detection of drug use, e.g. alcohol consumption}
- E05B 17/226
- • {-Displays on locks, e.g. LED or LCD screens (on handles [E05B 1/0084](#); on keys [E05B 19/0088](#))}
- U E05B 19/00**
- Keys; Accessories therefor (making keys, see the relevant places e.g. [B21D 53/42](#) { or [B23P 15/005](#)}; milling grooves in keys [B23C 3/35](#));**
{{[E05B 11/005](#) takes precedence; illuminating devices [E05B 17/103](#); key rings [A44B 15/00](#); key cases [A45C 11/32](#); key holders [A47G 29/10](#)}}
- E05B 19/0011
- {-Key decoders (general measuring of contours and curvatures [G01B 3/14](#), [G01B 5/20](#), [G01B 7/28](#))}
- U E05B 19/0017
- {Key profiles}
- E05B 19/0023
- • {-characterized by variation of the contact surface between the key and the tumbler pins or plates}
- E05B 19/0029
- • {-characterized by varying cross-sections of different keys within a lock system (cross-sections of single keys [E05B 19/0041](#))}
- E05B 19/0035
- • {-characterized by longitudinal bit variations }
- E05B 19/0041
- • {-characterized by the cross-section of the key blade in a plane perpendicular to the longitudinal axis of the key}
- E05B 19/0047
- • • {-with substantially circular or star-shape cross-section}
- E05B 19/0052
- • • {-Rectangular flat keys}
- E05B 19/0058
- • • • {-with key bits on at least one wide side surface of the key}
- E05B 19/0064
- • • • {-and with additional key bits on at least one narrow side edge of the key}
- E05B 19/007
- • • {-with U- or V-shaped cross-section}
- E05B 19/0076
- • {-Keys with a curved longitudinal axis}
- E05B 19/0082
- {-Keys or shanks being removably stored in a larger object, e.g. a remote control or a key fob (general constructional details of electronic keys [G07C 9/00944](#))}
- E05B 19/0088
- {-Displays on keys, e.g. LED or LCD screens}
- E05B 19/0094
- {-protruding elements on the key preventing unauthorized insertion into the keyhole}
- E05B 19/14
- Double {or multiple}keys, { e.g. with two or more bows or bits(see also[E05B 35/14](#))}
- U E05B 21/00**
- Locks with { lamelliform} tumblers { which are not set by the insertion of the key and which are} not following the movement of the bolt { , e.g. Chubb-locks}**
- E05B 21/003
- {-comprising tumblers moving in opposite directions, e.g. tumbler sets on opposite sides of the keyhole for operation by a double-bit key}
- E05B 21/006
- {-the bolt being operated by other means than the key bit, e.g. via a key-operated thrower}
- U E05B 21/06
- Cylinder locks, e.g. Protector locks
- E05B 21/066
- • {-of the rotary-disc tumbler type (tumblers which are set by inserting the key [E05B 29/0013](#))}

- U E05B 27/00** **Cylinder locks { and other locks} with tumbler pins which are set by pushing the key in {(fastening of cylinders, rotors, plugs or cores [E05B 9/084](#); with magnetic tumblers [E05B 47/0044](#); with electromagnetic control [E05B 47/0611](#))}**
- E05B 27/0003 · {-Details}
 - U E05B 27/0007 · · {-Rotors}
 - E05B 27/001 · · · {-having relatively movable parts, e.g. coaxial- or split-plugs (for anti-picking purposes [E05B 27/0075](#))}
 - E05B 27/0014 · · {-Stators (cylinder lock casings in general [E05B 9/04](#))}
 - E05B 27/0028 · {-Other locks than cylinder locks with tumbler pins or balls}
 - E05B 27/0046 · {-Axially movable rotor}
 - E05B 27/0053 · {-for use with more than one key, e.g. master-slave key (master key systems in general [E05B 35/10](#))}
 - E05B 27/0057 · {-with increased picking resistance}
 - E05B 27/006 · · · {-whereby a small rotation without the correct key blocks further rotation of the rotor ([E05B 27/0067](#) takes precedence)}
 - E05B 27/0064 · · · {-whereby the rotor is irreversibly blocked or can only be moved back with an authorized tool or key}
 - E05B 27/0067 · · · {-whereby a small rotation without the correct key blocks further movement of a tumbler ([E05B 27/0082](#) takes precedence)}
 - E05B 27/0071 · · {-by means preventing opening by using the bump-technique}
 - E05B 27/0075 · · {-by movable rotor elements}
 - E05B 27/0082 · {-Side bar locking}
 - E05B 27/0085 · {-wherein the key can be inserted or withdrawn in different positions or directions (in general [E05B 63/0047](#))}
 - E05B 27/0089 · · · {-wherein the key can be withdrawn in several angular positions}
 - E05B 27/0092 · · · {-wherein the key can be inserted from both sides of the lock}
 - E05B 27/0096 · · · {-reversible keys}
- U E05B 29/00** **Cylinder locks { and other locks} with plate tumblers which are set by pushing the key in {(fastening of cylinders, rotors, plugs or cores [E05B 9/084](#); with magnetic tumblers [E05B 47/0044](#); with electromagnetic control [E05B 47/0611](#))}**
- E05B 29/0006 · {-Other locks than cylinder locks with plate tumblers}
 - E05B 29/0013 · {-with rotating plate tumblers ([E05B 29/0033](#) takes precedence; plate tumblers which are not set by inserting the key [E05B 21/06](#))}
 - E05B 29/0046 · {-for use with more than one key, e.g. master-slave key (master key systems in general [E05B 35/10](#))}
 - E05B 29/0053 · {-with increased picking resistance}
 - E05B 29/006 · · · {-by movable rotor elements}
 - E05B 29/0066 · {-Side bar locking}
 - E05B 29/0073 · {-wherein the key can be inserted or withdrawn in different positions or directions (in general [E05B 63/0047](#))}
 - E05B 29/008 · · · {-wherein the key can be withdrawn in several angular positions}
 - E05B 29/0086 · · · {-wherein the key can be inserted from both sides of the lock}
 - E05B 29/0093 · · · {-reversible keys}
- U E05B 35/00** **Locks for use with special keys or a plurality of keys; { keys therefor}**

- E05B 35/007
 - {-the key being a card, e.g. perforated, or the like ([E05B 47/0045](#) takes precedence)}
- U E05B 35/08
 - operable by a plurality of keys
- U E05B 35/10
 - · with master and pass keys {(for cylinder locks [E05B 27/0053](#))}
- E05B 35/105
 - · · {-Locks allowing opening by official authorities, e.g. master key opening of luggage locks by customs officials}
- U **E05B 37/00**

Permutation { or combination} locks ({ handles with combination locks [E05B 13/103](#); keyhole guards with combination locks [E05B 17/145](#); alarms therefor [E05B 45/061](#); electric permutation locks [E05B 49/00](#); { for container closures [B65D 55/145](#); combination switches [H01H 27/10](#)});
Puzzle locks

 - E05B 37/0003
 - {-preventing detection of the combination}
 - E05B 37/0006
 - · {-by avoiding unauthorized viewing of the combination}
 - E05B 37/001
 - · {-through listening or feeling}
 - E05B 37/0013
 - · · {-by producing noise}
 - E05B 37/0017
 - · · {-by producing false clicks; by use of false gates}
 - E05B 37/002
 - · {-Speed sensors}
 - E05B 37/0024
 - · {-limited number of tries}
 - U E05B 37/0031
 - {Locks with both permutation and key actuation ([E05B 17/145](#) takes precedence)}
 - E05B 37/0041
 - · {-Key actuation allowing recovery of a lost/forgotten combination}
 - E05B 37/0048
 - {-with changeable combination}
 - E05B 37/0051
 - · {-by moving pins to another hole}
 - E05B 37/0055
 - · {-by radial disengagement between hub and rim of tumbler discs or rings }
 - E05B 37/0058
 - · {-by axial disengagement between hub and rim of tumbler discs or rings}
 - E05B 37/0062
 - {-Operation by feeling, e.g. in darkness using Braille signs}
 - E05B 37/0065
 - {-Master combination}
 - E05B 37/0072
 - {-Sign-, picture- or letter-based permutations}
 - E05B 37/0075
 - {-Automatic scrambling}
 - E05B 37/0079
 - · {-when unlocking}
 - E05B 37/0082
 - · {-when locking}
 - E05B 37/0086
 - · {-when the wing is opened}
 - E05B 37/0089
 - · {-when the wing is closed}
 - E05B 37/0093
 - · {-Obligatory manual scrambling}
 - E05B 37/0096
 - {-with tumbler discs arranged on concentric axes, each axis being operated by a different rotating knob}
- U **E05B 39/00**

Locks giving indication of { authorised} or unauthorised unlocking {(with key identification means [E05B 35/001](#); alarm locks [E05B 45/00](#))}

 - E05B 39/002
 - {-by releasing a liquid, e.g. ill-smelling or dye}
 - E05B 39/005
 - {-Locks with means for tracking the location of locked items, e.g. freight containers}
 - E05B 39/007
 - {-Indication by a tactile impulse to the user, e.g. vibration of a lock-, handle- or key-part}
- U **E05B 43/00**

Time locks, { e.g. locks with delaying means}(clocks or clock mechanisms with attached or built-in means operating any device at preselected times or after a predetermined time interval [G04B 23/00](#) { time recording locks [G07C 1/32](#)})

- E05B 43/005
 - {-Timer devices controlling electrically operated locks}
- U E05B 45/00**
 - Alarms locks (alarm devices actuated by tampering with fastenings, in general [G08B](#); {vehicle fittings actuating a signalling device [B60R 25/10](#); bicycle appliances indicating unauthorised use [B62H 5/20](#))}**
- E05B 45/005
 - {-Chain-locks, cable-locks or padlocks with alarms}
- U E05B 45/06
 - Electric alarm locks {([E05B 45/005](#) takes precedence)}
- U E05B 45/08
 - · with contact making inside the lock or in the striking plate
- U E05B 45/12
 - · · by movement of the bolt {([E05B 45/083](#) takes precedence)}
- E05B 45/125
 - · · · {-by transverse movement}
- U E05B 47/00**
 - Operating or controlling locks or other fastening devices by electric or magnetic means (electric permutation locks [E05B 49/00](#); holding in open position or limiting movement of wings by magnetic or electromagnetic attraction [E05C 17/56](#); { [E05B 17/0029](#), [E05B 17/147](#), [E05B 81/00](#), [E05C 19/16](#) take precedence})**
- E05B 47/0001
 - {-with electric actuators; Constructional features thereof (for vehicles [E05B 81/04](#))}
- E05B 47/0002
 - · {-with electromagnets }
- E05B 47/0003
 - · · {-having a movable core}
- E05B 47/0004
 - · · · {-said core being linearly movable}
- E05B 47/0005
 - · · · {-said core being rotary movable}
- E05B 47/0006
 - · · {-having a non-movable core; with permanent magnet}
- E05B 47/0009
 - · {-with thermo-electric actuators, e.g. heated bimetals}
- E05B 47/0011
 - · {-with piezo-electric actuators (piezo-electric devices per se [H01L 41/00](#))}
- E05B 47/0012
 - · {-with rotary electromotors (actuators with rotary electromotors per se [H02K 7/06](#), [H02K 23/68](#))}
- U E05B 47/0038
 - {using permanent magnets}
- E05B 47/004
 - · {-the magnets acting directly on the bolt}
- E05B 47/0043
 - · {-Mechanical locks operated by cards having permanent magnets}
- E05B 47/0044
 - · {-Cylinder locks with magnetic tumblers ([E05B 47/0041](#), [E05B 47/0042](#) take precedence)}
- E05B 47/0045
 - · {-keys with permanent magnets ([E05B 47/0043](#), [E05B 47/0044](#), [E05B 73/0052](#) take precedence)}
- U E05B 2047/0072
 - {Operation}
- U E05B 2047/0073
 - · {Current to unlock only}
- E05B 2047/0074
 - · · {holding means other than current (*mechanical, magnetic*)}(~~mechanical; magnetic~~)
- U E05B 47/02
 - {Movement of the bolt by electromagnetic means}; Adaptation of locks, latches, or parts thereof, for movement of the bolt by electromagnetic means {(by means in the striker [E05B 63/248](#))}
- E05B 47/023
 - · {-the bolt moving pivotally or rotatively}
- E05B 47/026
 - · {-the bolt moving rectilinearly}
- U E05B 47/06
 - Controlling mechanically-operated bolts by electro-magnetically-operated detents
- E05B 47/0603
 - · {-the detent moving rectilinearly}
- E05B 47/0607
 - · {-the detent moving pivotally or rotatively}
- U E05B 47/0611
 - · {Cylinder locks with electromagnetic control}
- E05B 47/0615
 - · · {-operated by handles, e.g. by knobs}

- E05B 47/0619 . . . {-by blocking the rotor}
- E05B 47/0623 {-axially, i.e. with an axially engaging blocking element}
- E05B 47/0626 {-radially}
- E05B 47/063 {-with a rectilinearly moveable blocking element}
- E05B 47/0634 {-with a pivotally moveable blocking element}
- E05B 47/0638 . . . {-by disconnecting the rotor}
- E05B 47/0642 {-axially, i.e. with an axially disengaging coupling element}
- E05B 47/0646 {-radially}
- E05B 47/0649 {-with a rectilinearly moveable coupling element}
- E05B 47/0653 {-with a pivotally moveable coupling element}
- U E05B 47/0657 . . {-by locking the handle, spindle, follower or the like}
- E05B 47/0661 . . . {-axially, i.e. with an axially engaging blocking element}
- E05B 47/0665 . . . {-radially}
- E05B 47/0669 {-with a pivotally moveable blocking element}
- E05B 47/0673 {-with a rectilinearly moveable blocking element}
- U E05B 47/0676 . . {-by disconnecting the handle}
- E05B 47/068 . . . {-axially, i.e. with an axially disengaging coupling element}
- E05B 47/0684 . . . {-radially}
- E05B 47/0688 {-with a pivotally moveable coupling element}
- E05B 47/0692 {-with a rectilinearly moveable coupling element}

- U **E05B 51/00** **Operating or controlling locks or other fastening devices by other non-mechanical means**
- E05B 51/005 . {-by a bimetallic or memory-shape element (heated by electricity [E05B 47/0009](#); for panic door actuation [E05B 65/104](#))}
- U E05B 51/02 . by pneumatic or hydraulic means {([E05B 17/0029](#) takes precedence)}
- E05B 51/023 . . {-actuated in response to external pressure, blast or explosion ([E05B 65/102](#) takes precedence)}

- U **E05B 53/00** **Operation or control of locks by mechanical transmissions, e.g. from a distance**
- E05B 53/008 . {-by planetary gears}

- U **E05B 63/00** **Locks {or fastenings} with special structural characteristics**
- E05B 63/0004 . {-Additional locks added to existing lock arrangements}
- E05B 63/0034 . {-Locks for use instead of cylinder locks, e.g. locks with cylinder lock profile and a low security operating mechanism}
- E05B 63/0043 . {-Dummy or simulated locks; Cover elements without lock function}
- E05B 63/0047 . {-Locks having a key withdrawable in different positions (cylinder locks [E05B 27/0085](#), [E05B 29/0073](#))}
- U E05B 63/0056 . {-Locks with adjustable or exchangeable lock parts (adjustable strikers [E05B 15/024](#); adjustable to different keys [E05B 35/083](#); adjustable bolt or backset [E05B 63/06](#); adjustable coupling means for bars, rods, cables [E05C 9/20](#))}
- E05B 63/006 . . {-for different door thicknesses ([E05B 9/045](#) takes precedence; for fastening handles to lock or latch parts [E05B 3/00](#))}
- U E05B 63/0065 . {-Operating modes; Transformable to different operating modes}

- E05B 63/0069
 - • {Override systems, e.g. allowing opening from inside without the key, even when locked from outside ([E05B 65/1086](#), [E05B 9/105](#) take precedence; by movable striker [E05B 63/246](#))}
- E05B 63/0073
 - • • {-by withdrawal of the entire lock unit}
- U E05B 63/12
 - with means carried by the bolt for interlocking with the keeper
- E05B 63/121
 - • {-using balls or the like cooperating with notches}
- U **E05B 65/00**

Locks { or fastenings} for special use {(for dishwashers [A47L 15/4259](#); hatch fastenings [B63B 19/24](#); for container closures [B65D 55/02](#); for elevator doors [B66B 13/16](#); for lids or covers of refuse receptacles [B65F 1/1615](#); for laundry washing machines [D06F 37/42](#), [D06F 39/14](#); for two wings [E05C 7/00](#); safety devices [F16P 3/08](#); for furnaces [F24C 15/022](#); coin freed locks [G07F 17/12](#), [G07F 17/14](#); switches operated by key or combination [H01H 27/00](#))}
- E05B 65/0003
 - {-for locking a plurality of wings, e.g. simultaneously ([E05B 65/0017](#), [E05B 77/46](#), [E05B 65/462](#), [E05C 7/00](#) take precedence)}
- E05B 65/001
 - {-for gas- or watertight wings}
- E05B 65/0032
 - {-for hotel rooms (electronic [G07C 9/00904](#))}
- E05B 65/0042
 - {-For refrigerators or cold rooms ([E05B 17/0075](#) takes precedence; magnetic [E05C 19/16](#))}
- E05B 65/0053
 - • {-with safety release from inside (by releasing the striker [E05B 63/246](#); similar means for safe doors [E05B 65/0078](#))}
- E05B 65/0057
 - {-for caskets, coffins or burial vaults (coffins in general [A61G 17/02](#))}
- U E05B 65/006
 - {-for covers or panels (for manholes [E02D 29/1427](#); for holes enabling access to installations in buildings [E04F 19/08](#); for pressure vessels [F16J 13/00](#))}
- E05B 65/0064
 - • {-for openings in masts}
- E05B 65/0067
 - • {-for portable computers, e.g. for locking the screen panel to the keyboard panel}
- U E05B 65/0075
 - {-for safes, strongrooms, vaults, fire-resisting cabinets or the like (safes, closures and fastenings therefor [E05G](#))}
- E05B 65/0078
 - • {-Safety means for persons trapped within the safe, e.g. release from inside, venting means (by releasing the striker [E05B 63/246](#); similar means for refrigerator or cold-room doors [E05B 65/0053](#))}
- U E05B 65/08
 - for sliding wings {(for vehicles [E05B 83/04](#), [E05B 83/40](#); holding sliding wings open [E05C 17/60](#))}
- U E05B 65/0811
 - • {the bolts pivoting about an axis perpendicular to the wings}
- E05B 65/0823
 - • • {-cooperating with the slide guide, e.g. the rail}
- E05B 65/0829
 - • • {-mounted on the slide guide, e.g. the rail}
- U E05B 65/0835
 - • {the bolts pivoting about an axis parallel to the wings}
- E05B 65/0847
 - • • {-mounted on the slide guide, e.g. the rail ([E05B 65/0841](#) takes precedence)}
- E05B 65/0852
 - • • {-with a bolt under compression force}
- U E05B 65/087
 - • {the bolts sliding parallel to the wings}
- E05B 65/0876
 - • • {-cooperating with the slide guide, e.g. the rail}
- E05B 65/0882
 - • • {-mounted on the slide guide, e.g. the rail}
- U E05B 65/10
 - for panic or emergency doors
- E05B 65/102
 - • {-opening under pressure on the surface of the door itself ([E05C 19/02](#) takes precedence)}
- E05B 65/1026
 - • • {-by a yieldable or breakable bolt or striker}
- E05B 65/1093
 - • {-Dogging means for holding the actuation means, e.g. the actuating handle}

- U E05B 65/44 · for furniture or drawers
- U E05B 65/46 · · Special locks for drawers, e.g. for a plurality of drawers {(for electronic unit cases [H05K 7/1401](#))}
- E05B 65/462 · · · {-for a plurality of drawers}
- E05B 65/463 · · · · {-Drawer interlock or anti-tilt mechanisms, i.e. when one drawer is open, a number, e.g. all, of the remaining drawers are locked}
- E05B 65/464 · · · · · {-comprising a plurality of lock element aligned in end-to-end abutting relation}
- E05B 65/466 · · · · · {-with tensionable flexible elements, e.g. cables, bands, chains or ropes}
- E05B 65/52 · Other locks for chests, boxes, trunks, baskets, travelling bags, or the like (closures for bags or trunks [A45C 13/06](#), [A45C 13/10](#), [A45C 13/16](#); {hasp locks [E05B 65/50](#); permutation locks [E05B 37/00](#); toggles [E05C 19/14](#); locking slide fasteners [A44B 19/301](#))}
- E05B 65/5207 · · {-characterised by bolt movement}
- E05B 65/5215 · · · {-sliding}
- E05B 65/5246 · · · {-rotating}
- E05B 67/00** **Padlocks (permutation locks [E05B 37/00](#); { steering wheel padlocks [B60R 25/022](#)}); -Details thereof**
- E05B 67/003 · {-Chain, wire or cable locks (alarms therefor [E05B 45/005](#); [E05B 69/006](#) takes precedence)}
- E05B 67/006 · · {-with retraction of the cable for storage ([E05B 73/0029](#) takes precedence; for devices mounted to a fixed surface or a portable object [E05B 73/0011](#))}
- U E05B 67/06 · Shackles; Arrangement of the shackle
- E05B 67/063 · · {-Padlocks with removable shackles}
- E05B 67/36 · {-Padlocks with closing means other than shackles; { Removable locks, the lock body itself being the locking element; Padlocks consisting of two separable halves or cooperating with a stud}}
- E05B 67/365 · · {-with locking means in the form of balls or rollers}
- U **E05B 73/00** **Devices for locking portable objects against unauthorised removal; Miscellaneous locking devices {(motorcycle helmets [A42B 3/0413](#), [B62J 11/005](#); gun racks [A47B 81/005](#); showcases with theft protection [A47F 3/002](#); anti-theft means for peg-boards, grids or rods for hanging merchandise [A47F 5/0861](#); show stands, hangers, shelves with provision against unauthorised removal [A47F 7/024](#); for self-service hand-carts [A47F 10/04](#); locking skis [A63C 11/004](#); locking bolts, nuts or pins [F16B 41/00](#))}**
- E05B 73/0005 · {-using chains, cables or the like (chain- or cable-locks of the padlock type [E05B 67/003](#); lockable clothing hangers or hanger racks [E05B 69/006](#))}
- E05B 73/0011 · · {-with retraction of the flexible element for storage ([E05B 73/0029](#) takes precedence; for padlocks [E05B 67/006](#))}
- U E05B 73/0017 · {-Anti-theft devices, e.g. tags or monitors, fixed to articles, e.g. clothes, and to be removed at the check-out of shops}
- E05B 73/0029 · · {-Tags wrapped around the protected product using cables, wires or the like, e.g. with cable retraction for tensioning}
- E05B 73/0041 · · {-for essentially round objects, e.g. bottles or racket handles}
- E05B 73/0047 · · {-Unlocking tools; Decouplers}
- E05B 73/0052 · · · {-of the magnetic type}
- E05B 73/0058 · · · · {-for essentially box-shaped devices}

- E05B 73/0064
 - · · {-of the mechanical type}
- U E05B 73/007
 - {for boats, surfboards or parts or accessories thereof}
- E05B 73/0076
 - · {-outboard motors or propellers}
- U **E05B 75/00** **Handcuffs {Finger cuffs; Leg irons; Handcuff holsters; Means for locking prisoners in automobiles (retaining devices for the body or body parts [A61F 5/37](#))}**
 - E05B 75/005
 - {-Handcuff holders, e.g. for storage}
- U **E05B 77/00** **Vehicle locks characterised by special functions or purposes (locks specially adapted for bicycles [E05B 71/00](#); locking arrangements for non-fixed vehicle roofs [B60J 7/185](#))**
 - E05B 77/02
 - for accident situations
 - E05B 77/04
 - · Preventing unwanted lock actuation, e.g. unlatching, at the moment of collision
 - E05B 77/06
 - · · by means of inertial forces
 - E05B 77/08
 - · Arrangements for protection of pedestrians
 - E05B 77/10
 - · Allowing opening in case of deformed bodywork, e.g. by preventing deformation of lock parts
 - E05B 77/12
 - · Automatic locking or unlocking at the moment of collision
 - E05B 77/14
 - Specially controlled locking actions in case of open doors or in case of doors moved from an open to a closed position, e.g. lock-out prevention or self-cancelling
 - E05B 77/16
 - · Preventing locking with the bolt in the unlatched position, i.e. when the door is open
 - E05B 77/18
 - · Keyless locking with self-cancellation, e.g. resulting in an unlocking action when the door is being closed
 - E05B 77/20
 - · · Override of self-cancellation, e.g. by actuation of the handle while the door is being closed
 - E05B 77/22
 - Functions related to actuation of locks from the passenger compartment of the vehicle
 - E05B 77/24
 - · preventing use of an inner door handle, sill button, lock knob or the like
 - E05B 77/245
 - · · {-by blocking the movement of a movable element}
 - U E05B 77/26
 - · · specially adapted for child safety
 - E05B 77/265
 - · · · {-hand actuated, e.g. by a lever at the edge of the door}
 - E05B 77/28
 - · · for anti-theft purposes, e.g. double-locking or super-locking
 - E05B 77/283
 - · · · {-initiated by hand actuation, e.g. by using a mechanical key}
 - E05B 77/287
 - · · · {-Prevention or overriding of a super-lock condition, e.g. for preventing being trapped in the vehicle}
 - E05B 77/30
 - · allowing opening by means of an inner door handle, even if the door is locked
 - E05B 77/32
 - allowing simultaneous actuation of locking or unlocking elements and a handle, e.g. preventing interference between an unlocking and an unlatching action
 - E05B 77/34
 - Protection against water, e.g. against water ingress (closures or guards for keyholes [E05B 17/14](#))
 - E05B 77/36
 - Noise prevention; Anti-rattling means
 - E05B 77/38
 - · Cushion elements, elastic guiding elements or holding elements, e.g. for cushioning or damping the impact of the bolt against the striker during closing of the wing
 - E05B 77/40
 - · Lock elements covered by silencing layers, e.g. coatings

- E05B 77/42 · Means for damping the movement of lock parts, e.g. slowing down the return movement of a handle ([E05B 77/38](#) takes precedence)
- E05B 77/44 · Burglar prevention, e.g. protecting against opening by unauthorised tools ([E05B 77/28](#) takes precedence)
- E05B 77/46 · Locking several wings simultaneously
- E05B 77/465 · · {-Automatic locking when all passengers have left the vehicle }
- E05B 77/48 · · by electrical means
- E05B 77/50 · · by pneumatic or hydraulic means
- E05B 77/52 · Locking one wing by shutting another
- E05B 77/54 · Automatic securing or unlocking of bolts triggered by certain vehicle parameters, e.g. exceeding a speed threshold (triggered by vehicle collision [E05B 77/12](#))

E05B 79/00 Mounting or connecting vehicle locks or parts thereof

- E05B 79/02 · Mounting of vehicle locks or parts thereof
- E05B 79/04 · · Mounting of lock casings to the vehicle, e.g. to the wing
- E05B 79/06 · · Mounting of handles, e.g. to the wing or to the lock
- E05B 79/08 · · Mounting of individual lock elements in the lock, e.g. levers
- E05B 79/10 · Connections between movable lock parts
- E05B 79/12 · · using connecting rods
- E05B 79/14 · · · the rods being linked to each other
- E05B 79/16 · · · characterised by the means for linking the rods to other lock parts, e.g. to levers
- E05B 79/18 · · · Rod guides
- E05B 79/20 · · using flexible connections, e.g. Bowden cables
- E05B 79/22 · · Operative connections between handles, sill buttons or lock knobs and the lock unit (mounting of non-movable base elements of a handle to a lock [E05B 79/06](#))

E05B 81/00 Power-actuated vehicle locks

- E05B 81/01 · {-Comfort closing, i.e. the locking action for a wing is combined with actuation of other vehicle functions, e.g. locking the doors and closing the windows simultaneously}
- E05B 81/02 · characterised by the type of actuators used
- E05B 81/04 · · Electrical (electrical circuits [E05B 81/54](#))
- E05B 81/05 · · · {-moving in one direction only}
- E05B 81/06 · · · using rotary motors
- E05B 81/08 · · · using electromagnets or solenoids
- E05B 81/10 · · Hydraulic or pneumatic (hydraulic or pneumatic circuits [E05B 81/52](#))
- E05B 81/12 · characterised by the function or purpose of the powered actuators
- E05B 81/13 · · {-a single actuator for driving a lock and additional vehicle components, e.g. window wipers or window lifters}
- E05B 81/14 · · operating on bolt detents, e.g. for unlatching the bolt
- E05B 81/15 · · · {-with means preventing the detent to return to its latching position before the bolt has moved to the unlatched position}
- E05B 81/16 · · operating on locking elements for locking or unlocking action
- E05B 81/18 · · to effect movement of a bolt or bolts ([E05B 81/20](#) takes precedence)
- E05B 81/20 · · for assisting final closing or for initiating opening

- E05B 81/21 . . . {-with means preventing or detecting pinching of objects or body parts}
- E05B 81/22 . . . by movement of the striker
- E05B 81/24 . characterised by constructional features of the actuator or the power transmission
- E05B 81/25 . . {-Actuators mounted separately from the lock and controlling the lock functions through mechanical connections}
- E05B 81/26 . . Output elements
- E05B 81/28 . . . Linearly reciprocating elements
- E05B 81/30 . . . Rotary elements
- E05B 81/32 . . Details of the actuator transmission
- E05B 81/34 . . . of geared transmissions
- E05B 81/36 Geared sectors, e.g. fan-shaped gears
- E05B 81/38 Planetary gears
- E05B 81/40 . . . Nuts or nut-like elements moving along a driven threaded axle
- E05B 81/42 . . . Cams
- E05B 81/44 in the form of grooves
- E05B 81/46 . . . Clutches
- E05B 81/48 . . Actuators being driven in a single direction
- E05B 81/50 . . Powered actuators with automatic return to the neutral position by non-powered means, e.g. by springs
- E05B 81/52 . Pneumatic or hydraulic circuits (for locking several wings simultaneously [E05B 77/50](#))
- E05B 81/54 . Electrical circuits (for locking several wings simultaneously [E05B 77/48](#))
- E05B 81/56 . . Control of actuators
- E05B 81/58 . . . including time control, e.g. for controlling run-time of electric motors
- E05B 81/60 . . . using pulse control, e.g. pulse-width modulation
- E05B 81/62 . . . for opening or closing of a circuit depending on electrical parameters, e.g. increase of motor current
- E05B 81/64 . . Monitoring or sensing, e.g. by using switches or sensors
- E05B 81/66 . . . the bolt position, i.e. the latching status
- E05B 81/68 by sensing the position of the detent
- E05B 81/70 . . . the wing position
- E05B 81/72 . . . the lock status, i.e. locked or unlocked condition
- E05B 81/74 by sensing the state of the actuator
- E05B 81/76 . . . Detection of handle operation; Detection of a user approaching a handle; Electrical switching actions performed by door handles
- E05B 81/77 {-comprising sensors detecting the presence of the hand of a user}
- E05B 81/78 as part of a hands-free locking or unlocking operation
- E05B 81/80 . . characterised by the power supply; Emergency power operation
- E05B 81/82 . . . using batteries other than the vehicle main battery
- E05B 81/84 . . . using manually operated generator means
- E05B 81/86 . . . using capacitors
- E05B 81/88 . . . using inductive energy transmission
- E05B 81/90 . . Manual override in case of power failure

E05B 83/00

Vehicle locks specially adapted for particular types of wing or vehicle (locks specially adapted for bicycles [E05B 71/00](#); locking arrangements for non-fixed vehicle roofs [B60J 7/185](#); latching means for sideboards or tailgates of open load compartments [B62D 33/037](#))

- E05B 83/01 · {-Locks for military or armoured vehicles}
- E05B 83/02 · Locks for railway freight-cars, freight containers or the like; Locks for the cargo compartments of commercial lorries, trucks or vans
- E05B 83/04 · · for sliding wings
- E05B 83/06 · · · of railway freight-cars
- E05B 83/08 · · with elongated bars for actuating the fastening means
- E05B 83/10 · · · Rotary bars
- E05B 83/12 · · for back doors of vans ([E05B 83/04](#), [E05B 83/08](#) take precedence)
- E05B 83/14 · · with provisions for sealing
- E05B 83/16 · Locks for luggage compartments, car boot lids or car bonnets
- E05B 83/18 · · for car boot lids or rear luggage compartments
- E05B 83/20 · · · with two or more wings, which together close a single compartment
- E05B 83/22 · · for luggage compartments at the side of the vehicle, e.g. of buses or camper vans
- E05B 83/24 · · for car bonnets
- E05B 83/243 · · · {-Hood clamps, i.e. individually actuated, usually yielding hooks}
- E05B 83/247 · · · {-Simultaneously actuated fasteners at separated positions}
- E05B 83/26 · · Emergency opening means for persons trapped in the luggage compartment
- U E05B 83/36 · Locks for passenger or like doors
- E05B 83/363 · · {-for railway vehicles ([E05B 77/54](#) takes precedence)}
- E05B 83/367 · · {-with centering alignment pin}
- E05B 83/38 · · for pillar-less vehicles, i.e. vehicles where a front and a back door engage each other in the closed position
- E05B 83/40 · · for sliding doors
- E05B 83/42 · · for large commercial vehicles, e.g. trucks, construction vehicles or vehicles for mass transport
- E05B 83/44 · · for recreational vehicles, e.g. caravans or camper vans

E05B 85/00

Details of vehicle locks not provided for in groups [E05B 77/00](#) - [E05B 83/00](#)

- E05B 85/01 · {-Mechanical arrangements specially adapted for hands-free locking or unlocking (handles with means for initiation of a hands-free locking or unlocking process [E05B 81/78](#))}
- E05B 85/02 · Lock casings (mounting of lock casings [E05B 79/04](#))
- E05B 85/04 · Strikers
- E05B 85/045 · · {-for bifurcated bolts}
- E05B 85/06 · Lock cylinder arrangements
- E05B 85/08 · Sill-buttons, garnish buttons or inner door lock knobs
- E05B 85/085 · · {-Manipulators therefor ([E05B 19/20](#) takes precedence)}
- E05B 85/10 · Handles
- E05B 85/103 · · {-creating a completely closed wing surface}
- E05B 85/107 · · {-Pop-out handles, e.g. sliding outwardly before rotation}
- E05B 85/12 · · Inner door handles
- E05B 85/13 · · · {-with a locking knob forming part of the inside door handle unit}

- E05B 85/14
 - E05B 85/16
 - E05B 85/18
 - E05B 85/20
 - E05B 85/22
 - E05B 85/24
 - E05B 85/243
 - E05B 85/245
 - E05B 85/247
 - E05B 85/28
- • Handles pivoted about an axis parallel to the wing
 - • • a longitudinal grip part being pivoted at one end about an axis perpendicular to the longitudinal axis of the grip part
 - • • a longitudinal grip part being pivoted about an axis parallel to the longitudinal axis of the grip part
 - Bolts or detents
 - • Rectilinearly moving bolts
 - • Bolts rotating about an axis
 - • • {with a bifurcated bolt}
 - • • {with a pair of bifurcated bolts}
 - • • {about a vertical axis}
 - • • in which the member engaging the keeper is shaped as a toothed wheel or the like

Project: N/A (E05C)

- U E05C 9/00** **Arrangements of simultaneously actuated bolts or other securing devices at well-separated positions on the same wing ({ Locking, cross or security bars [E05C 19/003](#); locks for safes or the like [E05B 65/0075](#); of the vertical-rod type for panic or emergency doors [E05B 65/1006](#)}; similar constructions for engineering closures [F16J 13/08](#))**
- E05C 9/002
 - E05C 9/004
 - E05C 9/006
 - E05C 9/008
 - U E05C 9/02
 - E05C 9/021
 - E05C 9/023
 - E05C 9/025
 - E05C 9/026
 - E05C 9/028
 - U E05C 9/04
 - E05C 9/041
 - E05C 9/042
 - E05C 9/043
 - E05C 9/045
 - E05C 9/046
 - E05C 9/047
 - E05C 9/048
- {with arrangements allowing the wing to be slam-shut, e.g. by securing elements with latching action ([E05B 63/20](#), [E05B 63/24](#) take precedence)}
 - {Faceplates (for other locks or fasteners [E05B 9/002](#)); Fixing the faceplates to the wing}
 - {Details of bars}
 - {mounted in an elongate casing on the surface of the wing}
 - with one sliding bar for fastening when moved in one direction and unfastening when moved in opposite direction; with two sliding bars moved in the same direction when fastening or unfastening
 - • {with rack and pinion mechanism}
 - • • {between a lock cylinder and the bar}
 - • {with pins engaging slots}
 - • {comprising key-operated locks, e.g. a lock cylinder to drive auxiliary deadbolts or latch bolts ([E05C 9/023](#) takes precedence)}
 - • {externally mounted on the wing, i.e. surface mounted ([E05C 9/008](#) takes precedence)}
 - with two sliding bars moved in opposite directions when fastening or unfastening
 - • {with rack and pinion mechanism}
 - • {with pins engaging slots}
 - • {with crank pins and connecting rods}
 - • {with inclined surfaces, e.g. spiral or helicoidal}
 - • {with two interconnected mechanisms each driving one rod}
 - • {comprising key-operated locks, e.g. a lock cylinder to drive auxiliary deadbolts or latch bolts ([E05C 9/041](#) takes precedence)}
 - • {externally mounted on the wing, i.e. surface mounted ([E05C 9/008](#) takes precedence)}

- U E05C 9/06
 - with three or more sliding bars {(for watertight doors in bulkheads of vessels [B63B 43/24](#), [B63B 43/32](#); for safe doors [E05B 65/0075](#); covers or similar closures for pressure vessels [F16J 13/00](#))}
- U E05C 9/063
 - • {extending along three or more sides of the wing or frame (means for transmitting movements between vertical and horizontal bars [E05F 7/08](#))}
- E05C 9/066
 - • • {-Locks for windows or doors specially adapted for tilt and turn}
- U E05C 9/18
 - Details of fastening means or of fixed retaining means for the ends of bars
- E05C 9/1825
 - • {-Fastening means}
- E05C 9/1833
 - • • {-performing sliding movements}
- E05C 9/1841
 - • • • {-perpendicular to actuating bar}
- E05C 9/185
 - • • • {-parallel with actuating bar}
- E05C 9/1875
 - • • {-performing pivoting movements ([E05C 9/08](#) takes precedence)}
- E05C 9/1883
 - • • • {-pivotally mounted on the actuation bar}
- E05C 9/1891
 - • • • {-pivoting around an axis parallel to the bar}
- U E05C 17/00

Devices for holding wings open; Devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing; Braking devices, stops or buffers, combined therewith (combined with hinges [E05D 11/00](#); combined with operating apparatus for wings [E05F](#); other braking devices, stops, buffers [E05F 5/00](#))
- E05C 17/003
 - {-Power-actuated devices for limiting the opening of vehicle doors}
- E05C 17/006
 - • {-with means for detecting obstacles outside the doors}
- U E05C 17/02
 - by mechanical means ([E05C 17/60](#) takes precedence)
- E05C 17/04
 - • {-Hinges for the movable bar ([E05C 17/163](#), [E05C 17/26](#), [E05C 17/345](#) take precedence; hinges in general [F16C 11/04](#), [E05D](#))}
- E05C 17/045
 - • • {-Hinges for the movable bar ([E05C 17/163](#), [E05C 17/26](#), [E05C 17/345](#) take precedence; hinges in general [F16C 11/04](#), [E05D](#))}
- U E05C 17/12
 - • • consisting of a single rod
- U E05C 17/20
 - • • • sliding through a guide ([E05C 17/18](#) takes precedence)
- U E05C 17/203
 - • • • • {-concealed, e.g. for vehicles}
- E05C 17/206
 - • • • • • {-with elastomeric springs to hold wing open}
- U E05C 17/46
 - • in which the wing or a member fixed thereon is engaged by a movable fastening member in a fixed position; in which a movable fastening member mounted on the wing engages a stationary member
- U E05C 17/50
 - • • comprising a single pivoted securing member
- E05C 17/505
 - • • • {-acting directly on the knob or handle}
- U E05C 19/00

Other devices specially designed for securing wings, {e.g. with suction cups}{movable draft sealings additionally used for bolting [E06B 7/18](#)}
- E05C 19/001
 - {-with bolts extending over a considerable extent, e.g. nearly along the whole length of at least one side of the wing (movable sealing strips [E06B 7/18](#)-)}
- E05C 19/006
 - {-by displacement of the wing substantially in its own plane ([E05F 7/02](#) takes precedence)}
- U E05C 19/06
 - in which the securing part is formed or carried by a spring and moves only by distortion of the spring, e.g. snaps
- U E05C 19/063
 - • {Released by pull or pressure on the wing ([E05C 19/022](#) takes precedence)}
- E05C 19/066
 - • • {-made of plastics, e.g. hook-and-loop type fastener }
- U E05C 19/10
 - Hook fastenings; Fastenings in which a link engages a fixed hook-like member
- E05C 19/105
 - • {-Butterfly latches}

- U E05C 21/00** Arrangements or combinations of wing fastening, securing, or holding devices, not covered by a single preceding main group; {Locking kits}
- E05C 21/005 · {-Provisional arrangements between door and frame for holding vehicle doors closed or partially open during manufacturing or maintenance}

Project: N/A (E05D)**E05D**

HINGES OR OTHER SUSPENSION DEVICES FOR DOORS, WINDOWS OR WINGS ({ foldable tables [A47B 3/00](#) ; hinged panels [A47B 5/00](#) ; foldable chairs [A47C 4/00](#) ; making hinges [B21D 53/40](#) , [B21K 13/02](#) ; making holes for taking-up fittings [B27F 5/12](#) ; for vehicle tailboards [B60P 1/26](#) ; for refuse receptacles [B65F 1/1646](#) } ; pivotal connections in general [F16C 11/00](#) ; mounting of stove or range doors [F24C 15/023](#) ; for folding flat displays of portable computers [G06F 1/1616](#)])

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups: [E05D 5/16](#) covered by [E05D 5/14](#)

[E05D 7/081](#) covered by [E05D 7/08](#)

[E05D 7/083](#) covered by [E05D 7/082](#)

[E05D 15/04](#) covered by [E05D 15/02](#) , [E05D 15/28](#) , [E05D 15/403](#)

[E05D 15/522](#) covered by [E05D 15/52](#)

[E05D 15/523](#) covered by [E05D 15/52](#)

[E05D 15/524](#) covered by [E05D 15/52](#)

- E05D 3/00** **Hinges with pins**{(-[E05D 7/08](#) takes precedence-)}
- E05D 3/06 · with two or more pins (-[E05D 7/08](#) takes precedence-)
- U E05D 3/14** · · with four parallel pins and two arms
- E05D 3/142 · · · {with at least one of the hinge parts having a cup-shaped fixing part, e.g. for attachment to cabinets or furniture (-[E05D 11/1021](#) takes precedence-)}
- U E05D 5/00** **Construction of single parts, e.g. the parts for attachment**
- U E05D 5/02** · Parts for attachment, e.g. flaps
- E05D 5/0207 · · {for attachment to vehicles (-[E05D 5/043](#) , [E05D 5/062](#) take precedence-)}
- E05D 5/0276 · · {for attachment to cabinets or furniture, the hinge having two or more pins (-[E05D 5/046](#) , [E05D 5/065](#) , [E05D 7/125](#) take precedence-)}
- E05D 5/10 · Pins, sockets or sleeves; Removable pins (-[E05D 15/522](#) takes precedence-)
- U E05D 5/12** · · Securing pins in sockets, movably or not
- E05D 5/125 · · · {Non-removable, snap-fitted pins (-removable snap-fitted pins [E05D 7/1022](#) , [E05D 7/1055](#)-)}
- E05D 5/127 · · · {by forcing the pin into the socket (-[E05D 5/125](#) takes precedence-)}
- E05D 7/00** **Hinges or pivots of special construction** (-used for special suspension arrangements [E05D 15/00](#) ; so as to be self-closing [E05F 1/06](#) , [E05F 1/12](#) ; with means for raising wings before being turned [E05F 7/02](#)-)
- E05D 7/0009 · {Adjustable hinges (-[E05D 7/04](#) takes precedence-)}
- U E05D 7/04** · Hinges adjustable relative to the wing or the frame
- U E05D 7/0415** · · {with adjusting drive means}
- E05D 7/0423 · · · {Screw-and-nut mechanisms (-[E05D 7/0407](#) , [E05D 7/043](#) take precedence-)}
- E05D 7/08 · for use in suspensions comprising two spigots placed at opposite edges of the wing, especially at the top and the bottom, e.g. trunnions{(-[E05D 15/266](#) takes precedence-)}

- U E05D 7/082
 - • the pivot axis of the wing being situated at a considerable distance from the edges of the wing, {e.g. for balanced wings}
- E05D 7/086
 - • • Braking devices structurally combined with hinges {braking devices for windows per se [E05F 5/00](#)}
- E05D 7/10
 - to allow easy separation {or connection} of the parts at the hinge axis {({[E05D 5/12](#) and [E05D 15/50](#) take precedence) }; substitutes for hinges [E05D 1/06](#)}
- U E05D 7/1005
 - • {by axially moving free pins, balls or sockets}
- E05D 7/1011
 - • • {biased by free springs {[E05D 7/1016](#) takes precedence}}
- E05D 7/1044
 - • {in an axial direction {[E05D 7/1005](#) takes precedence}}
- E05D 7/1061
 - • {in a radial direction {[E05D 7/1005](#) takes precedence}}
- E05D 7/12
 - to allow easy detachment of the hinge from the wing or the frame {([E05D 15/507](#) takes precedence)}
- U E05D 9/00**

Flaps or sleeves specially designed for making from particular material, e.g. hoop-iron, sheet metal, plastics
- E05D 9/005
 - {from plastics {[E05D 1/02](#) takes precedence}}
- E05D 11/00**

Additional features or accessories of hinges {edge protecting devices [E06B 3/88](#)}
- E05D 11/0009
 - {Templates for marking the position of fittings on wings or frames {implements for making doors, windows or frames [E04F 21/003](#)}
- E05D 11/04
 - relating to the use of free balls as bearing-surfaces {[E05D 7/06](#) takes precedence}
- E05D 11/08
 - Friction devices between relatively-movable hinge parts {[E05D 7/086](#) takes precedence}
- U E05D 11/10
 - Devices for preventing movement between relatively-movable hinge parts
- U E05D 11/1028
 - • {for maintaining the hinge in two or more positions, e.g. intermediate or fully open}
- U E05D 11/105
 - • • {the maintaining means acting perpendicularly to the pivot axis}
- E05D 11/1057
 - • • • {specially adapted for vehicles {[E05D 11/1064](#) takes precedence}}
- E05D 13/00**

Accessories for sliding or lifting wings, e.g. pulleys, safety catches {closers or openers for horizontally sliding wings [E05F 1/02](#), [E05F 1/08](#) }; counterbalance devices {for swinging wings} [E05F 1/00](#), [E05F 3/00](#)}
- E05D 13/003
 - {Anti-dropping devices {[E05D 13/1223](#), [E05D 13/1246](#), [E05D 13/1269](#), [E05D 13/1292](#) take precedence}}
- E05D 13/04
 - Fasteners specially adapted for holding sliding wings open {for holding wings closed [E05C](#)}
- E05D 13/06
 - • with notches {for vertically sliding wings}
- E05D 13/08
 - • acting by friction {for vertically sliding wings}
- U E05D 13/10
 - Counterbalance devices
- U E05D 13/12
 - • with springs
- U E05D 13/1207
 - • • {with tension springs}
- E05D 13/1215
 - • • • {specially adapted for overhead wings {[E05D 13/1223](#) takes precedence}}
- U E05D 13/123
 - • • {with compression springs}
- E05D 13/1238
 - • • • {specially adapted for overhead wings {[E05D 13/1246](#) takes precedence}}
- U E05D 13/1253
 - • • {with canted-coil torsion springs}

- E05D 13/1261 . . . {specially adapted for overhead wings (~~E05D 13/1269~~ takes precedence-)}
- E05D 13/1276 . . . {with coiled ribbon springs, e.g. constant force springs (~~E05D 13/1253~~ takes precedence-)}
- E05D 13/1284 . . . {specially adapted for overhead wings (~~E05D 13/1292~~ takes precedence-)}
- E05D 15/00** **Suspension arrangements for wings (-arrangements of wings not characterised by the construction of the supporting means [E06B 3/32](#))**
- U E05D 15/06 . for wings sliding horizontally more or less in their own plane
- E05D 15/0604 . . {allowing an additional movement (~~E05D 15/10~~ takes precedence; raising wings before sliding [E05D 15/565](#)-)}
- E05D 15/0621 . . {Details, e.g. suspension or supporting guides (~~E05D 15/0604~~ , [E05D 15/08](#) to [E05D 15/14](#) take precedence-)}
- U E05D 15/0626 . . . {for wings suspended at the top}
- E05D 15/0652 . . . {Tracks (~~E05D 15/063~~ to [E05D 15/0647](#) and [E05D 15/0656](#) take precedence-)}
- U E05D 15/066 . . . {for wings supported at the bottom}
- E05D 15/0686 . . . {Tracks (~~E05D 15/0665~~ to [E05D 15/0682](#) and [E05D 15/0691](#) take precedence-)}
- U E05D 15/10 . . movable out of one plane into a second parallel plane
- E05D 15/1002 . . . {specially adapted for use in railway-cars or mass transit vehicles (~~E05D 15/1007~~ , [E05D 15/1023](#) , [E05D 15/1044](#) , [E05D 15/1068](#) take precedence-)}
- U E05D 15/1005 . . . {the wing being supported on arms movable in horizontal planes}
- E05D 15/101 . . . {specially adapted for vehicles (~~E05D 15/1007~~ takes precedence-)}
- E05D 15/1042 . . . {with transversely moving carriage (~~E05D 15/1065~~ takes precedence-)}
- E05D 15/1047 . . . {specially adapted for vehicles (~~E05D 15/1044~~ takes precedence-)}
- U E05D 15/1065 . . . {with transversely moving track}
- E05D 15/1081 . . . {specially adapted for vehicles (~~E05D 15/1068~~ takes precedence-)}
- U E05D 15/16 . for wings sliding vertically more or less in their own plane
- E05D 15/165 . . {Details, e.g. sliding or rolling guides (~~E05D 15/18~~ to [E05D 15/24](#) take precedence-)}
- E05D 15/22 . . allowing an additional movement(~~E05D 15/20~~ takes precedence-)}
- U E05D 15/40 . supported on arms movable in vertical planes
- E05D 15/401 . . {specially adapted for overhead wings (~~E05D 15/403~~ to [E05D 15/46](#) take precedence-)}
- E05D 15/406 . . {with pivoted arms and sliding guides (~~E05D 15/42~~ , [E05D 15/44](#) take precedence-)}
- E05D 15/48 . allowing alternative movements ({ [E05D 15/0604](#) takes precedence } ; for vertically-sliding wings [E05D 15/22](#)-)
- E05D 15/50 . . for opening at either of two opposite edges({-hinges or pivots of special construction to allow easy separation or connection of the parts at the hinge axis [E05D 7/10](#) ; to allow easy detachment of the hinge from the wing or the frame [E05D 7/12](#)-)}
- U E05D 15/52 . . for opening about a vertical as well as a horizontal axis
- E05D 15/526 . . . Safety devices({~~E05D 15/5217~~ takes precedence-)}
- E05D 15/56 . with successive different movements({-raising wings before being turned [E05F 7/02](#)-)}

- U E05D 15/58 · · with both swinging and sliding movements
- E05D 15/581 · · · {the swinging axis laying in the sliding direction (~~E05D 15/1015~~ takes precedence)}
- E05D 15/582 · · · {with horizontal swinging axis (~~E05D 15/581~~ takes precedence)}

Project: RP0118 (E05F)

- U **E05F 1/00** **Closers or openers for wings, not otherwise provided for in this subclass**
- E05F 1/002 · {controlled by automatically acting means (for powered-operated mechanisms ~~E05F 15/20~~ ~~E05F 15/70~~)}

Project: N/A (E05F)

- U E05F 1/02 · gravity-actuated, {e.g. by use of counterweights}
- U E05F 1/04 · · for wings which lift during movement, {operated by their own weight}
- E05F 1/046 · · · {-with rectilinearly-inclined tracks for sliding wings}
- E05F 1/08 · spring-actuated, {e.g. for horizontally sliding wings-(counterbalancing sliding or lifting wings [E05D](#); springs per se [F16F](#), e.g. gas-springs [F16F 9/00](#))}
- E05F 1/10 · · for swinging wings, {e.g. counterbalance-(spring-assisted actuation of lids or covers of refuse receptacles [B65F 1/1623](#))}
- U E05F 1/1008 · · · {with a coil spring parallel with the pivot axis ([E05F 1/1207](#) takes precedence)}
- E05F 1/1025 · · · · {-with a compression or traction spring}
- U **E05F 3/00** **Closers or openers with braking devices, e.g. checks; Construction of pneumatic or liquid braking devices (construction of non-pneumatic or non-liquid braking devices [E05F 5/00](#); friction devices in hinges [E05D 11/08](#))**
- U E05F 3/22 · Additional arrangements for closers, e.g. for holding the wing in opened or other position
- U E05F 3/221 · · {Mechanical power-locks, e.g. for holding the wing open or for free-moving zones}
- E05F 3/222 · · · {-electrically operated ([E05F 3/223](#) takes precedence)}
- E05F 3/223 · · {-Hydraulic power-locks, e.g. with electrically operated hydraulic valves}
- E05F 3/225 · · {-mounted at the bottom of wings, e.g. details related to seals, covers, connections to the wings, embedding in the floor}
- E05F 3/226 · · · {-with means to adjust the closed position of the wing}
- E05F 3/227 · · {-mounted at the top of wings, e.g. details related to closer housings, covers, end caps or rails therefor}
- U **E05F 5/00** **Braking devices, e.g. checks; Stops; Buffers; {Dovetails with buffering action}; (construction of pneumatic or liquid braking devices [E05F 3/00](#); combined with devices for holding wings open [E05C 17/00](#); devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing [E05C 17/04](#))**
- E05F 5/006 · {-for hinges having a cup-shaped fixing part, e.g. for attachment to cabinets or furniture}
- E05F 15/00 **Power-operated mechanisms for wings {(for hatch covers ~~B63B 19/14~~; for elevator doors ~~B66B 13/00~~; motor-operated devices for completing closing or initiating opening of a wing ~~E05B 17/0029~~; limit switches ~~H01H 3/16~~ motor-operated accessories in locks for completing closing or initiating opening of a wing ~~E05B 17/00~~)}**

- D E05F 15/0004 · {Safety devices, e.g. safety couplings, detection of obstructions or end position (E05F 15/20 takes precedence); anti-dropping devices E05D 13/003; by current overload H02H 7/0851}
- D E05F 15/0008 · · {specially adapted for vehicle windows or roofs (E05F 15/0013 to E05F 15/0095 take precedence)}
- D E05F 15/0013 · · {specially adapted for mass transit vehicles (E05F 15/0017 to E05F 15/0095 take precedence)}
- D E05F 15/0017 · · {Detection by means of monitoring transmitted force or torque (E05F 15/0082, E05F 15/0095 take precedence); Safety, e.g. slip, couplings}
- D E05F 15/0021 · · {Detection using safety edges}
- D E05F 15/0026 · · · {by disruption of energy beams, e.g. light, sound}
- D E05F 15/003 · · · · {specially adapted for vehicle windows or roofs}
- D E05F 2015/0034 · · · · {with acoustical sensors }
- D E05F 2015/0039 · · · · {using reflection from the obstruction }
- D E05F 2015/0043 · · · · {with optical sensors }
- D E05F 2015/0047 · · · · · {by interruption of the beam }
- D E05F 2015/0052 · · · · · {the beam being parallel to the wing edge }
- D E05F 2015/0056 · · · · · {the beam being perpendicular to the wing edge }
- D E05F 15/006 · · · {by change in electrical conductivity}
- D E05F 15/0065 · · · · {specially adapted for vehicle windows or roofs}
- D E05F 2015/0069 · · · · {using switches in serial arrangement }
- D E05F 15/0073 · · · {by change in electrical capacity}
- D E05F 15/0078 · · · {by change in fluid pressure}
- D E05F 15/0082 · · · {by transmission of mechanical forces, e.g. rigid, movable members}
- D E05F 2015/0086 · · · {for detection during opening }
- D E05F 2015/0091 · · · {Fault detection of safety edges }
- D E05F 15/0095 · · {specially adapted for pressure medium-operated mechanisms for wings, e.g. detection by means of monitoring transmitted fluid pressure (E05FB15/00B6H takes precedence)}
- D E05F 15/02 · with pressure medium
- D E05F 15/025 · · {for folding wings}
- D E05F 15/04 · · for swinging wings
- D E05F 15/042 · · · {specially adapted for use in vehicles}
- D E05F 15/045 · · · · {for railway-cars or mass transit vehicles}
- D E05F 15/047 · · · {operated by linear motors acting on a helical track coaxial with the suringing axis}
- D E05F 15/06 · · for horizontally-sliding wings
- D E05F 15/065 · · · {for railway-cars}
- D E05F 15/08 · · for vertically-sliding wings
- D E05F 15/083 · · · {for overhead wings}
- D E05F 15/086 · · · {for vehicle windows}
- D E05F 15/10 · with rotary electromotors {(detection of end position by striking, safety couplings E05F 15/0017)}
- D E05F 15/103 · · {for folding wings}
- D E05F 15/106 · · {for revolving wings}
- D E05F 15/12 · · for swinging wings

- D E05F 15/121 . . . {operated by meshing gear wheels, one of which being mounted at the wing pivot axis; the motor acting directly on the wing pivot axis}
- D E05F 15/122 . . . {operated by push-pull mechanisms}
- D E05F 15/123 . . . {by flexible or rigid rack-and-pinion arrangements}
- D E05F 15/124 . . . {by screw-nut mechanisms}
- D E05F 15/125 . . . {by friction wheels}
- D E05F 15/126 . . . {operated by flexible elongated pulling elements, e.g. belts, chains}
- D E05F 15/127 . . . {operated by swinging arms}
- D E05F 2015/128 . . . {the end of the arm sliding in a track; Slider arms therefor}
- D E05F 15/14 . . . for horizontally-sliding wings
- D E05F 15/141 . . . {for railway cars}
- D E05F 15/142 . . . {operated by push-pull mechanisms, e.g. friction wheels, flexible or rigid rack-and-pinion arrangements (E05F 15/141, E05F 15/147, E05F 15/148 take precedence)}
- D E05F 15/143 . . . {allowing or involving an additional movement of the wing}
- D E05F 15/145 . . . {operated by flexible elongated pulling elements, e.g. belts, chains (E05F 15/141 takes precedence)}
- D E05F 15/146 . . . {allowing or involving an additional movement}
- D E05F 15/147 . . . {operated by swinging arms (E05F 15/141 takes precedence)}
- D E05F 15/148 . . . {operated by screw mechanisms (E05F 15/141 takes precedence)}
- D E05F 15/16 . . . for vertically-sliding wings
- D E05F 15/1607 . . . {for overhead wings}
- D E05F 15/1615 . . . {operated by flexible or rigid rack-and-pinion arrangements}
- D E05F 15/1623 . . . {operated by screw mechanisms}
- D E05F 15/163 . . . {operated by friction wheels}
- D E05F 15/1638 . . . {operated by swinging lever arms}
- D E05F 15/1646 . . . {operated by flexible elongated pulling elements, e.g. belts (E05F 15/1615 takes precedence)}
- D E05F 15/1653 . . . {by chains}
- D E05F 15/1661 . . . {by cables or ropes}
- D E05F 15/1669 . . . {for vehicle windows}
- D E05F 15/1676 . . . {enabling manual drive, e.g. in case of power failure}
- D E05F 15/1684 . . . {Control circuits therefor}
- D E05F 15/1692 . . . {Specially adapted motor units, e.g. geared motors}
- D E05F 15/18 . . . with other electrical means, e.g. solenoids {or linear motors}
- D E05F 15/20 . . . controlled by automatically-acting means, e.g. by photocells, by electric waves, by thermostats, by rain, by fire, {by remote or time control}
- D E05F 15/2007 . . . {by thermostats, rain, wind or noise (E05F 15/2015 takes precedence)}
- D E05F 15/2015 . . . {by emergency conditions, e.g. fire (operating or controlling mechanisms for physical fire-barriers A62C 2/24; locks actuating in response to heat E05B 65/104)}
- D E05F 15/2023 . . . {by detection of movement or presence of persons or objects}
- D E05F 15/203 . . . {with photocells}
- D E05F 15/2038 . . . {by the weight or other physical contact of a person or object}
- D E05F 15/2046 . . . {reacting to a device carried by a person or object, e.g. a magnet or reflector (E05F 15/2076 takes precedence)}

- D E05F 2015/2053 . . . {with acoustical sensors }
- D E05F 2015/2061 . . . {with optical sensors (photocells E05F 15/203)}
- D E05F 2015/2069 . . . {using camera's }
- D E05F 15/2076 . . {by remote wireless control}
- D E05F 15/2084 . . . {with light beams}
- D E05F 15/2092 . . {by time control}
- N E05F 15/40 . Safety devices, e.g. detection of obstructions or end positions
- N E05F 15/41 . . Detection by monitoring transmitted force or torque ([E05F 15/48](#) takes precedence); Safety couplings with activation dependent upon torque or force, e.g. slip couplings
- N E05F 15/42 . . Detection using safety edges
- N E05F 15/43 . . . responsive to disruption of energy beams, e.g. light or sound
- N E05F 15/431 {specially adapted for vehicle windows or roofs}
- N E05F 2015/432 {with acoustical sensors }
- N E05F 2015/433 {using reflection from the obstruction }
- N E05F 2015/434 {with optical sensors }
- N E05F 2015/435 {by interruption of the beam }
- N E05F 2015/436 {the beam being parallel to the wing edge }
- N E05F 2015/437 {the beam being perpendicular to the wing edge }
- N E05F 15/44 . . . responsive to changes in electrical conductivity
- N E05F 15/443 {specially adapted for vehicle windows or roofs}
- N E05F 2015/447 {using switches in serial arrangement }
- N E05F 15/46 . . . responsive to changes in electrical capacitance
- N E05F 15/47 . . . responsive to changes in fluid pressure
- N E05F 15/48 . . . by transmission of mechanical forces, e.g. rigid or movable members
- N E05F 2015/483 . . . {for detection during opening }
- N E05F 2015/487 . . . {Fault detection of safety edges }
- N E05F 15/49 . . specially adapted for mechanisms operated by fluid pressure, e.g. detection by monitoring transmitted fluid pressure ([E05F 15/47](#) takes precedence)
- N E05F 15/50 . using fluid-pressure actuators
- N E05F 15/51 . . for folding wings
- N E05F 15/53 . . for swinging wings
- N E05F 15/54 . . . operated by linear actuators acting on a helical track coaxial with the swinging axis
- N E05F 15/56 . . for horizontally-sliding wings
- N E05F 15/565 . . . {for railway-cars}
- N E05F 15/57 . . for vertically-sliding wings
- N E05F 15/59 . . . for overhead wings
- N E05F 15/60 . using electrical actuators
- N E05F 15/603 . . using rotary electromotors
- N E05F 15/605 . . . for folding wings
- N E05F 15/608 . . . for revolving wings
- N E05F 15/611 . . . for swinging wings
- N E05F 15/614 operated by meshing gear wheels, one of which being mounted at the wing pivot axis; operated by a motor acting directly on the wing pivot axis

- N E05F 15/616 operated by push-pull mechanisms
- N E05F 15/619 using flexible or rigid rack-and-pinion arrangements
- N E05F 15/622 using screw-and-nut mechanisms
- N E05F 15/624 using friction wheels
- N E05F 15/627 operated by flexible elongated pulling elements, e.g. belts, chains or cables (using flexible elongated push-pull mechanisms [E05F 15/619](#))
- N E05F 15/63 operated by swinging arms
- N E05F 2015/631 {the end of the arm sliding in a track; Slider arms therefor }
- N E05F 15/632 for horizontally-sliding wings
- WARNING
Group [E05F 15/632](#) is incomplete pending reclassification of documents from group [E05F 15/652](#).
Groups [E05F 15/652](#) and [E05F 15/632](#) should be considered in order to perform a complete search.
- N E05F 15/635 operated by push-pull mechanisms, e.g. flexible or rigid rack-and-pinion arrangements ([E05F 15/652](#) takes precedence)
- N E05F 15/638 allowing or involving a secondary movement of the wing, e.g. rotational or transversal
- N E05F 15/641 operated by friction wheels
- WARNING
Group [E05F 15/641](#) is incomplete pending reclassification of documents from group [E05F 15/635](#).
Groups [E05F 15/635](#) and [E05F 15/641](#) should be considered in order to perform a complete search.
- N E05F 15/643 operated by flexible elongated pulling elements, e.g. belts, chains or cables (by flexible elongated push-pull mechanisms [E05F 15/635](#))
- N E05F 15/646 allowing or involving a secondary movement of the wing, e.g. rotational or transversal
- N E05F 15/649 operated by swinging arms
- N E05F 15/652 operated by screw-and-nut mechanisms
- N E05F 15/655 specially adapted for vehicle wings
- WARNING
Groups [E05F 15/655](#) - [E05F 15/662](#) are incomplete pending reclassification of documents from group [E05F 15/632](#).
Group [E05F 15/632](#) and the appropriate group in [E05F 15/655](#) - [E05F 15/662](#) should be considered in order to perform a complete search.
- N E05F 15/657 enabling manual drive, e.g. in case of power failure
- N E05F 15/659 Control circuits therefor
- N E05F 15/662 Motor units therefor, e.g. geared motors
- N E05F 15/665 for vertically-sliding wings
- N E05F 15/668 for overhead wings
- WARNING
Group [E05F 15/668](#) is incomplete pending reclassification of documents from group [E05F 15/673](#).
Groups [E05F 15/673](#) and [E05F 15/668](#) should be considered in order to perform a complete search.
- N E05F 15/67 operated by flexible or rigid rack-and-pinion arrangements

- N E05F 15/673 operated by screw-and-nut mechanisms
- N E05F 15/676 operated by friction wheels
- N E05F 15/678 operated by swinging lever arms
- N E05F 15/681 operated by flexible elongated pulling elements, e.g. belts
- N E05F 15/684 by chains
- N E05F 15/686 by cables or ropes
- N E05F 15/689 specially adapted for vehicle windows
- N E05F 15/692 enabling manual drive, e.g. in case of power failure
- N E05F 15/695 Control circuits therefor
- N E05F 15/697 Motor units therefor, e.g. geared motors
- N E05F 15/70 with automatic actuation
- N E05F 15/71 responsive to temperature changes, rain, wind or noise
- N E05F 15/72 responsive to emergency conditions, e.g. fire
- N E05F 15/73 responsive to movement or presence of persons or objects
- N E05F 15/74 using photoelectric cells
- N E05F 15/75 responsive to the weight or other physical contact of a person or object
- N E05F 15/76 responsive to devices carried by persons or objects, e.g. magnets or reflectors ([E05F 15/77](#) takes precedence)
- N E05F 2015/763 {using acoustical sensors }
- N E05F 2015/765 {using optical sensors (using photoelectric cells [E05F 15/74](#))}
- N E05F 2015/767 {using cameras }
- N E05F 15/77 using wireless control
- N E05F 15/78 using light beams
- N E05F 15/79 using time control

Project: N/A (E05Y)

- U E05Y 2400/00** **Electronic control; Power supply; Power or signal transmission; User interfaces**
- U E05Y 2400/10 Electronic control
- U E05Y 2400/20 of brakes, disengaging means, holders or stops
- E05Y 2400/202 Force or torque control (mechanical aspects [E05Y 2201/25-](#))
- U E05Y 2600/00** **Mounting or coupling arrangements for elements provided for in this subclass**
- U E05Y 2600/50 Mounting methods; Positioning
- E05Y 2600/54 Welding (-in general [B23K](#), [B29C 65/02](#))

Project: N/A (E06B)**E06B**

FIXED OR MOVABLE CLOSURES FOR OPENINGS IN BUILDINGS, VEHICLES, FENCES OR LIKE ENCLOSURES IN GENERAL, e.g. DOORS, WINDOWS, BLINDS, GATES (-shades or blinds for greenhouses [A01G 9/22](#) ; curtains [A47H](#); lids for car boots or bonnets [B62D 25/10](#) ; skylights [E04B 7/18](#) ; sunshades, awnings [E04F 10/00-](#))

NOTES

This subclass does not cover combinations of wings or frames with operating, mounting, latching or locking means of the type found in class [E05](#), which are

covered by the relevant subclasses of class [E05](#), except such as are covered by groups [E06B 7/086](#) , [E06B 9/00](#) , or [E06B 11/02](#) of this subclass.

In this subclass, the following terms or expressions are used with the meanings indicated:

- "wing" means a swingable, slidable or otherwise movable member such as a door or window, for closing an opening;
- "wing frame" means the peripheral edge or edges which define the outer border of the wing.

For vehicle door or window arrangements, attention is drawn to Note (1) following the title of subclass [B60J](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[E06B 11/06](#) covered by [E05B 65/0007](#)

- E06B 1/00** **Border constructions of openings in walls, floors, or ceilings; Frames to be rigidly mounted in such openings (-E06B 5/00 takes precedence; features relating also to inner frames or wing frames, features relating solely to the mounting of inner frames E06B 3/00 ; corner joints or edge joints E06B 3/96-)**
- E06B 1/003 • {Cavity wall closers; Fastening door or window frames in cavity walls (-lintels [E04C 3/02-](#))}
- E06B 1/02 • Base frames, i.e. template frames for openings in walls or the like, provided with means for securing a further rigidly-mounted frame; Special adaptations of frames to be fixed therein((-[E06B 1/003](#) , [E06B 1/24](#) take precedence; fastening door or window frames per se [E06B 1/56-](#))}
- E06B 1/04 • Frames for doors, windows, or the like to be fixed in openings ({ of curvilinear outline [E06B 1/006](#) ; } special adaptations for fixing in base frames [E06B 1/02](#) ; features relating solely to the mounting of glass panes or other sheets [E06B 3/00-](#))
- E06B 1/045 • • {with separate wing abutment strips, e.g. ajustable; Door stops (-sealing arrangements [E06B 7/16-](#))}
- U E06B 1/12 • • Metal frames
- E06B 1/14 • • • of special cross-section (-[E06B 1/18](#) , [E06B 1/22](#) take precedence-){not used}
- U E06B 1/26 • • Frames of plastics
- E06B 1/28 • • • Hollow frames (-[E06B 1/30](#) takes precedence-)
- U E06B 1/36 • • Frames uniquely adapted for windows
- E06B 1/40 • • • Frames with parts removable to admit the glass (-[E06B 1/38](#) takes precedence-)
- U E06B 1/52 • • Frames specially adapted for doors
- E06B 1/526 • • • {for door wings that can be set up to open either left or right, outwards or inwards, e.g. provided with grooves for easily detachable hinges or latch plates (-locks therefor [E05B 63/04](#) ; hinges therefor [E05D 7/02-](#))}
- E06B 1/56 • Fastening frames to the border of openings {or to similar contiguous frames (-[E06B 1/003](#) takes precedence-)}
- U E06B 1/60 • • by mechanical means, e.g. anchoring means
- E06B 1/6007 • • • {between similar contiguous frames (-bay windows [E06B 1/363-](#))}
- E06B 1/6015 • • • {Anchoring means (-[E06B 1/6007](#) , [E06B 1/6046](#) to [E06B 1/6092](#) take precedence-)}

- E06B 1/6023
 - • • {completely hidden between the frame and the border of the opening, at least part of the means being previously fixed to the wall (-E06B 1/6038 takes precedence-)}
- E06B 1/6046
 - • • {Clamping means acting perpendicular to the wall opening; Fastening frames by tightening or drawing them against a surface parallel to the opening (-E06B 1/6007 takes precedence-)}
- E06B 1/6069
 - • • {Separate spacer means acting exclusively in the plane of the opening; Shims; Wedges; Tightening of a complete frame inside a wall opening (-E06B 1/6084 takes precedence-)}
- E06B 1/6084
 - • • {Mounting frames elastically, e.g. with springs or other elastic material, between the wall and the frame (-E06B 1/6046 takes precedence-)}
- E06B 1/6092
 - • • {Fastening door frames to the floor or ceiling; Jamb feet; Cross members uniting the jamb feet (-E06B 1/70 and E06B 3/9632 take precedence-)}
- E06B 1/62
 - Tightening or covering joints between the border of openings and the frame (or between contiguous frames) (-E06B 1/34 takes precedence-)
- E06B 3/00**

Window sashes, door leaves, or like elements for closing {wall or like} openings; Layout of fixed or moving closures, e.g. windows {in wall or like openings}; Features of rigidly-mounted outer frames relating to the mounting of wing frames (-E06B 5/00 takes precedence; shutters or the like E06B 9/00 ; glass panes C03-)
- E06B 3/01
 - Removable or disappearing walls for hangars or other halls, e.g. for aircraft (-wall constructions E04B 2/00-)
- E06B 3/02
 - Wings made completely of glass ((-E06B 3/4681 takes precedence-))
- E06B 3/025
 - • {consisting of multiple glazing units (-units per se E06B 3/66-)}
- E06B 3/04
 - Wing frames not characterised by the manner of movement (-features relating to the manner of movement E06B 3/32-)
- U E06B 3/06
 - • Single frames
- E06B 3/08
 - • • Constructions depending on the use of specified materials (-E06B 3/24 takes precedence-)
- U E06B 3/12
 - • • • of metal
- E06B 3/14
 - • • • • of special cross-section { not used, see subgroup and E06B 3/12-}
- E06B 3/16
 - • • • • Hollow frames {of special construction, e.g. made of folded sheet metal or of two or more section parts connected together}
- U E06B 3/20
 - • • • of plastics
- E06B 3/22
 - • • • • Hollow frames ((-E06B 3/205 takes precedence-))
- E06B 3/24
 - • • specially adapted for double glazing (-separable parts for securing panes E06B 3/64-)
- E06B 3/26
 - • Compound frames, i.e. one frame within or behind another (-E06B 3/28 takes precedence; arrangements of movable frames E06B 3/32-)
- U E06B 3/263
 - • Frames with special provision for insulation
- E06B 3/26301
 - • • {with prefabricated insulating strips between two metal section members (-with two metal frame members having interpenetrating or overlapping parts when mounted E06B 3/26336 ; combined with insulating elements formed in situ E06B 3/2675-)}
- E06B 3/26305
 - • • • {Connection details (-deformation of portions of the metal frame members E06B 3/273 ; expansion of the extremities of the insulating elements E06B 3/277-)}
- E06B 3/26336
 - • • {with two metal frame members having interpenetrating or overlapping parts when mounted (-involving sheet metal section members E06B 3/2735-)}

- E06B 3/273
 - • • with prefabricated insulating elements held in position by deformation of portions of the {metal}frame members
- E06B 3/277
 - • • with prefabricated insulating elements held in position by expansion of the {extremities of the}insulating elements
- E06B 3/30
 - Coverings, e.g. protecting against weather, for decorative purposes{(-for door leaves [E06B 3/7001](#)-)}
- E06B 3/32
 - Arrangements of wings characterised by the manner of movement; Arrangements of movable wings in openings; Features of wings or frames relating solely to the manner of movement of the wing{ fittings or supporting means, separable from the frame, for guiding or controlling the movement of wings, arrangements of wings characterised by particular forms of such means [E05D](#)-}
- E06B 3/34
 - • with only one kind of movement (-[E06B 3/48](#) takes precedence-)
- E06B 3/36
 - • • with a single vertical axis of rotation at one side of the opening, or swinging through the opening (-wings requiring lifting before opening [E06B 3/52](#)-)
- E06B 3/38
 - • • with a horizontal axis of rotation at the top or bottom of the opening{(-[E06B 3/5036](#) takes precedence-)}
- E06B 3/42
 - • • Sliding wings; Details of frames with respect to guiding{(-[E06B 3/26347](#) and [E06B 3/92](#) take precedence-)}
- E06B 3/46
 - • • • Horizontally-sliding wings{(-[E06B 3/487](#) takes precedence-)}
- E06B 3/4609
 - • • • • {for windows (-[E06B 3/4654](#) to [E06B 3/4681](#) take precedence-)}
- E06B 3/4618
 - • • • • • {the sliding wing being arranged beside a fixed wing (-[E06B 3/4627](#) takes precedence-)}
- E06B 3/4636
 - • • • • • {for doors (-[E06B 3/4609](#) and [E06B 3/4654](#) to [E06B 3/4681](#) take precedence; Sliding shower doors [A47K 3/34](#)-)}
- E06B 3/4681
 - • • • • • {made of glass panes without frames (-[E06B 3/4663](#) takes precedence-)}
- U E06B 3/48
 - • Wings connected at their edges, e.g. foldable wings
- U E06B 3/481
 - • • {Wings foldable in a zig-zag manner or bi-fold wings}
- E06B 3/483
 - • • • {folding upwardly (-[E06B 3/482](#) takes precedence-)}
- E06B 3/50
 - • with more than one kind of movement (-[E06B 3/48](#) takes precedence-){(-[E06B 3/92](#) takes precedence-)}
- E06B 3/5009
 - • • {where the sliding and rotating movements are necessarily performed simultaneously (-[E06B 3/5027](#) , [E06B 3/5036](#) take precedence-)}
- E06B 3/5045
 - • • {specially adapted for furniture (-[E06B 3/52](#) takes precedence-)}
- U E06B 3/54
 - Fixing of glass panes or like plates
- E06B 3/5418
 - • {Permanently fixing of an additional unframed pane (-compound frames [E06B 3/2605](#)-)}
- E06B 3/5427
 - • {the panes mounted flush with the surrounding frame or with the surrounding panes (-[E06B 3/5436](#) takes precedence; supporting structures for curtain walls [E04B 2/885](#)-)}
- E06B 3/56
 - • by means of putty, cement, or adhesives only (-[E06B 3/64](#) { [E06B 3/5427](#) }take precedence)
- E06B 3/58
 - • by means of borders, cleats, or the like ({ [E06B 3/30](#) } , [E06B 3/64](#) take precedence-)
- U E06B 3/5807
 - • • {not adjustable}
- E06B 3/5821
 - • • • {hooked on or in the frame member, fixed by clips or otherwise elastically fixed (-[E06B 3/585](#) takes precedence-)}
- U E06B 3/5828
 - • • • • {on or with auxiliary pieces}

- E06B 3/5835
 - • • • • {together with parts of the border in the same undercut groove in the frame (-E06B 3/5842 takes precedence-)}
- E06B 3/585
 - • • {adjustable, e.g. for accomodating panes of various thickness, or with provisions for altering the clamping force on the pane (-E06B 3/5871 takes precedence-)}
- E06B 3/5878
 - • • {the borders being pre-assembled in a frame-like manner on the pane or on the frame before the pane is fitted to the frame (-E06B 3/645 takes precedence-)}
- E06B 3/66
 - Units comprising two or more parallel glass or like panes permanently secured together{(-reforming and uniting glass sheets by fusing C03B 23/00 ; joining glass to glass or to other materials C03C 27/00 ; laminated glass B32B 17/10-)}
- E06B 3/6604
 - • {comprising false glazing bars or similar decorations between the panes (-connectors therefor E06B 3/6675-)}
- E06B 3/6608
 - • {without separate spacing elements (-E06B 3/6707 and E06B 3/6715 take precedence-)}
- E06B 3/6621
 - • {with special provisions for fitting in window frames or to adjacent units; Separate edge protecting strips (-E06B 3/66347 takes precedence-)}
- U E06B 3/663
 - • Element for spacing panes
- U E06B 3/66309
 - • • {Section members positioned at the edges of the glazing unit}
- E06B 3/66314
 - • • • {of tubular shape (-E06B 3/66323 and E06B 3/66333 take precedence-)}
- E06B 3/66328
 - • • • {of rubber, plastics or similar materials (-E06B 3/66314 , E06B 3/66323 and E06B 3/66342 take precedence; transparent materials E06B 3/66333-)}
- U E06B 3/66342
 - • • • {characterised by their sealed connection to the panes}
- E06B 3/66347
 - • • • • {with integral grooves or rabbets for holding the panes (-E06B 3/66366 takes precedence-)}
- E06B 3/67
 - • characterised by additional arrangements or devices for heat or sound insulation {or for controlled passage of light}
- E06B 3/6707
 - • • {specially adapted for increased acoustical insulation (-doors, windows for insulation against noise E06B 5/20-)}
- E06B 3/6715
 - • • {specially adapted for increased thermal insulation or for controlled passage of light (-E06B 3/66323 takes precedence; coating of glass pains C03C 17/00 ; devices or arrangements for controlling the intensity, colour, phase, polarisation or direction of light G02F 1/00-)}
- E06B 3/673
 - • Assembling the units (-E06B 3/677 takes precedence; { making hollow glass sheets or bricks C03B 23/24 })
- U E06B 3/67304
 - • • {Preparing rigid spacer members before assembly}
- E06B 3/67308
 - • • • {Making spacer frames, e.g. by bending or assembling straight sections (-connectors E06B 3/667-)}
- U E06B 3/67339
 - • • {Working the edges of already assembled units}
- E06B 3/6736
 - • • • {Heat treatment (-for soldering E06B 3/67334-)}
- E06B 3/67365
 - • • {Transporting or handling panes, spacer frames or units during assembly (-E06B 3/67304 to E06B 3/67339 take precedence-)}
- E06B 3/677
 - • Evacuating or filling the gap between the panes; {Equilibration of inside and outside pressure}; Preventing condensation in the gap between the panes (-by means of spacing elements E06B 3/663-); Cleaning the gap between the panes
- E06B 3/68
 - Window bars{(-bay windows E06B 1/363 ; joints for frame members crossing each other E06B 3/9628-)}
- E06B 3/685
 - • {False glazing bars (-E06B 3/6604 takes precedence-)}

- E06B 3/70 · Door leaves (-wing frames [E06B 3/04](#)-)
- E06B 3/7007 · · {Door leaves with curved, e.g. cylindrical or oval cross-section (~~-E06B 3/7001~~ takes precedence-)}
- E06B 3/7015 · · {characterised by the filling between two external panels (-fireproof doors [E06B 5/16](#) ; noise insulating doors [E06B 5/20](#)-)}
- E06B 3/72 · · consisting of frame and panels,{e.g. of raised panel type (~~-E06B 3/7001~~ to [E06B 3/7015](#) and [E06B 3/82](#) take precedence-)}
- E06B 3/74 · · · with wooden panels {or frame (~~-E06B 3/721~~ , [E06B 3/725](#) and [E06B 3/76](#) take precedence-)}
- E06B 3/76 · · · with metal panels{(~~-E06B 3/721~~ to [E06B 3/725](#) take precedence-)}
- E06B 3/78 · · · with panels of plastics{(~~-E06B 3/721~~ to [E06B 3/725](#) take precedence-)}
- E06B 3/80 · · flexible{(-upwardly folding flexible screens [E06B 9/262](#)-)}
- E06B 3/805 · · · {folding sideways (-doors of the bellows type [E06B 3/94](#)-)}
- E06B 3/82 · · Flush doors, i.e. with completely flat surface (~~-E06B 3/02~~ , { [E06B 3/7003](#) and [E06B 3/7015](#) }take precedence)
- E06B 3/84 · · · of plywood {or other wooden panels without an internal frame, e.g. with exterior panels substantially of wood}
- E06B 3/86 · · · of plastics {without an internal frame, e.g. with exterior panels substantially of plastics}
- E06B 3/88 · · Edge-protecting devices for door leaves ({ astragals for double doors [E06B 3/365](#) } ; finger guards for doors or windows [E06B 7/36](#)-)}
- E06B 3/90 · Revolving doors; Cages or housings therefor (-turnstiles [E06B 11/08](#)-)
- E06B 3/903 · · {consisting of arcuate wings revolving around a parallel axis situated outside the wing, e.g. a cylindrical wing revolving around its axis (~~-E06B 3/906~~ takes precedence-)}
- E06B 3/92 · Doors or windows extensible when set in position (-foldable wings [E06B 3/48](#) ; sliding wings for windows [E06B 3/42](#) ; wall-closing devices which may be rolled up, e.g. shutters, [E06B 9/11](#)-){(~~-E06B 3/01~~ takes precedence-)}
- E06B 3/922 · · {with several wings opening horizontally towards the same side of the opening and each closing a separate part of the opening (~~-E06B 3/921~~ and [E06B 3/928](#) take precedence-)}
- E06B 3/925 · · {with several wings opening vertically towards the same side of the opening and each closing a separate part of the opening (~~-E06B 3/921~~ and [E06B 3/928](#) take precedence-)}
- E06B 3/96 · Corner joints or edge joints for windows, doors, or the like frames or wings{(~~-E06B 3/663~~ takes precedence-)}
- E06B 3/9604 · · {Welded or soldered joints (~~-E06B 3/988~~ , [E06B 3/99](#) take precedence; welding of plastics [B29C 65/00](#) , soldering or welding of metals [B23K](#)-)}
- E06B 3/9616 · · {characterised by the sealing at the junction of the frame members (~~-E06B 3/9632~~ takes precedence-)}
- E06B 3/964 · · using separate connection pieces, e.g. T-connection pieces (~~-E06B 3/9604~~ to [E06B 3/9636](#) and [E06B 3/984](#) to [E06B 3/99](#) take precedence-)
- E06B 3/9641 · · · {part of which remains visible (~~-E06B 3/9647~~ takes precedence-)}
- E06B 3/9642 · · · {Butt type joints with at least one frame member cut off square; T-shape joints (~~-E06B 3/9641~~ , [E06B 3/9644](#) , [E06B 3/9647](#) , [E06B 3/9649](#) , [E06B 3/968](#) take precedence-)}
- E06B 3/9645 · · · {Mitre joints (~~-E06B 3/9641~~ , [E06B 3/9644](#) , [E06B 3/9647](#) . [E06B 3/9649](#) , [E06B 3/968](#) take precedence-)}
- U E06B 3/968 · · · characterised by the way the connecting pieces are fixed in or on the frame members

- E06B 3/9684
 - • • {by hooking protrusions on the connecting piece in openings of the frame member, e.g. by snap-locking (~~E06B 3/972~~ , ~~E06B 3/976~~ , ~~E06B 3/98~~ take precedence-)}
- E06B 3/9687
 - • • {with screws blocking the connecting piece inside or on the frame member (~~E06B 3/972~~ , ~~E06B 3/976~~ take precedence-)}
- E06B 3/972
 - • • by increasing the cross-section of the connecting pieces, e.g. by expanding the connecting pieces with wedges (~~E06B 3/976~~ takes precedence-)
- E06B 3/976
 - • • by deformation of the frame members{(-making sheet metal frames for openings [B21D 53/74](#)-)}
- E06B 3/98
 - • • the connecting pieces being specially adapted for drawing the frame members towards each other (~~E06B 3/9684~~ , ~~E06B 3/972~~ , ~~E06B 3/976~~ take precedence-)
- E06B 3/984
 - specially adapted for frame members of wood or other material worked in a similar way (~~E06B 3/99~~ takes precedence-)
- E06B 3/99
 - for continuous frame members crossing each other with out interruption (~~window bars [E06B 3/68](#)~~-)
- E06B 5/00**
 - Doors, windows, or like closures for special purposes{(-insulated compound frames specially adapted for sliding doors or windows [E06B 3/26347](#)-)}; Border constructions therefor**
- E06B 5/006
 - {for furniture (~~E06B 3/00~~ , ~~E06B 9/115~~ take precedence-)}
- U E06B 5/10
 - for protection against air-raid or other war-like action; for other protective purposes
- E06B 5/106
 - {Frames for bullet-proof windows (~~transparent bullet-proof laminates [F41H 5/0407](#)~~-)}
- U E06B 5/11
 - against burglary
- E06B 5/113
 - • {Arrangements at the edges of the wings, e.g. with door guards to prevent the insertion of prying tools (~~protection of the locking region by preventing insertion of a tool [E05B 17/2003](#)~~ ; means to prevent forced opening by attack, tampering or jimmying of lock [E05B 17/2084](#) ; anti-tamper devices arranged on or near the hinges [E05D 11/0018](#)-)}
- U E06B 5/16
 - Fireproof doors or similar closures; Adaptations of fixed constructions therefor
- E06B 5/165
 - • {Fireproof windows (~~layered glass panes with expansion layers for fire protection [B32B 17/10311](#)~~-)}
- E06B 5/18
 - against harmful radiation (~~against heat [E06B 5/16](#)~~-)
- E06B 7/00**
 - Special arrangements or measures in connection with doors or windows ({ arrangements against burglary at the edges of the wings [E06B 5/113](#) } ; screening or similar protective devices [E06B 9/00](#)-)**
- E06B 7/02
 - for providing ventilation, e.g. through double windows; Arrangement of ventilation roses (~~airflow control members per se [F24F 13/08](#)~~-)
- E06B 7/03
 - Ventilating devices for inserting under upwardly-sliding windows (~~rain or draught deflectors [E06B 7/26](#)~~-)
- E06B 7/04
 - with ventilation wings (~~[E06B 7/08](#) takes precedence-~~)
- E06B 7/08
 - Louvre doors, windows or grilles{(-shutters [E06B 9/04](#) ; louvre awnings [E04F 10/08](#) to [E04F 10/10](#)-)}
- U E06B 7/084
 - • with rotatable lamellae
- U E06B 7/086
 - • • interconnected for concurrent movement
- E06B 7/096
 - • • • operated or interconnected by gearing (~~wing operators with gearing in general [E05F 11/00](#)~~-)

- E06B 7/12 • Measures preventing the formation of condensed water (-double glazing [E06B 3/24](#) to [E06B 3/28](#) { and [E06B 3/677](#) } ; heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#)-)
- E06B 7/14 • Measures for draining-off condensed water or water leaking-in {frame members for draining off condensation water, throats at the bottom of a sash}
- E06B 7/16 • Sealing arrangements on wings or parts co-operating with the wings ({ specially adapted for fireproof or similar closures [E06B 5/164](#) ; } [E06B 7/098](#) takes precedence; { fixed sealing joints [E04B 1/68](#) ; Devices for fitting sealing strips [E04F 21/00](#) })
- E06B 7/22 • • by means of elastic edgings, e.g. elastic rubber tubes; by means of resilient edgings, e.g. felt or plush strips, resilient metal strips ([E06B 7/18](#) takes precedence-)
- U E06B 7/23 • • • Plastic, sponge rubber, or like strips or tubes
- E06B 7/2305 • • • • {with an integrally formed part for fixing the edging ([E06B 7/2316](#) takes precedence-)}
- E06B 7/2318 • • • • {by applying over- or under-pressure, e.g. inflatable (-gasproof doors or windows [E06B 5/12](#) ; for vehicles [B60J 10/0037](#)-)}
- E06B 7/26 • Rain or draught deflectors, e.g. under sliding wings {also protection against light for doors}
- E06B 7/28 • Other arrangements on doors or windows, e.g. door-plates, windows adapted to carry plants, hooks for window cleaners{ edge protecting devices for door leaves [E06B 3/88](#) ; special glazing; emergency glazing; double glazing [E06B 3/66](#)-}
- E06B 7/285 • • {Finger plates (-escutcheons [E05B 15/02](#)-)}
- E06B 7/34 • • Doors containing cupboards (-cabinet constructions per se [A47B](#)-)

Project: RP0118 (E06B)

- E06B 7/36 • • Finger guards {or other measures preventing harmful access between the door and the door frame (-safety devices for doors in railway cars [B61D 19/026](#) ; for lift doors [B66B 13/26](#) ; detection of obstructions [E05F 15/0004](#) [E05F 15/40](#))}

Project: N/A (E06B)

- E06B 9/00 **Screening or protective devices for {wall or similar}openings, with or without operating or securing mechanisms; Closures of similar construction ([E06B 5/10](#) takes precedence; wings for doors or windows, connected at their edges, [E06B 3/48](#) ; additional indoor equipment of doors or windows, not forming part of the proper finishing work of a building, e.g. curtains, [A47H](#) ; gratings as building elements [E04C 2/24](#) ; fastening means [E05](#) ; operating-mechanisms for wings in general [E05F](#)-)**
- E06B 9/01 • Grilles fixed to walls, doors, or windows; Grilles moving with doors or windows; Walls formed as grilles, e.g. claustra{(-emergency release of window grilles [E05B 65/1033](#) ; security bars for wings [E05C 19/003](#)-)}
- E06B 9/02 • Shutters, movable grilles, or other safety closing devices, e.g. against burglary (-louvre windows or grilles [E06B 7/08](#) ; lamellar blinds [E06B 9/26](#)-)
- E06B 9/04 • • of wing type, e.g. revolving or sliding{ trap doors; louvre doors or windows [E06B 7/08](#)-}
- E06B 9/06 • • collapsible or foldable, e.g. of the bellows or lazy-tongs type (-bellows-type doors [E06B 3/94](#) ; roll-type grilles [E06B 9/18](#)-)
- E06B 9/08 • • Roll-type closures (-roller blinds [E06B 9/40](#) ; operating, guiding or securing devices or arrangements for roll-type closures [E06B 9/56](#) ; usable only as awnings [E04F 10/06](#)-)

- E06B 9/24
- Screens or other constructions affording protection against light, especially against sunshine; Similar screens for privacy or appearance; {Slat blinds} (-operating, guiding or securing devices or arrangements for roll-type closures [E06B 9/56](#) ; free-hanging flexible screens [A47H 23/00](#)-)
- E06B 9/26
- • Lamellar or like blinds, e.g. venetian blinds{(for vehicles [B60J 1/2088](#)-)}
- E06B 9/266
- • • Devices or accessories for making or mounting lamellar blinds or parts thereof{(cleaning of lamellar blinds [A47L 4/00](#) ; joining plastics plates for making venetian blinds [B29C 66/437](#)-)}
- E06B 9/28
- • • with horizontal lamellae, e.g. non-liftable (-louvre windows or gratings [E06B 7/08](#)-)
- E06B 2009/285
- • • • {Means for actuating a rod (*being tilt rod or lift rod*)}(*being tilt rod or lift rod*)
- U E06B 9/30
- • • • liftable
- E06B 9/32
- • • • • Operating, guiding, or securing devices therefor (-operation of tilting bars [E06B 9/307](#)-)
- E06B 9/322
- • • • • Details of operating devices, e.g. pulleys, brakes, spring drums, drives ({ operating devices [E06B 9/68](#) } ; devices of general interest specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material [B65H 75/34](#)-)
- E06B 9/324
- • • • • Cord-locks{ cord-locks for curtains [A47H 3/00](#)-}
- U E06B 9/36
- • • with vertical lamellae;{Supporting rails therefor}
- E06B 9/367
- • • • {Lamellae suspensions ([E06B 9/362](#) takes precedence-); Bottom weights; Bottom guides}
- E06B 9/40
- • Roller blinds(-usable only as awnings [E04F 10/06](#)-)
- E06B 9/42
- • • Parts or details of roller blinds, e.g. suspension devices, blind boxes (-brackets or adjustable mountings for roller blinds and drawable curtains [A47H 1/13](#)-)
- E06B 9/52
- Devices affording protection against insects, e.g. fly screens; Mesh windows for other purposes{ screens [A47G 5/00](#)-}
- E06B 9/521
- • {Frameless fly screens; Tensioning means therefor (-[E06B 9/54](#) takes precedence-)}
- E06B 9/522
- • {Dimensionally adjustable fly screens (-[E06B 9/54](#) and [E06B 9/521](#) take precedence-)}
- E06B 9/54
- • Roller fly screens (-operating, guiding or securing devices therefor [E06B 9/56](#)-)
- E06B 9/56
- Operating, guiding or securing devices or arrangements for roll-type closures; Spring drums; Tape drums; Counterweighting arrangements therefor (-devices of general interest specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material [B65H 75/34](#)-)
- E06B 9/62
- • Counterweighting arrangements (-[E06B 9/60](#) takes precedence-)
- E06B 9/80
- • Safety measures against dropping or unauthorised opening; Braking or immobilising devices; Devices for limiting unrolling (-securing devices or arrangements for direct manual operation [E06B 9/78](#)-)
- E06B 11/00**
- Means for allowing passage through fences, barriers or the like, e.g. stiles (-general features of doors [E06B 1/00](#) to [E06B 9/00](#) ; { cattle grids [A01K 3/002](#) ; features peculiar to electrified wire fencing [A01K 3/005](#) })**
- U E06B 11/02
- Gates; Doors
- E06B 11/021
- • {Wire gates, e.g. traction gates; Fastenings therefor (-insulators, poles, handles, or the like, in electric fences [H01B 17/145](#)-)}
- E06B 11/04
- • characterised by the kind of suspension (-suspensions per se [E05D](#)-)

- E06B 11/08
- Turnstiles; {Gates for control of entry or exit of persons, e.g. in supermarkets} (-control gates on vehicles [B60N 5/00](#) ; [bank protection devices [E05G 5/00](#)]; with registering means [G07C 9/02](#) ; { coin-freed facilities for turnstiles [G07F 17/14](#) })

Project: N/A (E06C)

- U E06C 1/00** **Ladders in general (mounted on undercarriages or vehicles [E06C 5/00](#); permanently attached to fixed structures [E06C 9/00](#))**
- E06C 1/005
- {-Ladders in use as furniture or ladders in relation to furniture, e.g. in cupboards (step-stools, chairs or benches requiring conversion between the step and seat functions [A47C 12/02](#))}
- U E06C 1/02
- with rigid longitudinal member or members
- U E06C 1/04
- • Ladders for resting against objects, e.g. walls poles, trees (supports for ladder heads [E06C 7/48](#))
- U E06C 1/08
- • • multi-part {([E06C 1/32](#) takes precedence)}
- U E06C 1/12
- • • • extensible, e.g. telescopic
- E06C 1/125
- • • • {-with tubular longitudinal members nested within each other}
- U E06C 1/34
- • Ladders attached to structures, such as windows, cornices, poles, or the like {([E06C 9/12](#) takes precedence); ladders permanently fastened to buildings [E06C 9/00](#), {e.g. climbing irons [E06C 9/04](#))}
- E06C 1/345
- • • {-specially adapted to be installed parallel to the roof surface}
- U E06C 1/38
- • Special constructions of ladders, e.g. ladders with more or less than two longitudinal members, ladders with movable rungs or other treads, longitudinally-foldable ladders
- E06C 1/382
- • • {-Tripod ladders}
- U E06C 1/383
- • • Foldable ladders in which the longitudinal members are brought together on folding {([E06C 9/085](#) takes precedence)}
- E06C 1/3835
- • • • {-having collapsible steps comprising a hinge in their central part}
- U E06C 1/52
- with non-rigid longitudinal members
- E06C 1/525
- • {-made of a continuous strip of material}
- U E06C 7/00** **Component parts, supporting parts, or accessories**
- U E06C 7/08
- Special construction of longitudinal members, or rungs or other treads
- E06C 7/081
- • {-Rungs or other treads comprising anti-slip features}
- E06C 7/082
- • {-Connections between rungs or treads and longitudinal members}
- E06C 7/083
- • • {-Bracket type connection}
- E06C 7/084
- • • {-Rungs comprising projecting tabs or flanges}
- E06C 7/085
- • • {-achieved by deforming the rung or the stile; [E06C 7/084](#) takes precedence}
- E06C 7/086
- • • {-with a connecting piece inserted in a hollow rung; [E06C 7/088](#) takes precedence}
- E06C 7/087
- • • {-with a connecting piece installed around the rung}
- E06C 7/088
- • • {-with tie rods parallel to the rungs}
- U E06C 7/14
- Holders for pails or other equipment on or for ladders
- E06C 7/143
- • {-specially adapted to be inserted into the end of a hollow rung}
- E06C 7/146
- • {-made from wire; [E06C 7/143](#) takes precedence}
- U E06C 7/16
- Platforms on, or for use on, ladders, e.g. liftable or lowerable platforms (aspects relating to the lifting [B66F](#))
- E06C 7/165
- • {-specially adapted to be fixed to only one rung}

- U E06C 7/42
 - Ladder feet; Supports therefor (for scaffold elements [E04G 5/02](#))
- E06C 7/426
 - • {-Height adjustable supports for receiving both ladder feet}
- U E06C 7/48
 - Ladder heads; Supports for heads of ladders for resting against objects {ladders attachable to structures such as poles [E06C 1/34](#)}
- E06C 7/482
 - • {-Supports specially adapted for resting the ladder against or in a corner}
- E06C 7/484
 - • {-Supports specially adapted for use with a wall opening, e.g. windows}
- E06C 7/486
 - • {-Supports specially adapted to support a ladder on a gutter}
- E06C 7/488
 - • {-Supports specially adapted to attach a ladder to a ridge of a roof}
- U E06C 7/50
 - Joints or other connecting parts
- E06C 7/505
 - • {-Anchors being adapted to fix a ladder to a vertical structure, e.g. ladder hooks}

Project: N/A (E21B)

- U **E21B 7/00** **Special methods or apparatus for drilling**
- U E21B 7/003
 - {Drilling with mechanical conveying means (bailers, e.g. baskets, buckets [E21B 27/00](#); tunnelling [E21D](#))}
- U E21B 7/005
 - • {with helical conveying means ([E21B 7/201](#) takes precedence; augers [E21B 10/44](#); drilling rods or pipes with helical structure [E21B 17/22](#))}
- E21B 7/006
 - • • {-combined with a bucket-type container (bailers with helical conveying means [E21B 27/04](#))}
- U E21B 7/02
 - Portable drilling rigs, truck- or skid-mounted, with their own drive (portable drilling rigs for use on underwater floors [E21B 7/124](#))
- E21B 7/022
 - • {-Control of the drilling operation; Hydraulic or pneumatic means for activation or operation (control circuits for drilling masts [E21B 15/045](#))}
- E21B 7/023
 - • {-the mast being foldable or telescopically retractable}
- E21B 7/024
 - • {-having means for adapting to inclined terrain; having means for stabilizing the vehicle while drilling}
- E21B 7/025
 - • {-Rock drills, i.e. jumbo drills}
- E21B 7/026
 - • {-having auxiliary platforms, e.g. for observation purposes}
- E21B 7/027
 - • {-Drills for drilling shallow holes, e.g. for taking soil samples or for drilling postholes}
- E21B 7/028
 - • • {-the drilling apparatus being detachable from the vehicle, e.g. hand portable drills}
- U E21B 7/20
 - Driving or forcing casings or pipes into boreholes, e.g. sinking; Simultaneously drilling and casing boreholes (surface means for applying to-and-fro rotation movements to the casing [E21B 3/025](#); {pushing means outside of the borehole [E21B 19/08](#);} placing piles [E02D 7/00](#); sinking shafts while moving the lining downwards [E21D 1/08](#); {making galleries by forcing prefabricated elements through the ground [E21D 9/005](#)})
- E21B 7/205
 - • {-without earth removal ([E21B 7/30](#) takes precedence)}

NOTES

Special methods or apparatus for drilling without earth removal [E21B 7/26](#)

- U **E21B 10/00** **Drill bits (specially adapted for deflecting the direction of boring [E21B 7/064](#); with means for collecting substances [E21B 27/00](#))**
- U E21B 10/46
 - characterised by wear resisting parts, e.g. diamond inserts {(drill bits with self-renewable cutting edge [E21B 10/006](#))}
- U E21B 10/56
 - • Button type inserts ([E21B 10/52](#) takes precedence)

- U E21B 10/567
 - • • with preformed cutting elements mounted on a distinct support, e.g. polycrystalline inserts
- E21B 10/5673
 - • • • {-having a non planar or non circular cutting face }
- E21B 10/5676
 - • • • {-having a cutting face with different segments, e.g. mosaic-type inserts}
- U E21B 10/573
 - • • • characterised by support details
- E21B 10/5735
 - • • • • {-Interface between the substrate and the cutting element}
- U E21B 17/00**

Drilling rods or pipes; Flexible drill strings; Kellies; Drill collars; Sucker rods; {Cables}; Casings; Tubings (rod couplings in general [F16D](#); tubes or tube couplings in general [F16L](#))
- U E21B 17/02
 - Couplings; joints { Expandable couplings or joints [E21B 43/106](#)}
- E21B 17/021
 - • {-Devices for subsurface connecting or disconnecting by rotation (connecting or disconnecting pipe couplings or joints [E21B 19/16](#); fishing tools for frozen rods, casings, ropes, bits or the like [E21B 31/00](#))}
- E21B 17/023
 - • {-Arrangements for connecting cables or wirelines to downhole devices}
- E21B 17/025
 - • • {-Side entry subs}
- E21B 17/026
 - • • {-Arrangements for fixing cables or wirelines to the outside of downhole devices (protectors and centralisers for cables and control lines [E21B 17/1035](#))}
- E21B 17/028
 - • {-Electrical or electro-magnetic connections}
- U E21B 17/10
 - Wear protectors; Centralising devices, { e.g. stabilisers}{drives used in the borehole with anchoring means [E21B 4/18](#); guiding or centralising devices outside the borehole [E21B 19/24](#)}
- E21B 17/1071
 - • {-specially adapted for pump rods, e.g. sucker rods}
- E21B 17/1078
 - • {-Stabilisers or centralisers for casing, tubing or drill pipes (devices for off-center positioning [E21B 17/10](#); [E21B 17/1007](#) to [E21B 17/1064](#) take precedence)}
- E21B 17/1085
 - • {-Wear protectors; Blast joints; Hard facing (wear protection included in centralising devices, see relevant subgroups)}
- E21B 17/1092
 - • {-Gauge section of drill bits}
- U E21B 21/00**

Methods or apparatus for flushing boreholes, e.g. by use of exhaust air from motor (freeing objects stuck in boreholes by flushing [E21B 31/03](#); well drilling compositions [C09K 8/02](#))
- U E21B 21/01
 - Arrangements for handling drilling fluids or cuttings outside the borehole, e.g. mud boxes ({swivel joints in hose-lines [E21B 21/02](#);} arrangements for treating drilling fluids [E21B 21/06](#); {waste disposal systems [E21B 41/005](#)})
- E21B 21/012
 - • {-using exhaust air from the drilling motor for blowing off the dust at the borehole entrance}
- U E21B 23/00**

Apparatus for displacing, setting, locking, releasing, or removing tools, packers or the like in the boreholes or wells (setting of casings, screens or liners [E21B 43/10](#))
- E21B 23/004
 - {-Indexing systems for guiding relative movement between telescoping parts of downhole tools}
- E21B 23/006
 - • {"J-slot" systems, i.e. lug and slot indexing mechanisms}
- E21B 29/00**

Cutting or destroying pipes, packers, plugs, or wire lines, located in boreholes or wells, e.g. cutting of damaged pipes, of windows (perforators [E21B 43/11](#)); -Deforming of pipes in boreholes or wells; -Reconditioning of well casings while in the ground{(by enlarging drilled holes or counterboring [E21B 7/28](#))}
- U E21B 41/00**

Equipment or details not covered by groups [E21B 15/00](#) to [E21B 40/00](#)

- U E21B 41/005
 - {Waste disposal systems (treatment of drilling fluid outside the borehole [E21B 21/06](#); collecting oil or the like from a submerged leakage [E21B 43/0122](#))}
- U E21B 41/0057
 - • {Disposal of a fluid by injection into a subterranean formation}
- E21B 41/0064
 - • • {-Carbon dioxide sequestration (storing fluids in porous layers [B65G 5/005](#))}
- U E21B 43/00**

Methods or apparatus for obtaining oil, gas, water, soluble or meltable materials or a slurry of minerals from wells (applicable only to water [E03B](#); obtaining oil-bearing deposits or soluble or meltable materials by mining techniques [E21C 41/00](#); pumps [F04](#))
- U E21B 43/02
 - Subsoil filtering ([E21B 43/11](#) takes precedence, chemical compositions for consolidating loose sand or the like around wells [C09K 8/56](#))
- E21B 43/025
 - • {-Consolidation of loose sand or the like round the wells without excessively decreasing the permeability thereof (sealing borehole walls [E21B 33/138](#))}
- U E21B 43/04
 - • Graveling of wells
- E21B 43/045
 - • • {-Crossover tools}
- U E21B 43/10
 - • Setting of casings, screens, liners { or the like} in wells (driving or forcing casings into boreholes, simultaneously drilling and casing boreholes [E21B 7/20](#); setting of tools, packers or the like [E21B 23/00](#); suspending casings in well heads [E21B 33/04](#))
- E21B 43/103
 - • • {-of expandable casings, screens, liners, or the like}
- E21B 43/106
 - • • • {-Couplings or joints therefor}
- E21B 43/108
 - • • • {-Expandable screens or liners}
- U E21B 43/16
 - Enhanced recovery methods for obtaining hydrocarbons (fracturing [E21B 43/26](#); obtaining slurry [E21B 43/29](#); reclamation of contaminated soil in situ [B09C](#); { chemical compositions therefor [C09K 8/58](#)})
- E21B 43/164
 - • {-Injecting CO₂ or carbonated water (in combination with organic material [C09K 8/594](#))}
- U E21B 43/24
 - • using heat, e.g. steam injection (heating, cooling or insulating wells [E21B 36/00](#)){(in combination with organic material [C09K 8/592](#))}
- E21B 43/2406
 - • • {-Steam assisted gravity drainage (SAGD)}
- E21B 43/2408
 - • • • {-SAGD in combination with other methods}
- WARNING
- Not complete pending a reorganisation. See also [E21B 43/24](#) and subgroups
- U E21B 47/00**

Survey of boreholes or wells (monitoring pressure or flow of drilling fluid [E21B 21/08](#); geophysical logging [G01V](#))
- E21B 47/0002
 - {-Survey of boreholes or wells by visual inspection (photographing internal surfaces, e.g. of pipes [G03B 37/005](#), [E21B57/A7B8](#); closed circuit television systems [H04N 7/18](#))}
- E21B 47/04
 - Measuring depth or liquid level (~~measuring liquid level in general~~*measuring liquid level in general {and telerecorders for level of liquids} G01F; {measuring depth in general G01B 7/26}*){and telerecorders for level of liquids}-G01F; ~~{measuring depth in general G01B-7/26}~~
- U E21B 47/12
 - Means for transmitting measuring-signals {or control signals} from the well to the surface {or from the surface to the well}, e.g. for logging while drilling (remote signalling in general [G08](#))
- E21B 47/121
 - • {using earth as an electrical conductor ([E21B 47/122](#) takes precedence; in general [H04B 13/02](#) ; electric prospecting [G01V 3/00](#)-)}

- U E21B 49/00** **Testing the nature of borehole walls; Formation testing; Methods or apparatus for obtaining samples of soil or well fluids, specially adapted to earth drilling or wells (sampling in general [G01N 1/00](#))**
- U E21B 49/08
- Obtaining fluid samples or testing fluids, in boreholes or wells {(packers [E21B 33/12](#); valves [E21B 34/00](#); analysing pressure variations in an injection or production test [E21B 49/008](#))}
- E21B 49/084
- · {-with means for conveying samples through pipe to surface}
- E21B 49/086
- · {-Withdrawing samples at the surface}
- E21B 49/087
- · {-Well testing, e.g. testing for reservoir productivity or formation parameters}
- E21B 49/088
- · · {-combined with sampling}

Project: N/A (E21C)

- E21C 1/00** **Rotary-drilling machines (rotary-drilling machines in general [B23B](#); rotary earth drilling [E21B 3/00](#); driving of shafts, galleries or tunnels [E21D](#)){ not used, see subgroup and [E21B 3/00](#)}**
- E21C 1/10
- with a built-in feeding device (feeding devices [E21C 5/00](#))
- E21C 3/00** **Drilling machines with reciprocating tool that is intermittently turned when out of contact with the working face (portable percussion tools in general [B25D](#))**
- E21C 3/02
- Machines in which the tool is connected to an impulse member
- E21C 3/04
- Hammer drilling machines in which the tool is hit by an impulse member
- E21C 3/06
- Means for driving the impulse member {(not used, see subgroups and [B25D](#))}
- E21C 3/16
- · by electromagnets
- E21C 3/18
- · directly by a piston of an internal-combustion engine
- E21C 3/24
- · directly by air, steam, or gas pressure
- E21C 3/26
- · · working with pulses
- E21C 5/00** **Devices for feeding tool to working face (feeding devices for metal-boring machines [B23B](#)){ not used, see subgroups and [E21B 19/08](#)}**
- E21C 5/08
- Means for driving feed mechanism { not used, see subgroups and [E21B 19/08](#)}
- E21C 5/10
- · Separate motor, e.g. compressed-air motor or cylinder
- E21C 7/00** **Dust eliminating or dust removing while drilling (see also [E21B 21/00](#)); equipment for preventing the formation of dust by slitting or dislodging machines [E21C 35/22](#); {by foam [E21B 21/14](#)}; exhausting dust from mines [E21F 5/20](#))**
- E21C 7/04
- using exhaust air from the drill motor for blowing-off the dust
- E21C 7/08
- by liquids
- E21C 7/10
- · Liquid flushing installations
- E21C 7/12
- Preventing exhaust air from the drill motor from blowing-off towards the working face
- E21C 11/00** **Supports or guides for drilling machines; Columns to which the machine is clamped (feed legs [E21C 5/11](#); slitting machines mounted on supports [E21C 25/64](#); guiding, slitting, or dislodging machines [E21C 35/08](#))**

- U E21C 41/00** **Methods of underground or surface mining ([E21C 45/00](#) takes precedence); Lay-outs therefor (for peat [E21C 49/00](#))**
- WARNING**
Groups [E21C 41/28](#) to [E21C 41/14](#) are no longer used for classification. Documents are reclassified to groups [E21C 41/16](#), [E21C 41/26](#) and [E21C 41/32](#)
- E21C 41/04 • for hard coal
- E21C 41/10 • for oil-bearing deposits
- E21C 41/14 • for other specified minerals, e.g. gold, mercury, other heavy metals, sulfur, slate; -for clay
- U E21C 41/26** • Methods of surface mining (machines for obtaining, or the removal of, materials in open-pit mines [E21C 47/00](#)); Layouts therefor
- WARNING**
Group [E21C 41/26](#) is incomplete. See Warning after [E21C 41/00](#)
- E21C 41/31 • • {-for oil-bearing deposits}
- E21C 43/00** **Methods for preparing for the gasification of coal underground (methods for generating gas [C10B](#))**

Project: N/A (E21D)

- U E21D 1/00** **Sinking shafts**
- U E21D 1/10** • Preparation of the ground {(for galleries or tunnels [E21D 9/001](#); improving or preserving foundation soil or rock [E02D 3/00](#))}
- E21D 1/16 • • by petrification (grouting anchoring-bolts [E21D 20/02](#); { consolidating foundation soil by placing solidifying or pore-filling substances in the soil [E02D 3/12](#)})
- U E21D 9/00** **Tunnels or galleries, with or without linings; Methods or apparatus for making thereof ([E02D 29/045](#), [E02D 29/063](#) take precedence; linings per se [E21D 11/00](#)); Layout of tunnels or galleries**
- E21D 9/04 • Driving tunnels or galleries through loose materials; -Apparatus therefor not otherwise provided for {([E21D 9/005](#), [E21D 9/06](#) take precedence; soil improvement [E21D 9/001](#); provisional protective covers [E21D 19/04](#))}
- E21D 9/06 • Making by using a driving shield, {i.e. advanced by pushing means bearing against the already placed lining-(pushing prefabricated elements through the ground from an access pit [E21D 9/005](#))}
- U E21D 2009/0642** • • {the shield having means for additional processing at the front end }
- E21D 2009/0678 • • • {Adding additives, e.g. chemical compositions, to the slurry or the cuttings (*bentonite shall not be coded*)}(~~bentonite shall not be coded~~)
- U E21D 11/00** **Lining tunnels, galleries or other underground cavities, e.g. large underground chambers; Linings therefor; Making such linings in situ, e.g. by assembling ([E21D 15/00](#) to [E21D 23/00](#) take precedence; specially for shafts [E21D 5/00](#); {driving shields in combination with means for lining the tunnel [E21D 9/06](#)}; lining pressure water galleries, linings therefor [E02B 9/06](#))**
- U E21D 11/14** • Lining predominantly with metal {(backfilling the space between the lining elements and the rock [E21D 11/105](#))}
- E21D 11/18 • • Arch members; {Network made of arch members ([E21D 11/36](#) takes precedence); Ring elements; Polygon elements; Polygon elements inside arches-(caps for arches [E21D 17/00](#))}

- U E21D 15/00** Props (in the building art [E04G 25/00](#)); Chocks, {e.g. made of flexible containers filled with backfilling material}
- U E21D 15/60
- E21D 15/606
- Devices for withdrawing props or chocks
 - · {-the props being moved systematically (mine roof supports for step-by-step movement [E21D 23/00](#))}

Project: N/A (E21F)

- U E21F 13/00** Transport specially adapted to underground conditions (mine cars [B61D](#); transport in general, loading {unless specially adapted to underground conditions} [B65G](#))
- U E21F 13/06
- E21F 13/063
- {Transport of mined material} at or adjacent to the working face
 - · {-Loading devices for use in mining}

Project: N/A (F01B)

- U F01B 3/00** Reciprocating-piston machines or engines with cylinder axes coaxial with, or parallel or inclined to, main shaft axis
- U F01B 3/0082
- F01B 3/0091
- U F01B 3/10
- U F01B 3/103
- F01B 3/108
- {Details}
 - · {-Casings, housings}
 - Control of working-fluid admission or discharge peculiar thereto (suitable for more general application [F01L](#))
 - · {for machines with rotary cylinder block}
 - · · {by turning the swash plate (*with fixed inclination*)}{~~with fixed inclination~~}

Project: N/A (F01C)

- U F01C 1/00** Rotary-piston machines or engines (with axes of co-operating members non parallel [F01C 3/00](#); with the working-chamber walls at least partly resiliently deformable [F01C 5/00](#); with fluid ring or the like [F01C 7/00](#); rotary-piston machines or engines in which the working fluid is exclusively displaced by, or exclusively displaces, one or more reciprocating pistons [F01B 13/00](#))

NOTE

Group [F01C 1/30](#) takes precedence over groups [F01C 1/02](#) to [F01C 1/28](#).

- U F01C 1/02
- of arcuate-engagement type, i.e. with circular translatory movement of co-operating members, each member having the same number of teeth or tooth-equivalents
- U F01C 1/0207
- · {both members having co-operating elements in spiral form}
- U F01C 1/0246
- · · {Details concerning the involute wraps or their base, e.g. geometry}
- F01C 1/0253
- · · · {-Details concerning the base}
- F01C 1/0261
- · · · · {-Details of the ports, e.g. location, number, geometry}
- F01C 1/0269
- · · · {-Details concerning the involute wraps}
- F01C 1/0276
- · · · · {-Different wall heights}
- F01C 1/0284
- · · · · {-Details of the wrap tips}
- F01C 1/0292
- · · · · {-Ports or channels located in the wrap}
- U F01C 1/04
- · of internal-axis type
- F01C 1/045
- · · {-having a C-shaped piston}
- F01C 1/06
- · of other than internal-axis type ([F01C 1/063](#) takes precedence)
- U F01C 1/08
- of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing

- U F01C 1/082
 - {Details specially related to intermeshing engagement type machines or engines}
- F01C 1/088
 - • {Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement}
- U F01C 1/30
 - having the characteristics covered by two or more groups [F01C 1/02](#), [F01C 1/08](#), [F01C 1/22](#), [F01C 1/24](#) or having the characteristics covered by one of these groups together with some other type of movement between co-operating members
- U F01C 1/32
 - • having both the movement defined in group [F01C 1/02](#) and relative reciprocation between the co-operating members
- F01C 1/321
 - • {with vanes hinged to the inner member and reciprocating with respect to the inner member}
- F01C 1/322
 - • {with vanes hinged to the outer member and reciprocating with respect to the outer member}
- U F01C 17/00 Arrangements for drive of co-operating members, e.g. for rotary piston and casing**
- U F01C 17/06
 - using cranks, universal joints or similar elements ([F01C 1/07](#) takes precedence)
- F01C 17/066
 - • {with an intermediate piece sliding along perpendicular axes, e.g. Oldham coupling}
- U F01C 19/00 Sealing arrangements in rotary-piston machines or engines (sealings in general [F16J](#))**
- F01C 19/005
 - {Structure and composition of sealing elements such as sealing strips, sealing rings and the like; Coating of these elements (vane construction [F01C 21/0809](#); piston rings and ring sealings of similar construction in general [F16J 9/00](#))}
- U F01C 20/00 Control of, monitoring of, or safety arrangements for, machines or engines**
- U F01C 20/18
 - characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings [F01C 20/10](#))
- F01C 20/185
 - • {by varying the useful pumping length of the cooperating members in the axial direction}

Project: N/A (F01D)

- U F01D 1/00 Non-positive-displacement machines or engines, e.g. steam turbines (with working-fluid flows in opposite axial directions for balancing axial thrust [F01D 3/02](#); with other than pure rotation [F01D 23/00](#); turbines characterised by their use in special steam systems, cycles, or processes, regulating devices therefor [F01K](#))**
- F01D 1/32
 - with pressure velocity transformation exclusively in rotor, e.g. the rotor rotating under the influence of jets issuing from the rotor, {e.g. Heron turbines-(the working fluid being a combustion products [F02C 3/165](#); jet propulsion plants per se [F02K](#))}
- U F01D 5/00 Blades; Blade-carrying members (nozzle boxes [F01D 9/02](#)); Heating, heat-insulating, cooling or anti-vibration means on the blades or the members {special arrangements in rotors dealing with breaking off of part thereof [F01D 21/045](#)}**
- U F01D 5/12
 - Blades ({specially adapted for radial flow machines or engines [F01D 5/04](#)}; blade roots [F01D 5/30](#); rotors with blades adjustable in operation [F01D 7/00](#); stator blades [F01D 9/02](#))
- U F01D 5/14
 - • Form or construction (selecting particular materials, measures against erosion or corrosion [F01D 5/28](#))

- F01D 5/18
 - • • Hollow blades, {i.e. blades with cooling or heating channels or cavities-(structure of hollow blades in general [F01D 5/147](#))}; -Heating, heat-insulating or cooling means on blades
- U F01D 5/30
 - Fixing blades to rotors; Blade roots; {Blade spacers}
- F01D 5/323
 - • {-Locking of axial insertion type blades by means of a key or the like parallel to the axis of the rotor}
- F01D 5/326
 - • {-Locking of axial insertion type blades by other means}
- F01D 5/34
 - Rotor-blade aggregates of unitary construction {e.g. formed of sheet laminae; -(discs formed of sheet laminae [F01D 5/028](#); Ceramic materials [F01D 5/284](#), composite materials [F01D 5/282](#))}
- U F01D 9/00

Stators (non-fluid guiding aspects of casings, regulating, controlling, or safety aspects, see the relevant groups)
- F01D 9/02
 - Nozzles; -Nozzle boxes; -Stator blades; -Guide conduits { e.g. individual nozzles-(nozzle boxes [F01D 9/047](#))}
- U F01D 25/00

Component parts, details, or accessories, not provided for in, or of interest apart from, other groups
- U F01D 25/24
 - Casings (modified for heating or cooling [F01D 25/14](#)); Casing parts, e.g. diaphragms, casing fastenings (casings for rotary machines or engines in general [F16M](#)){special arrangements in stators dealing with breaking-off of part of rotor [F01D 21/045](#)}
- F01D 25/243
 - • {-Flange connections; Bolting arrangements ([F01D 25/265](#) takes precedence)}

Project: N/A (F01K)

- U F01K 3/00

Plants characterised by the use of steam or heat accumulators, or intermediate steam heaters, therein (regenerating exhaust steam [F01K 19/00](#))
- U F01K 3/18
 - having heaters (having both steam accumulator and heater [F01K 3/14](#); steam heaters per se [F22](#))
- F01K 3/185
 - • {-using waste heat from outside the plant ([F02G 5/00](#) takes precedence)}

Project: N/A (F01L)

- U F01L 1/00

Valve-gear or valve arrangements, e.g. lift-valve gear (lift-valve and valve-seat assemblies per se [F01L 3/00](#); slide-valve gear [F01L 5/00](#); actuated non-mechanically [F01L 9/00](#); valve arrangements in working piston or piston rod [F01L 11/00](#); modifications of valve-gear to facilitate reversing, braking, starting, changing compression ratio, or other specific operations [F01L 13/00](#))
- U F01L 1/02
 - Valve drive (transmitting-gear between valve drive and valve [F01L 1/12](#))
- F01L 1/022
 - • {-Chain drive}
- F01L 1/024
 - • {-Belt drive}
- F01L 1/026
 - • {-Gear drive}
- U F01L 7/00

Rotary or oscillatory slide valve-gear or valve arrangements (slide valves with combined rotary and non-rotary movements, combinations of rotary and non-rotary slide valves [F01L 5/00](#))
- U F01L 7/02
 - with cylindrical, sleeve, or part-annularly shaped valves (of disc type [F01L 7/06](#); of conical type [F01L 7/08](#))
- F01L 7/027
 - • {with two or more valves arranged coaxially }([F01L 7/045](#) takes precedence)}

Project: N/A (F01N)

F01N

GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR MACHINES OR ENGINES IN GENERAL; GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR INTERNAL COMBUSTION ENGINES ({ evacuation of fumes from the area where they are produced [B08B 15/00](#) ; arrangement of exhaust or silencing apparatus on percussive tools [B25D 17/12](#) } ; arrangements in connection with gas exhaust of propulsion units in vehicles [B60K 13/00](#) , { on ships or other waterborne vessels [B63H 21/32](#) , on aircraft [B64D 33/04](#) ; arrangement of exhaust or silencing apparatus on firearms [F41A 21/30](#) ; ground installations for reducing aircraft engine or jet noise [B64F 1/26](#) ; silencers specially adapted for steam engines [F01B 31/16](#) ; air-intake silencers for gas turbine or jet propulsion plants [F02C 7/045](#) ; jet pipe or nozzles for jet propulsion plants [F02K](#) } ; combustion-air intake silencers specially adapted for, or arranged on, internal-combustion engines [F02M 35/00](#) ; { combating noise or silencing in positive displacement machines or pumps [F04B 39/0027](#) , in rotary-piston machines or pumps [F04C 29/06](#) , in non-positive displacement pumps [F04D 29/66](#) ; means in valves for absorbing noise [F16K 47/02](#) ; noise absorbers in pipe system [F16L 55/02](#) ; conducting smoke or fumes from various locations to the outside [F23J 11/00](#) ; means for preventing or suppressing noise in air-conditioning or ventilation systems [F24F 13/24](#) } ; protecting against, or damping, noise in general [G10K 11/16](#)-)

NOTES

Attention is drawn to the notes preceding Class [F01](#), especially as regards Note 2(b).

F01N 1/00

Silencing apparatus characterised by method of silencing{ by cooling [F01N 3/02](#) ; using liquids [F01N 3/04](#) }

F01N 1/003

• {by using dead chambers communicating with gas flow passages (-resonance chambers [F01N 1/02](#) ; chambers containing sound-absorbing materials [F01N 1/24](#)-)}

U F01N 1/08

• by reducing exhaust energy by throttling or whirling

F01N 1/082

• {the gases passing through porous members (-[F01N 1/081](#) takes precedence-)}

F01N 1/086

• {having means to impart whirling motion to the gases (-with helically or spirally shaped channels [F01N 1/12](#)-)}

F01N 1/089

• {using two or more expansion chambers in series (-[F01N 1/083](#) , [F01N 1/084](#) , [F01N 1/086](#) take precedence-)}

F01N 1/10

• in combination with sound-absorbing materials (-[F01N 1/125](#) takes precedence-)

F01N 1/12

• using spirally or helically shaped channels (-cyclones [B04C](#)-)

F01N 1/14

• by adding air to exhaust gases((-in tailpipes [F01N 13/082](#) , [F01N 13/20](#)-)}

U F01N 1/16

• by using movable parts

F01N 1/166

• {for changing gas flow path through the silencer or for adjusting the dimensions of a chamber or a pipe (-[F01N 1/165](#) takes precedence-)}

F01N 1/20

• having oscillating or vibrating movement{ the parts being resilient walls [F01N 1/22](#)-}

F01N 1/24

• by using sound-absorbing materials (-[F01N 1/04](#) , [F01N 1/06](#) , [F01N 1/10](#) , [F01N 1/14](#) , [F01N 1/16](#) take precedence-)

- F01N 3/00 Exhaust or silencing apparatus having means for purifying, rendering innocuous, or otherwise treating exhaust (-electric control [F01N 9/00](#) ; monitoring or diagnostic devices for exhaust-gas treatment apparatus [F01N 11/00](#) ; { collecting or removing exhaust gases of vehicle engines in workshops [B08B 15/00](#) , on highways [E01C 1/005](#) })**
- F01N 3/005 · {for draining or otherwise eliminating condensates or moisture accumulating in the apparatus (-[F01N 3/02](#) takes precedence-)}~~{e0809}~~
- F01N 3/02 · for cooling, or for removing solid constituents of, exhaust (-by means of electric or electrostatic separators [F01N 3/01](#) ; { mixing air with exhaust in tailpipes [F01N 13/082](#) , [F01N 13/20](#) })
- U F01N 3/021 · · by means of filters
- F01N 3/023 · · · using means for regenerating the filters, e.g. by burning trapped particles (-by electrically controlling the supply of combustible mixture or its constituents only [F02D 41/0235](#)-)
- F01N 3/033 · · · in combination with other devices{ with adsorbents or absorbents [F01N 3/0821](#)-}
- F01N 3/05 · · by means of air, e.g. by mixing exhaust with air (-silencers working by addition of air to exhaust [F01N 1/14](#) ; arrangements for the supply of additional air for the thermal or catalytic conversion of noxious components of exhaust [F01N 3/30](#) ; { in tailpipes [F01N 13/082](#) })
- F01N 3/08 · for rendering innocuous (-using electric or electrostatic separators [F01N 3/01](#) ; chemical aspects [B01D 53/92](#)-)
- U F01N 3/0807 · · {by using absorbents or adsorbents}
- F01N 3/0821 · · · {combined with particulate filters (-catalysed diesel particulate filters [F01N 3/035](#)-)}
- F01N 3/0871 · · · {Regulation of absorbents or adsorbents, e.g. purging (-by electrically controlling the supply of combustible mixture or its constituents only [F02D 41/0235](#)-)}
- F01N 3/0892 · · {Electric or magnetic treatment, e.g. dissociation of noxious components (-electric filters [F01N 3/01](#) ; regeneration of exhaust filters [F01N 3/023](#) ; heating catalytic converters [F01N 3/2006](#)-)}
- F01N 3/10 · · by thermal or catalytic conversion of noxious components of exhaust (-by using other chemical processes, chemical aspects of catalytic conversion, e.g. using specified catalysts, [B01D 53/34](#)-)
- U F01N 3/18 · · · characterised by methods of operation; Regulation
- F01N 3/20 · · · · specially adapted for catalytic conversion; {Methods of operation or regulation of catalytic converters} (-[F01N 3/22](#) takes precedence-)
- F01N 3/2006 · · · · · {Periodically heating or cooling catalytic reactors, e.g. at cold starting or overheating (-by electrically controlling the supply of combustible mixture or its constituents only [F02D 41/0235](#)-)}
- F01N 3/206 · · · · · {Adding periodically or continuously substances to exhaust gases for promoting purification, e.g. catalytic material in liquid form, NOx reducing agents (-[F01N 3/2066](#) takes precedence-)}
- F01N 3/24 · · · characterised by constructional aspects of converting apparatus (-filtering in combination with catalytic reactors [F01N 3/035](#)-)
- U F01N 3/28 · · · · Construction of catalytic reactors
- U F01N 3/2803 · · · · · {characterised by structure, by material or by manufacturing of catalyst support}
- F01N 3/2807 · · · · · · {Metal other than sintered metal (-[F01N 3/2832](#) and [F01N 3/2835](#) take precedence-)}
- F01N 3/2825 · · · · · · {Ceramics (-[F01N 3/2832](#) , [F01N 3/2835](#) take precedence-)}

- U F01N 3/2839 {Arrangements for mounting catalyst support in housing, e.g. with means for compensating thermal expansion or vibration}
- F01N 3/2842 {specially adapted for monolithic supports, e.g. of honeycomb type (-F01N 3/2853 to F01N 3/2871 take precedence-)}
- F01N 3/2875 {by using elastic means, e.g. spring leaves, for retaining catalyst body in the housing (-F01N 3/2853 to F01N 3/2871 take precedence-)}
- F01N 3/2882 {Catalytic reactors combined or associated with other devices, e.g. exhaust silencers or other exhaust purification devices (-combined with absorbents or adsorbents only F01N 3/0814 ; combined with particulate filters F01N 3/035-)}
- F01N 3/30 Arrangements for supply of additional air (-regulation, e.g. using air by-passes or variable air pump drives F01N 3/22-)
- F01N 3/32 using air pump (-using jet air pumps F01N 3/34 ; pumps in general F04-)
- F01N 5/00 Exhaust or silencing apparatus combined or associated with devices profiting by exhaust energy (predominant aspects of such devices, see the relevant classes for the devices; using kinetic or wave energy of exhaust gases in exhaust systems for charging F02B)**
- F01N 9/00 Electrical control of exhaust gas treating apparatus (-monitoring or diagnostic devices for exhaust-gas treatment apparatus F01N 11/00 ; { electrical control of supply of combustible mixture or its constituents in relation with the state of the exhaust gas treating apparatus F02D 41/0235 } ; controlling combustion engines conjoint electrical control of two or more combustion engine functions F02D 43/00-)**
- F01N 11/00 Monitoring or diagnostic devices for exhaust-gas treatment apparatus, {e.g. for catalytic activity (-safety, indicating or supervising devices for internal combustion engines F02B 77/08 ; testing of machines G01M 13/00-)}**
- F01N 13/00 Exhaust or silencing apparatus characterised by constructional features; { Exhaust or silencing apparatus, or parts thereof, having pertinent characteristics not provided for in, or of interest apart from, groups F01N 1/00 to F01N 5/00 , F01N 9/00 , F01N 11/00-}**
- F01N 13/001 . {Gas flow channels or gas chambers being at least partly formed in the structural parts of the engine or machine (-using structural parts of the vehicle B60K 13/06-)}
- F01N 13/004 . {specially adapted for marine propulsion, i.e. for receiving simultaneously engine exhaust gases and engine cooling water (-for submerged exhausting F01N 13/12 ; treating exhaust by using liquids F01N 3/04-)}
- F01N 13/007 . {Apparatus used as intake or exhaust silencer (-silencing methods F01N 1/00 ; intake silencers F02M 35/12-)}
- F01N 13/008 . {Mounting or arrangement of exhaust sensors in or on exhaust apparatus (-sensor arrangements for engine control F02D 41/1439-)}
- F01N 13/08 . Other arrangements or adaptations of exhaust conduits ({ pipes, joints or supports therefor in general F16L; collecting or removing exhaust gases of vehicle engines in workshops B08B 15/00 , on highways E01C 1/005 })
- F01N 13/082 . {of tailpipe, e.g. with means for mixing air with exhaust for exhaust cooling, dilution or evacuation (-F01N 13/20 takes precedence-)}
- F01N 13/087 . {having valves upstream of silencing apparatus for by-passing at least part of exhaust directly to atmosphere (-valves for changing gas flow path through the silencer F01N 1/166-)}
- F01N 13/10 . . of exhaust manifolds((-with cooling jacket F01N 3/046-)}
- F01N 13/14 . having thermal insulation((-exhaust manifolds F01N 13/102-)}

- U F01N 13/18 · Construction facilitating manufacture, assembly, or disassembly
- F01N 13/1805 · · {Fixing exhaust manifolds, exhaust pipes or pipe sections to each other, to engine or to vehicle body (pipe joints in general [F16L](#); fixing auxiliaries in motor vehicles in general [B60K](#))}
- F01N 13/1827 · · · {Sealings specially adapted for exhaust systems (-sealings in general [F16J 15/00](#)-)}
- F01N 2240/00** **Combination or association of two or more different exhaust treating devices, or of at least one such device with an auxiliary device, not covered by indexing codes [F01N 2230/00](#) or [F01N 2250/00](#) , one of the devices being**
- U F01N 2330/00** **Structure of catalyst support or particle filter**
- U F01N 2330/30 · Honeycomb supports characterised by their structural details
- F01N 2330/38 · · flow channels with means to enhance flow mixing, (*e.g. protrusions or projections*) (~~e.g. protrusions or projections~~)

Project: N/A (F02B)**F02B**

INTERNAL-COMBUSTION PISTON ENGINES; COMBUSTION ENGINES IN GENERAL (plants in which engines use combustion products [F02C](#), [F02G](#); internal-combustion turbines [F02C](#))

NOTES

In this subclass, the following terms or expressions are used with the meanings indicated:

- "positive ignition" means ignition by a source external to the working fluid, e.g. by spark or incandescent source;
- "charging" means forcing air or fuel-air mixture into engine cylinders and thus embraces super-charging;
- "scavenging" means forcing the combustion residues from the cylinders other than by movement of the working pistons and thus embraces tuned exhaust systems.

Attention is drawn to the Notes preceding class [F01](#), specially as regards Note (1).

Engines with specified cycles or number of cylinders are classified in group [F02B 75/02](#) or [F02B 75/16](#) , unless other classifying features predominate.

**F02B 1/00 -
F02B 11/00**

Engines characterised by the working fluid to be compressed, or characterised by the type of ignition (with both fuel-air mixture compression and air-compression, or with both positive ignition and compression ignition [F02B 11/00](#) ; with pre-combustion chambers [F02B 19/00](#) ; having air storage chambers [F02B 21/00](#) ; with special shape or construction of other combustion chambers [F02B 23/00](#))

F02B 1/00

Engines characterised by fuel-air mixture compression (-characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#) ; characterised by precombustion chambers [F02B 19/00](#) ; characterised by air-storage chambers [F02B 21/00](#) ; characterised by special shape or construction of combustion chambers [F02B 23/00](#) -)

NOTE

- in this group the following indexing codes are used: [F02B 2700/02](#) to [F02B 2720/30](#)

- F02B 1/02 · with positive ignition (~~-with non-timed positive ignition [F02B 9/06](#)-~~)
- F02B 1/12 · with compression ignition (~~-with fuel-air charge ignited by compression ignition of an additional fuel [F02B 7/00](#)-~~)
- F02B 3/00** **Engines characterised by air compression and subsequent fuel addition (~~-characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#) ; characterised by precombustion chambers [F02B 19/00](#) ; characterised by air-storage chambers [F02B 21/00](#) ; characterised by special shape or construction of combustion chambers [F02B 23/00](#)-~~)**
- NOTE
- in this group the following indexing codes are used:
[F02B 2700/02](#) to [F02B 2720/30](#)
- F02B 3/02 · with positive ignition (~~-with non-timed positive ignition [F02B 9/06](#)-~~)
- F02B 3/06 · with compression ignition (~~-[F02B 13/02](#) takes precedence; with fuel-air charge ignited by compression ignition of an additional fuel [F02B 7/00](#)-~~)
- F02B 3/08 · · Methods of operating (~~-[F02B 3/12](#) takes precedence-~~)
- F02B 5/00** **Engines characterised by positive ignition (~~- [F02B 1/02](#) , [F02B 3/02](#) take precedence; with non-timed positive ignition [F02B 9/06](#) ; characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#) ; characterised by precombustion chambers [F02B 19/00](#) ; characterised by air-storage chambers [F02B 21/00](#) ; characterised by special shape or construction of combustion chambers [F02B 23/00](#)-~~)**
- F02B 7/00** **Engines characterised by the fuel-air charge being ignited by compression ignition of an additional fuel (~~-characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#) ; characterised by precombustion chambers [F02B 19/00](#) ; characterised by air-storage chambers [F02B 21/00](#) ; characterised by special shape or construction of combustion chambers [F02B 23/00](#)-~~)**
- F02B 9/00** **Engines characterised by other types of ignition (~~-characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#) ; characterised by precombustion chambers [F02B 19/00](#) ; characterised by air-storage chambers [F02B 21/00](#) ; characterised by special shape or construction of combustion chambers [F02B 23/00](#)-~~)**
- NOTE
- in this group the following indexing codes are used:
[F02B 2700/02](#) to [F02B 2720/30](#)
- F02B 9/02 · with compression ignition (~~-[F02B 1/12](#) , [F02B 3/06](#) take precedence-~~)
- F02B 11/00** **Engines characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition, e.g. in different cylinders (~~-characterised by recombustion chambers [F02B 19/00](#) ; characterised by air-storage chambers [F02B 21/00](#) ; characterised by special shape or construction of combustion chambers [F02B 23/00](#)-~~)**
- F02B 11/02 · convertible from fuel-air mixture compression to air compression or vice-versa

- F02B 13/00 - F02B 17/00** **Engines characterised by the method of introducing fuel into cylinders (-characterised by use of gaseous or solid fuels [F02B 43/00](#) , [F02B 45/00](#) ; carburettors, fuel-injection apparatus [F02M](#)-)**
- U F02B 15/00** **Engines characterised by the method of introducing liquid fuel into cylinders and not otherwise provided for**
- F02B 15/02
- having means for sucking fuel directly into cylinder
- F02B 19/00 - F02B 23/00** **Engines characterised by having pre-combustion chambers or air storage chambers, or characterised by shape or construction of combustion chambers to improve operation (-engines with incandescent chambers [F02B 9/08](#)-)**
- F02B 19/00** **Engines characterised by precombustion chambers (-engines with incandescent chambers [F02B 9/08](#))**
- F02B 19/10
- with fuel introduced partly into pre-combustion chamber, and partly into cylinder (-[F02B 19/02](#) to [F02B 19/08](#) take precedence-)
- F02B 19/1019
- · {with only one pre-combustion chamber (-[F02B 19/1004](#) take precedence-)}
- U F02B 19/1023**
- · · {pre-combustion chamber and cylinder being fed with fuel-air mixture(s)}
- F02B 19/1071
- · · · {pre-combustion chamber having only one orifice, (i.e. an orifice by means of which it communicates with the cylinder) (i.e. an orifice by means of which it communicates with the cylinder); the intake system comprising two distinct intake conduits}
- F02B 19/12
- with positive ignition (-[F02B 19/02](#) to [F02B 19/10](#) take precedence-)
- F02B 19/14
- with compression ignition (-[F02B 19/02](#) to [F02B 19/10](#) take precedence-)
- F02B 19/16
- Chamber shapes or constructions not specific to sub-groups [F02B 19/02](#) to [F02B 19/10](#)
- F02B 19/165
- · {The shape or construction of the pre-combustion chambers is specially adapted to be formed, at least in part, of ceramic material (-surface coverings of combustion-gas-swept parts [F02B 77/02](#) ; shaped ceramic products characterised by their composition or ceramic compositions [C04B 35/00](#) ; ceramic material for engine casings [F02F 7/0087](#)-)}
- F02B 23/00** **Other engines characterised by special shape or construction of combustion chambers to improve operation (-engines with incandescent chambers [F02B 9/08](#)-)**
- NOTE**
- in this group the following indexing codes are used:
[F02B 2700/02](#) to [F02B 2720/30](#)
- U F02B 23/02**
- with compression ignition
- F02B 23/04
- · the combustion space being subdivided into two or more chambers (-with pre-combustion chambers [F02B 19/00](#)-)
- F02B 23/06
- · the combustion space being arranged in working piston (-[F02B 23/04](#) takes precedence-)
- U F02B 23/0618**
- · · {having in-cylinder means to influence the charge motion}
- F02B 23/063
- · · · {the combustion space in the piston interacting fluid dynamically with the cylinder head, the injector body or the cylinder wall (-[F02B 23/04](#) takes precedence-)}
- F02B 23/0672
- · · {Omega-piston bowl, i.e. the combustion space having a central projection pointing towards the cylinder head and the surrounding wall being inclined towards the cylinder center axis (-the surrounding wall being exactly vertical [F02B 23/0696](#)-)}

- F02B 25/00 - F02B 31/00** **Engines characterised by provisions for charging or scavenging (-aspects concerned with driven charging or scavenging pumps [F02B 33/00](#) to [F02B 39/00](#)-)**
- F02B 25/00** **Engines characterised by using fresh charge for scavenging cylinders (-aspects characterised by provision of driven charging or scavenging pumps [F02B 33/00](#) to [F02B 39/00](#)-)**
- NOTE**
- in this group the following indexing codes are used:
[F02B 2700/02](#) to [F02B 2700/038](#)
- U F02B 25/14 • using reverse-flow scavenging, e.g. with both outlet and inlet ports arranged near bottom of piston stroke
- F02B 25/16 • • the charge flowing upward essentially along cylinder wall opposite the inlet ports{(-[F02B 25/145](#) takes precedence-)}
- F02B 25/18 • • the charge flowing upward essentially along cylinder wall adjacent the inlet ports, e.g. by means of deflection rib on piston{(-[F02B 25/145](#) takes precedence-)}
- F02B 25/20 • Means for reducing the mixing of charge and combustion residues or for preventing escape of fresh charge through outlet ports not provided for in, or of interest apart from, subgroups [F02B 25/02](#) to [F02B 25/18](#)
- F02B 25/26 • Multi-cylinder engines other than those provided for in, or of interest apart from, groups [F02B 25/02](#) to [F02B 25/24](#) (-internal-combustion aspects of rotary engines with movable cylinders [F02B 57/00](#)-)
- F02B 27/00** **Use of kinetic or wave energy of charge in induction systems, or of combustion residues in exhaust systems, for improving quantity of charge or for increasing removal of combustion residues (-aspects characterised by provision of driven charging or scavenging pumps [F02B 33/00](#) to [F02B 39/00](#), e.g. use of driven apparatus for immediate conversion of combustion gas pressure into pressure of fresh charge [F02B 33/42](#)-)**
- F02B 27/02 • the systems having variable, i.e. adjustable, cross-sectional areas, chambers of variable volume, or like variable means (-in exhaust systems only [F02B 27/06](#)-)
- U F02B 27/0205 • • {characterised by the charging effect}
- F02B 27/021 • • • {Resonance charging (-combined with oscillating pipe charging [F02B 27/0221](#)-)}
- U F02B 27/0226 • • {characterised by the means generating the charging effect}
- F02B 27/0231 • • • {Movable ducts, walls or the like (-[F02B 27/0257](#) takes precedence-)}
- U F02B 27/0247 • • • {Plenum chambers; Resonance chambers or resonance pipes}
- F02B 27/0263 • • • • {the plenum chamber and at least one of the intake ducts having a common wall, and the intake ducts wrap partially around the plenum chamber, i.e. snail-type (-[F02B 27/0257](#) takes precedence-)}
- F02B 29/00** **Engines characterised by provision for charging or scavenging not provided for in groups [F02B 25/00](#), [F02B 27/00](#) or [F02B 33/00](#) to [F02B 39/00](#)-; Details thereof**
- F02B 29/02 • Other fluid-dynamic features of induction systems for improving quantity of charge (-for also imparting a rotation to the charge in the cylinder [F02B 31/00](#); structural features of induction systems [F02M](#)-)
- F02B 29/08 • Modifying distribution valve timing for charging purposes (-[F02B 29/06](#) takes precedence; valve gear therefor [F01L](#)-)
- F02B 31/00** **Modifying induction systems for imparting a rotation to the charge in the cylinder (-structural features of induction systems [F02M](#)-)**
- U F02B 31/04 • by means within the induction channel, e.g. deflectors

- U F02B 31/06
 - • Movable means, e.g. butterfly valves
- U F02B 31/08
 - • • having multiple air inlets, (i.e. having main and auxiliary intake passages)
- F02B 31/082
 - • • • {the main passage having a helical shape around the intake valve axis; Engines characterised by provision of driven charging or scavenging pumps (-introducing fuel into cylinders by air-pressure [F02B 13/00](#) ; after-charging [F02B 29/06](#) ; arrangements of such pumps or other auxiliary apparatus on engines [F02B 67/00](#) ; combined engine pump control, control dependent on variables other than those generic to pump [F02D-](#))}
- F02B 33/00 -
F02B 41/00**

Engines characterised by provision of driven charging or scavenging pumps (-introducing fuel into cylinders by air-pressure [F02B 13/00](#) ; after-charging [F02B 29/06](#) ; arrangements of such pumps or other auxiliary apparatus on engines [F02B 67/00](#) ; combined engine and pump control, control dependent on variables other than those generic to pump [F02D-](#))
{ Details or constructional aspects of turbines [F01D](#) ; turbochargers [F02C](#) ; pumps [F04](#) }
- F02B 33/00

Engines characterised by provision of pumps for charging or scavenging (-characterised by the introduction of liquid fuel into cylinders by use of auxiliary fluid [F02B 13/00](#) ; characterised by after-charging [F02B 29/06](#) ; characterised by provision of pumps for sucking combustion residues from cylinders [F02B 35/00](#) ; characterised by provision of exhaust-driven pumps [F02B 37/00](#))

NOTE
- in this group the following indexing code is used:
[F02M 2700/33](#)
- U F02B 33/02
 - Engines with reciprocating-piston pumps; Engines with crankcase pumps
- F02B 33/28
 - • Component parts, details or accessories of crankcase pumps, not provided for in, or of interest apart from, subgroups [F02B 33/02](#) to [F02B 33/26](#)
- F02B 33/30
 - • • Control of inlet or outlet ports (-controlling only working-cylinder inlets [F01L-](#))
- F02B 33/32
 - Engines with pumps other than of reciprocating-piston type (-with crankcase pumps [F02B 33/02-](#))
- F02B 33/34
 - • with rotary pumps (-with cell-type pressure exchangers or the like [F02B 33/42-](#))
- F02B 33/42
 - • with driven apparatus for immediate conversion of combustion gas pressure into pressure of fresh charge, e.g. with cell-type pressure exchangers (-pressure exchangers per se [F04F 13/00-](#))
- F02B 33/44
 - Passages conducting the charge from the pump to the engine inlet, e.g. reservoirs (-cooling of charge after leaving pumps [F02B 29/04-](#))
- F02B 37/00**

Engines characterised by provision of pumps driven at least for part of the time by exhaust (-characterised by the introduction of liquid fuel into cylinders by use of auxiliary fluid [F02B 13/00](#) ; characterised by after-charging [F02B 29/06](#) ; characterised by passages conducting the charge from the pump to the engine inlet [F02B 33/44-](#))
- U F02B 37/04
 - Engines with exhaust drive and other drive of pumps, e.g. with exhaust-driven pump and mechanically-driven second pump
- F02B 37/10
 - • at least one pump being alternatively {or simultaneously} driven by exhaust and other drive, (e.g. by pressurised fluid from a reservoir or an engine-driven pump)
- U F02B 37/12
 - Control of the pumps
- F02B 37/127
 - • {by bypassing air from the pump inlet, e.g. to the pump outlet (-bypassing charging air [F02B 37/16](#) ; valves for admission of atmospheric air to engine [F02B 33/446-](#))}

- F02B 37/14
- {Control}of the alternation between {or the operation of}exhaust drive and other drive of a pump, e.g. dependent on speed
- F02B 37/16
- • by bypassing charging air{{-bypassing air from the pump inlet, e.g. to the pump outlet [F02B 37/127](#)-}}
- F02B 37/168
- • • {into the exhaust conduit (-[F02B 37/186](#) takes precedence-)}
- F02B 37/18
- • by bypassing exhaust {from the inlet to the outlet of turbine or to the atmosphere}
- F02B 37/20
- • by increasing exhaust energy, e.g. using combustion chamber {by after-burning(-using an auxiliary combustion chamber supplied by charging air [F02B 37/166](#)-)}
- F02B 37/22
- • by varying cross-section of exhaust passages or air passages,{e.g. by throttling turbine inlets or outlets or by varying effective number of guide conduits(-[F02B 37/24](#) takes precedence-)}
- F02B 39/00**
- Component parts, details, or accessories relating to, driven charging or scavenging pumps, not provided for in groups [F02B 33/00](#) to [F02B 37/00](#)**
- F02B 39/02
- Drives of pumps (-exhaust drives or combined exhaust and other drives [F02B 37/00](#)-); Varying pump drive gear ratio (-control acting both on engine and on pump drive gear ratio [F02D](#)-)
- F02B 39/04
- • Mechanical drives; Variable-gear-ratio drives (-non-mechanical pump drives having variable gear ratio [F02B 39/08](#)-)
- F02B 39/12
- • Drives characterised by use of couplings or clutches therein (-using fluid slip couplings for varying gear ratio [F02B 39/08](#)-)
- U F02B 41/00**
- Engines characterised by special means for improving conversion of heat or pressure energy into mechanical power**
- U F02B 41/02
- Engines with prolonged expansion
- F02B 41/10
- • in exhaust turbines (-use of exhaust turbines for charging [F02B 37/00](#) ; turbines constructions [F01D](#) ; gas turbine plant [F02C](#)-)
- F02B 43/00 -
F02B 45/00**
- Engines operating on non-liquid fuels; Plants including such engines, i.e. combinations of the engines with fuel-generating apparatus (-engines having gas-air charge ignited by compression-ignition of an additional fuel [F02B 7/06](#) ; engines convertible from gas to other fuel consumption [F02B 69/04](#) ; apparatus for generating fuel, e.g. gas, see the relevant classes, e.g. [C10](#)-)**
- F02B 43/00
- Engines characterised by operating on gaseous fuels; Plants including such engines (-engines characterised by the gas-air charge being ignited by compression ignition of an additional fuel [F02B 7/06](#) ; engines convertible from gas to other fuel consumption [F02B 69/04](#)-)**
- NOTE
- in this group the following indexing codes are used:
[F02B 2700/02](#) to [F02B 2720/30](#)
- F02B 45/00**
- Engines characterised by operating on non-liquid fuels other than gas; Plants including such engines (-plants involving generation of gaseous fuel from solid fuel [F02B 43/08](#) ; engines convertible from gas to other fuel consumption [F02B 69/04](#)-)**
- F02B 45/02
- operating on powdered fuel e.g. powdered coal (-operating on fuel containing oxidant [F02B 45/06](#)-)
- F02B 45/10
- operating on mixtures of liquid and non-liquid fuels, e.g. in pasty or foamed state

- F02B 47/00 - F02B 51/00** **Methods of operating engines involving specific pre-treating of, or adding specific substances to, combustion air, or fuel air-mixture, of the engines and not otherwise provided for** ~~(-apparatus for performing such pre-treatment or additions F02M-)~~
- U F02B 47/04
 - the substances being other than water or steam only
- F02B 47/06
 - the substance including non-airborne oxygen ~~(-F02B 47/10 takes precedence-)~~
- F02B 53/00** **Internal-combustion aspects of rotary-piston or oscillating-piston engines** ~~(-internal-combustion aspects of rotary pistons or outer members for co-operation therewith F02B 55/00-)~~
- NOTE
- in this group the following indexing codes are used:
[F02B 2730/01](#) to [F02B 2730/09](#)
- F02B 53/14
 - Adaptations of engines for driving, or engine combinations with, other devices ~~(aspects predominantly concerning such devices, see the relevant classes for the devices)~~
- U **F02B 55/00** **Internal-combustion aspects of rotary pistons; Outer members for co-operation with rotary pistons**
- F02B 55/16
 - Admission or exhaust passages in pistons or outer members
- U **F02B 57/00** **Internal-combustion aspects of rotary engines in which the combusted gases displace one or more reciprocating pistons**
- F02B 57/02
 - Fuel or combustion-air supply ~~(-cylinder-charge admission or exhaust control F02B 57/04-)~~
- F02B 57/04
 - Control of cylinder-charge admission or exhaust ~~(-peculiar to two-stroke engines or to other engines with working-piston-controlled charge admission or exhaust F02B 57/06-)~~
- F02B 57/06
 - Two-stroke engines or other engines with working-piston-controlled cylinder-charge admission or exhaust ~~(-with combustion space in centre of star F02B 57/10-)~~
- F02B 59/00** **Internal-combustion aspects of other reciprocating-piston engines with movable, e.g. oscillating, cylinders** ~~(-with yieldable walls F02B 75/38)~~
- F02B 61/00 - F02B 65/00** **Adaptations of engines for special use; Combinations of engines with devices other than engine parts or auxiliaries** ~~(-of rotary-piston or oscillating-piston engines F02B 53/14 ; aspects predominantly concerning such devices, see the relevant classes for the devices-)~~
- F02B 61/00** **Adaptations of engines for driving vehicles or for driving propellers; Combinations of engines with gearing** ~~(-the engine torque being divided by a differential gear for driving a scavenging or charging pump and the engine output shaft F02B 39/06 ; adaptations or combinations of rotary-piston or oscillating-piston engines F02B 53/14 ; arrangements in vehicles, see the relevant classes for vehicles-)~~
- F02B 61/06
 - Combinations of engines with mechanical gearing ~~(-F02B 61/02 , F02B 61/04 take precedence-)~~
- F02B 63/00** **Adaptations of engines for driving pumps, hand-held tools or electric generators; Portable combinations of engines with engine-driven devices** ~~(-of rotary-piston or oscillating-piston engines F02B 53/14-)~~

- F02B 65/00** Adaptations of engines for special uses not provided for in groups [F02B 61/00](#) or [F02B 63/00](#); Combinations of engines with other devices, e.g. with non-driven apparatus (of rotary-piston or oscillating-piston engines [F02B 53/14](#); combinations of prime-movers consisting of electric motors and internal combustion engines for mutual or common propulsion [B60K 6/20](#))
- F02B 69/00** Internal-combustion engines convertible into other combustion-engine type, not provided for in [F02B 11/00](#); Internal-combustion engines of different types characterised by constructions facilitating use of same main engine-parts in different types
- U F02B 71/00** Free-piston engines; Engines without rotary main shaft
F02B 71/04
 - Adaptations of such engines for special use; Combinations of such engines with apparatus driven thereby (aspects predominantly concerning driven apparatus, see the relevant classes for such apparatus)
- U F02B 75/00** Other engines
F02B 75/005
 - {having horizontal cylinders ([F02B 75/007](#) takes precedence)}**F02B 75/06**
 - Engines with means for equalising torque (compensation of inertial forces, suppression of vibration in systems [F16F](#))**F02B 75/10**
 - Engines with means for rendering exhaust gases innocuous (apparatus per se [F01N](#))**F02B 75/16**
 - Engines characterised by number of cylinders, e.g. single-cylinder engines ([F02B 75/26](#) takes precedence)**F02B 75/18**
 - Multi-cylinder engines (scavenging aspects [F02B 25/00](#))**F02B 75/28**
 - Engines with two or more pistons reciprocating within same cylinder or within essentially coaxial cylinders (arranged oppositely relative to main shaft [F02B 75/24](#))**U F02B 75/36**
 - Engines with parts of combustion- or working-chamber walls resiliently yielding under pressure**F02B 75/38**
 - Reciprocating - piston engines ([F02B 75/04](#) takes precedence; with resiliently-urged auxiliary piston in pre-combustion chamber [F02B 19/06](#))
- U F02B 77/00** Component parts, details or accessories, not otherwise provided for
F02B 77/02
 - Surface coverings of combustion-gas-swept parts (of pistons or cylinders only [F02F](#))**F02B 77/04**
 - Cleaning of, preventing corrosion or erosion in, or preventing unwanted deposits in, combustion engines (cleaning of fuel injection apparatus [F02M 65/00](#))**F02B 77/08**
 - Safety, indicating or supervising devices (thermal insulation [F02B 77/11](#); { rendering engines inoperative or idling [F02D 17/04](#); dependent on lubricating conditions [F01M 1/22](#); dependent on cooling [F01P 11/14](#) })**F02B 77/081**
 - {relating to endless members (endless members, e.g. belts, for driving auxiliary apparatus [F02B 67/04](#))}**F02B 77/083**
 - {relating to maintenance, e.g. diagnostic device (relating to lubrication [F01M 11/10](#))}**F02B 77/089**
 - {relating to engine temperature (concerning coolant temperature [F01P 11/16](#))}**F02B 79/00** Running-in of internal-combustion engines (lubrication thereof [F01M](#))

Project: N/A (F02C)

- U F02C 3/00 **Gas-turbine plants characterised by the use of combustion products as the working fluid (generated by intermittent combustion [F02C 5/00](#))**
- U F02C 3/20 · using a special fuel, oxidant, or dilution fluid to generate the combustion products
- F02C 3/30 · · Adding water, steam or other fluids {for influencing combustion, e.g. to obtain cleaner exhaust gases-([F02C 7/141](#), [F02C 7/30](#), [F01D 21/00](#), [F01K 21/04](#), [F23D 11/10](#) take precedence)}
- U F02C 7/00 **Features, components parts, details or accessories, not provided for in, or of interest apart form groups [F02C 1/00](#) to [F02C 6/00](#); Air intakes for jet-propulsion plants (controlling [F02C 9/00](#))**
- U F02C 7/12 · Cooling of plants (of component parts, see the relevant subclasses, e.g. [F01D](#); cooling of engines in general [F01P](#))
- F02C 7/14 · · of fluids in the plant, {e.g. lubricant or fuel-([F02C 7/185](#) takes precedence)}

Project: N/A (F02D)**F02D**

CONTROLLING COMBUSTION ENGINES (cyclically operating valves for combustion engines [F01L](#); controlling combustion engine lubrication [F01M](#); cooling internal combustion engines [F01P](#); supplying combustion engines with combustible mixtures or constituents thereof, e.g. carburettors, injection pumps [F02M](#); starting of combustion engines [F02N](#); controlling of ignition [F02P](#); controlling gas-turbine plants, jet-propulsion plants, or combustion-product engine plants, see the relevant subclasses for these plants)

NOTES

Attention is drawn to the notes preceding class [F01](#).

In this subclass, the following words are used with the meanings indicated:

- "Fuel injection" means the introduction of a combustible substance into a space, e.g. cylinder, by means of a pressure source, e.g. a pump, continuously or cyclically acting behind the substance;
- "Supercharging" means supplying to the working space, e.g. cylinder, combustion-air pressurised by means of a pressure source, e.g. a pump.

F02D 1/00 - F02D 17/00

Controlling, e.g. regulating, fuel injection (peculiar to engines characterised by their use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures [F02D 19/00](#) ; peculiar to supercharged engines [F02D 23/00](#) ; automatic controllers for prime movers, in general [G05D](#))

F02D 1/00

Controlling fuel-injection pumps, e.g. of high pressure injection type (-[F02D 3/00](#) takes precedence; controlling fuel-injection electrically [F02D 41/30](#)){pumping elements on fuel pressure acting for varying fuel delivery in quantity or timing [F02M](#)}

NOTE

- in this subclass the following indexing codes are used:

[F02D 2700/0282](#) and [F02D 2700/10](#)

- U F02D 1/02 · not restricted to adjustment of injection timing, e.g. varying amount of fuel delivered

- F02D 1/025
- {by means dependent on engine working temperature (-F02D 1/08 takes precedence-)}
- F02D 1/04
- {by mechanical means dependent on engine speed, e.g. using centrifugal governors (-F02D 1/08 takes precedence-)}
- F02D 1/06
- {by means dependent on pressure of engine working fluid (-F02D 1/08 takes precedence-)}
- F02D 1/16
- Adjustment of injection timing (-F02D 1/02 takes precedence-){ rotary distributor pumps F02M 41/00 ; by adjustment of pumping elements F02M 59/20 }
- F02D 3/00**
- Controlling low-pressure fuel injection, i.e. where the air-fuel mixture containing fuel thus injected will be substantially compressed by the compression stroke of the engine, by means other than controlling only an injection pump (-controlling fuel-injection electrically F02D 41/30 ; { controlling the feeding of liquid fuel from storage containers to carburettors or fuel-injection apparatus F02D 33/003 ; }carburettors F02M)**
- NOTE
- When the control apparatus or system forms part of the low-pressure fuel-injection apparatus it is classified in group F02M 69/00 .
- U F02D 7/00**
- Other fuel-injection control**
- F02D 7/002
- {Throttling of fuel passages between pumps and injectors or overflow passages (-low-pressure fuel injection F02M 69/00-)}
- F02D 7/02
- Controlling fuel injection where fuel is injected by compressed air
- U F02D 9/00**
- Controlling engines by throttling air or fuel-and-air induction conduits or exhaust conduits**
- NOTE
- in this group the following indexing codes are used: F02D 2700/00 , F02D 2700/02 , F02D 2700/04 , F02D 2700/09
- F02D 9/02
- concerning induction conduits (-throttle valves, or arrangements thereof in conduits F02D 9/08-)
- U F02D 2009/0201**
- {Arrangements; Control features; Details thereof}
- F02D 2009/0288
- • {Throttle control device specially adapted for spark-assisted compression-ignition engine (*Diesel engine*)}(*Diesel engine*)}
- F02D 9/04
- concerning exhaust conduits (-throttle valves, or arrangements thereof in conduits F02D 9/08-)
- F02D 9/08
- Throttle valves specially adapted therefor; Arrangements of such valves in conduits (-throttle valves modified for use in or arranged in carburettors F02M ; throttle valves in general F16K-)
- U F02D 9/10**
- • having pivotally-mounted flaps
- U F02D 9/1035**
- • • {Details of the valve housing}
- F02D 9/105
- • • {having a throttle position sensor (-detection of actuation F02D 11/106-)}
- F02D 11/00**
- Arrangements for, or adaptations to, non-automatic engine control initiation means, e.g. operator initiated (-specially for reversing F02D 27/00 ; arrangement or mounting of prime-mover control devices in vehicles B60K 26/00-)[0610]**
- F02D 11/04
- characterised by mechanical control linkages (-with power drive or assistance F02D 11/06-)
- F02D 13/00**
- Controlling the engine output power by varying inlet or exhaust valve operating characteristics, e.g. timing (-modifying valve gear F01L-)**

F02D 15/00	Varying compression ratio (modifying valve gear F01L)
	<u>NOTE</u>
	- in this group the following indexing codes are used: F02D 2700/03
F02D 17/00	Controlling engines by cutting out individual cylinders; Rendering engines inoperative or idling (-controlling or rendering inoperative by varying inlet or exhaust valve operating characteristics F02D 13/00-)
	<u>NOTE</u>
	- in this group the following indexing codes are used: F02D 2700/05
F02D 17/02	· Cutting-out (-cutting-out engines in multiple engine arrangements F02D 25/04 -)
F02D 17/04	· rendering engines inoperative or idling, e.g. caused by abnormal conditions (-dependent on lubricating conditions F01M 1/22 ; dependent on cooling F01P 5/14)
F02D 19/00	Controlling engines characterised by their use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures (-the non-fuel substances being gaseous F02D 21/00-)
F02D 19/02	· peculiar to engines working with gaseous fuels (-apparatus, or control parts thereof, for mixing gas and air F02M -)
U F02D 19/06	· peculiar to engines working with pluralities of fuels, e.g. alternatively with light and heavy fuel oil, other than engines indifferent to the fuel consumed
U F02D 19/0602	· · {Control of components of the fuel supply system}
F02D 19/0613	· · · {Switch-over from one fuel to another (- F02D 19/081 takes precedence-)}
U F02D 19/0626	· · {Measuring or estimating parameters related to the fuel supply system}
F02D 19/0634	· · · {Determining a density, viscosity, composition or concentration (- F02D 19/087 takes precedence-)}
U F02D 19/0639	· · {characterised by the type of fuels}
U F02D 19/0649	· · · {Liquid fuels having different boiling temperatures, volatilities, densities, viscosities, cetane or octane numbers}
U F02D 19/0652	· · · · {Biofuels, e.g. plant oils}
F02D 19/0655	· · · · · {at least one fuel being an alcohol, e.g. ethanol (- F02D 19/084 takes precedence-)}
F02D 19/08	· · simultaneously using pluralities of fuels (- F02D 19/12 takes precedence-)
F02D 19/12	· peculiar to engines working with non-fuel substances or with anti-knock agents, e.g. with anti-knock fuel (-apparatus, or control parts thereof for delivering such substances or agents F02M -)
U F02D 21/00	Controlling engines characterised by their being supplied with non-airborne oxygen or other non-fuel gas
U F02D 21/06	· peculiar to engines having other non-fuel gas added to combustion air
F02D 21/08	· · the other gas being the exhaust gas of engine (-circulation of exhaust gas in oxygen-fed engines F02D 21/04 -)
F02D 21/10	· · having secondary air added to the fuel-air mixture (-apparatus, or control parts thereof, for delivering secondary air F02M -)
U F02D 23/00	Controlling engines characterised by their being supercharged
F02D 23/005	· {with the supercharger being mechanically driven by the engine (-supercharger drives F02B 39/00 -)}

- F02D 28/00** Programme-control of engines (~~programme-control specific to a type or purpose covered by one of the groups of this subclass except groups [F02D 29/00](#) , [F02D 39/00](#) , or by one group of another subclass e.g. [F01L](#) , see that group; programme-control in general [G05B 19/00](#)~~)
- F02D 33/00** Controlling delivery of fuel or combustion-air, not otherwise provided for(~~using exhaust gas sensors [F02D 35/0023](#) , [F02D 35/0046](#)~~)
- F02D 33/003
- Controlling the feeding of liquid fuel from storage containers to carburettors or fuel-injection apparatus (~~control of electrical fuel pumps [F02D 41/3082](#) , controlling fuel flow to a common rail [F02D 41/3845](#)~~); Failure or leakage prevention; Diagnosis or detection of failure; Arrangement of sensors in the fuel system; Electric wiring; Electrostatic discharge]
- U F02D 35/00** Controlling engines, dependent on conditions exterior or interior to engines, not otherwise provided for
- F02D 35/0007
- {using electrical feedback(~~[F02D 35/0015](#) takes precedence~~)}
- NOTE
Attention is drawn to the note preceding [F02D 41/00](#) .
- F02D 35/0015
- {using exhaust gas sensors (~~[F02D 41/14](#) takes precedence~~)}
- U F02D 35/0046**
- • {Controlling fuel supply}
- U F02D 35/0053**
- • • {by means of a carburettor}
- F02D 35/0061
- • • • {Controlling the emulsifying air only (~~[F02D 35/0076](#) , [F02D 35/0084](#) take precedence~~)}
- F02D 35/0069
- • • • {Controlling the fuel flow only(~~[F02D 35/0076](#) , [F02D 35/0084](#) take precedence~~)}
- U F02D 37/00** Controlling conjointly two or more functions of engines, not otherwise provided for
- F02D 37/02
- one of the functions being ignition (~~ignition control per se [F02P](#) , { automatically advancing or retarding ignition combined with electronic control of other engine functions, e.g. fuel injection [F02P 5/045](#) }~~)
- F02D 41/00** Electrical control of supply of combustible mixture or its constituents (~~[F02D 43/00](#) takes precedence~~)
- U F02D 41/0002**
- {Controlling intake air}
- F02D 41/0007
- • {for control of turbo-charged or super-charged engines(~~control of the pumps per se [F02B 37/12](#)~~)}
- U F02D 41/0025**
- {Controlling engines characterised by use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures}
- F02D 41/0027
- • {the fuel being gaseous(~~non-electrical control [F02D 19/02](#)~~)}
- U F02D 41/003**
- • {Adding fuel vapours, e.g. drawn from engine fuel reservoir}
- U F02D 41/0032**
- • • {Controlling the purging of the canister as a function of the engine operating conditions}
- U F02D 41/0035**
- • • • {to achieve a special effect, e.g. to warm up the catalyst}
- F02D 41/0037
- • • • • {for diagnosing the engine(~~diagnosis of purge control systems [F02M 25/0809](#)~~)}
- F02D 41/0047
- • {Controlling exhaust gas recirculation [EGR]}(~~temperature control with cooler in recirculation circuit [F02M 25/0738](#)~~)}
- U F02D 41/005**
- • • {according to engine operating conditions}
- F02D 41/0057
- • • • {Specific combustion modes (~~combustion modes per se [F02D 41/3017](#)~~)}

- F02D 41/006
 - . . . {using internal EGR (-control of valve overlap for internal EGR [F02D 13/0261](#) ; arrangements for internal EGR [F02M 25/0752](#)-)}
- F02D 41/0065
 - . . . {Specific aspects of external EGR control (-constructional details of EGR system [F02M 25/07](#)-)}
- F02D 41/0072
 - {Estimating, calculating or determining the EGR rate, amount or flow (-sensors in EGR systems [F02M 25/0753](#)-)}
- F02D 41/0077
 - . . . {Control of the EGR valve or actuator, e.g. duty cycle, closed loop control of position (-~~EGR valve position sensor F02M 25/0756~~ *EGR valve position sensor F02M 25/0756*)}
- U F02D 41/008
 - . {Controlling each cylinder individually}
- F02D 41/0082
 - . . {per groups or banks (-[F02D 41/0087](#) takes precedence-)}
- F02D 41/0087
 - . . {Selective cylinder activation, i.e. partial cylinder operation (-deceleration cut-off [F02D 41/123](#)-)}
- U F02D 41/02
 - . Circuit arrangements for generating control signals
- F02D 41/0205
 - . . {using an auxiliary engine speed control (-engine speed control per se [F02D 31/00](#)-)}
- U F02D 41/021
 - . . {Introducing corrections for particular conditions exterior to the engine (conjoint control of vehicle sub-units for propelling the vehicle [B60W 30/18](#))}
- U F02D 41/0215
 - . . . {in relation with elements of the transmission}
- F02D 41/023
 - {in relation with the gear ratio shifting (-conjoint control for improving gear change [B60W 30/19](#)-)}
- F02D 41/0235
 - . . . {in relation with the state of the exhaust gas treating apparatus (-control of exhaust gas treating apparatus per se [F01N](#)-)}
- F02D 41/04
 - . . Introducing corrections for particular operating conditions (-[F02D 41/14](#) takes precedence-)
- F02D 41/045
 - . . . {Detection of accelerating or decelerating state (-detection thereof in general [G01P](#)-)}
- F02D 41/047
 - . . . {Taking into account fuel evaporation or wall wetting; (-special correction after fuel cut-off [F02D 41/126](#)-)}
- F02D 41/06
 - . . . for engine starting or warming up((-[F02D 41/0255](#) takes precedence-))
- F02D 41/062
 - {for starting (-[F02D 41/061](#) takes precedence-)}
- F02D 41/064
 - {at cold start (-[F02D 41/067](#) takes precedence-)}
- F02D 41/065
 - {at hot start or restart (-[F02D 41/067](#) takes precedence-)}
- F02D 41/067
 - {with control of the choke (-non electronic control of choke see [F02M 1/10](#)-)}
- F02D 41/08
 - . . . for idling (-[F02D 41/06](#) , [F02D 41/16](#) take precedence-)
- F02D 41/12
 - . . . for deceleration((-[F02D 41/0005](#) , [F02D 41/107](#) take precedence-))
- U F02D 41/14
 - . . Introducing closed-loop corrections
- F02D 41/1401
 - . . . {characterised by the control or regulation method (-[F02D 41/1473](#) , [F02D 41/1477](#) take precedence-)}
- U F02D 41/1438
 - . . . {using means for determining characteristics of the combustion gases; Sensors therefor}
- U F02D 41/1444
 - {characterised by the characteristics of the combustion gases}
- U F02D 41/1454
 - {the characteristics being an oxygen content or concentration or the air-fuel ratio}
- F02D 41/1455
 - {with sensor resistivity varying with oxygen concentration (-[F02D 41/1456](#) takes precedence-)}
- F02D 41/1477
 - {characterised by the regulation circuit or part of it, (*e.g. comparator, PI regulator, output*)}(-~~e.g. comparator, PI regulator, output~~)}

- U F02D 41/1493 {Details}
- F02D 41/1496 {Measurement of the conductivity of a sensor (-F02D 41/1455 takes precedence-)}
- F02D 41/18 . . by measuring intake air flow (-measuring flow in general G01F-)
- F02D 41/20 . Output circuits, e.g. for controlling currents in command coils (-current control in inductive loads in general H03K 17/64-)
- F02D 41/2096 . . {for controlling piezo-electric injectors (-drive and control circuit for piezo-electric devices in general H01L 41/042-)}
- F02D 41/22 . Safety or indicating devices for abnormal conditions{(in air/fuel ratio feedback systems F02D 41/1495 , in electric control linkage F02D 11/107 , in purge control systems F02M 25/0809-)}
- F02D 41/30 . {Controlling fuel injection ({ F02D 41/182, } F02D 41/24 take precedence-)}
- F02D 41/32 . . of the low pressure type(-F02D 41/3082 takes precedence-)}
- F02D 41/34 . . . with means for controlling injection timing or duration (-ignition timing F02P 5/00-)
- F02D 41/345 {Controlling injection timing (-F02D 41/365 takes precedence-)}
- F02D 41/36 . . . with means for controlling distribution (-arrangement of ignition distributors F02P 7/00-)
- U F02D 41/38 . . of the high pressure type
- F02D 41/3809 . . . {Common rail control systems (-common rail apparatus F02M 55/025 , F02M 63/0225-)}
- U F02D 41/40 . . . with means for controlling injection timing or duration
- F02D 41/401 {Controlling injection timing (-F02D 41/402 takes precedence-)}
- F02D 41/406 {Electrically controlling a diesel injection pump (-F02D 41/401 takes precedence-)}
- F02D 43/00** **Conjoint electrical control of two or more functions, e.g. ignition, fuel-air mixture, recirculation, supercharging, exhaust-gas treatment (-electrical control of exhaust gas treating apparatus per se F01N 9/00-)**
- F02D 45/00** **Electrical control not provided for in groups F02D 41/00 to F02D 43/00 (-electrical control of exhaust gas treating apparatus F01N 9/00 ; electrical control of one of the functions; ignition, lubricating, cooling, starting, intake-heating, see relevant subclasses for such functions-)**
- F02D 2250/00 - F02D 2700/00** **Controlling, e.g. regulating, fuel injection (-peculiar to engines characterised by their use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures F02D 19/00 ; peculiar to supercharged engines F02D 23/00 ; automatic controllers for prime movers, in general G05D)**

Project: N/A (F02F)

- F02F** **CYLINDERS, PISTONS OR CASINGS, FOR COMBUSTION ENGINES; ARRANGEMENTS OF SEALINGS IN COMBUSTION ENGINES (-specially adapted for rotary-piston or oscillating-piston internal-combustion engines F02B ; specially adapted for gas-turbine plants F02C ; specially adapted for jet-propulsion plants F02K-)**
- NOTES**
- Attention is drawn to the notes preceding class F01 .
- In considering the relationship between class F16 and subclass F02F , class F16 will take precedence unless the subject-matter is specific to combustion engines.
- F02F 1/00** **Cylinders; Cylinder heads (-in general F16J-)**

- F02F 1/004 · {Cylinder liners (~~F02F 1/08~~ , ~~F02F 1/16~~ take precedence-)}
- F02F 1/02 · having cooling means (~~-cylinder heads F02F 1/26-~~)
- U F02F 1/18 · Other cylinders
- F02F 1/186 · · {for use in engines with two or more pistons reciprocating within same cylinder (~~-such engines per se F02B 75/28-~~)}
- U F02F 1/24 · Cylinder heads
- U F02F 1/26 · · having cooling means
- U F02F 1/28 · · · for air cooling
- U F02F 1/30 · · · · Finned cylinder heads
- F02F 1/34 · · · · · with means for directing or distributing cooling medium (~~-F02F 1/32 takes precedence-~~)
- U F02F 1/36 · · · for liquid cooling
- F02F 1/40 · · · · Cylinder heads with means for directing, guiding, or distributing liquid stream (~~-F02F 1/38 takes precedence-~~)
- U F02F 1/42 · · Shape or arrangement of intake or exhaust channels in cylinder heads
- U F02F 1/4214 · · · {specially adapted for four or more valves per cylinder}
- F02F 1/4221 · · · · {particularly for three or more inlet valves (~~-mechanisms for driving such valves F01L 1/265-~~)}
- F02F 1/4228 · · · {Helically-shaped channels} (~~-F02B 31/00 takes precedence-}}~~)
- U F02F 1/4285 · · · {of both intake and exhaust channel}
- F02F 1/4292 · · · · {with liners (~~-F02F 1/4257~~ , ~~F02F 1/4271~~ take precedence-)}
- F02F 3/00** **Pistons (-in general F16J-)**
- U F02F 3/02 · having means for accomodating or controlling heat expansion
- F02F 3/022 · · {the pistons having an oval circumference or non-cylindrical shaped skirts, e.g. oval (~~-F02F 3/025~~ , ~~F02F 3/027~~ take precedence-)}
- F02F 3/10 · having surface coverings (~~-F02F 3/02 takes precedence-~~)
- F02F 3/26 · having combustion chamber in piston head (~~-the surface thereof being covered F02F 3/14-~~)
- F02F 5/00** **Piston rings, e.g. associated with piston crown{ not used see F16J 9/00 }**
- F02F 7/00** **Casings, e.g. crankcases (-engine casings in general F16M-){or frames}**
- U F02F 7/0021 · {Construction}
- F02F 7/0031 · · {Construction kit principle (*modular engines*)}(~~modular engines~~)
- F02F 7/006 · {Camshaft or pushrod housings (~~-oil sumps F01M 11/0004-~~)}
- U F02F 7/0065 · {Shape of casings for other machine parts and purposes, e.g. utilisation purposes, safety}
- F02F 7/008 · · {Sound insulation (~~-see also F02B 77/13-~~)}
- F02F 7/0095 · {Constructing engine casings (~~-welded casings F02F 7/0034-~~)}
- F02F 11/00** **Arrangements of sealings in combustion engines (-piston rings F02F 5/00 { not used, see F16J 9/00 } ; sealings per se F16J-)**
- U **F02F 2200/00** **Manufacturing**
- F02F 2200/06 · Casting (~~-casting of pistons F02F 2003/0007-~~)

Project: N/A (F02K)

F02K

JET-PROPULSION PLANTS (arrangement or mounting of jet-propulsion plants in land vehicles or vehicles in general [B60K](#); arrangement or mounting of jet-propulsion plants in waterborne vessels [B63H](#); controlling aircraft attitude, flight direction or altitude by jet reaction [B64C](#); arrangement or mounting of jet-propulsion plants in aircraft [B64D](#); plants characterised by the power of the working fluid being divided between jet-propulsion and another form of propulsion, e.g. propeller, [F02B](#), [G02C](#); features of jet-propulsion plants common to gas-turbine plants, air intakes or fuel supply control of air-breathing jet-propulsion plants [F02C](#))

NOTES

In this subclass, the following expression is used with the meaning indicated:

- "jet-propulsion plants" means plants using combustion to produce a fluid stream from which a propulsive thrust on the plant is obtained on the reaction principle.

Attention is drawn to the notes preceding class [F01](#).

Project: N/A (F02M)

U F02M 7/00

Carburettors with means for influencing, e.g. enriching or keeping constant, fuel/air ratio of charge under varying conditions (choke valves for starting [F02M 1/00](#))

F02M 7/06

· {-Means for enriching charge on sudden air throttle opening, i.e. at acceleration, e.g. storage means in passage way system}

U F02M 21/00

Apparatus for supplying engines with non-liquid fuels, e.g. gaseous fuels stored in liquid form

NOTE

- in this group the following indexing codes are used: [F02M 2700/12](#) to [F02M 2700/13](#)

U F02M 21/02

· for gaseous fuels (apparatus for vaporising liquid fuel by heat [F02M 31/00](#); engines with apparatus generating gas from solid fuel, e.g. from wood, [F02B 43/08](#))

F02M 21/0203

· · {-characterised by the type of gaseous fuel}

F02M 21/0206

· · · {-Non-hydrocarbon fuels, e.g. hydrogen, ammonia or carbon monoxide}

F02M 21/0209

· · · {-Hydrocarbon fuels, e.g. methane or acetylene}

F02M 21/0212

· · · · {-comprising at least 3 C-Atoms, e.g. liquefied petroleum gas (LPG), propane, butane or dimethyl ether (DME)}

F02M 21/0215

· · · {-Mixtures of gaseous fuels; Natural gas; Biogas; Mine gas; Landfill gas}

F02M 21/0218

· {-Details on the gaseous fuel supply system, e.g. tanks, valves, pipes, pumps, rails, injectors or mixers}

F02M 21/0221

· · · {-Fuel storage reservoirs, e.g. cryogenic tanks}

F02M 21/0224

· · · · {-Secondary gaseous fuel storages}

F02M 21/0227

· · · {-Means to treat or clean gaseous fuels or fuel systems, e.g. removal of tar, cracking, reforming or enriching}

F02M 21/023

· · · {-Valves; Pressure or flow regulators in the fuel supply or return system}

F02M 21/0233

· · · · {-Details of actuators therefor}

F02M 21/0236

· · · · {-Multi-way valves; Multiple valves forming a multi-way valve system}

F02M 21/0239

· · · · {-Pressure or flow regulators therefor}

F02M 21/0242

· · · · {-Shut-off valves; Check valves; Safety valves; Pressure relief valves}

- F02M 21/0245 . . . {High pressure fuel supply systems; Rails; Pumps; Arrangement of valves}
- F02M 21/0248 . . . {Injectors}
- F02M 21/0251 {-Details of actuators therefor}
- F02M 21/0254 {-Electric actuators, e.g. solenoid or piezoelectric}
- F02M 21/0257 {-Details of the valve closing elements, e.g. valve seats, stems or arrangement of flow passages}
- F02M 21/026 {-Lift valves, i.e. stem operated valves}
- F02M 21/0263 {-Inwardly opening single or multi nozzle valves, e.g. needle valves}
- F02M 21/0266 {-Hollow stem valves; Piston valves; Stems having a spherical tip}
- F02M 21/0269 {-Outwardly opening valves, e.g. poppet valves}
- F02M 21/0272 {-Ball valves; Plate valves; Valves having deformable or flexible parts, e.g. membranes; Rotatable valves}
- F02M 21/0275 {-for in-cylinder direct injection, e.g. injector combined with spark plug}
- F02M 21/0278 {-Port fuel injectors for single or multipoint injection into the air intake system}
- F02M 21/0281 {-Adapters, sockets or the like to mount injection valves onto engines; Fuel guiding passages between injectors and the air intake system or the combustion chamber}
- F02M 21/0284 {-Arrangement of multiple injectors or fuel-air mixers per combustion chamber}
- F02M 21/0287 {-characterised by the transition from liquid to gaseous phase ([F02M 21/06](#) takes precedence); Injection in liquid phase; Cooling and low temperature storage}
- F02M 21/029 {-Arrangement on engines or vehicle bodies; Conversion to gaseous fuel supply systems}
- F02M 21/0293 {-Safety devices; Fail-safe measures}
- F02M 21/0296 {-Manufacturing or assembly; Materials, e.g. coatings}
- U F02M 21/04 Gas-air mixing apparatus (carburettors adapted to use liquid and gaseous fuels [F02M 13/08](#); carburetting gases in general [C10J](#))
- F02M 21/042 {-Mixer comprising a plurality of bores or flow passages}
- F02M 21/045 {-Vortex mixer}
- F02M 21/047 {-Venturi mixer}
- U F02M 25/00 Engine-pertinent apparatus for adding non-fuel substances or small quantities of secondary fuel to combustion-air, main fuel, or fuel-air mixture ([F02M 43/00](#) takes precedence; adding secondary air to fuel-air mixture [F02M 23/00](#))**
- U F02M 25/022 Adding fuel and water emulsion, water or steam
- F02M 25/0221 {-Details of the water supply system, e.g. pumps or arrangement of valves}
- F02M 25/0222 {-Water recovery or storage}
- F02M 25/0224 {-Water treatment or cleaning ([F02M 25/032](#) takes precedence)}
- F02M 25/0225 {-Water atomisers or mixers, e.g. using ultrasonic waves}
- F02M 25/0227 {-Control aspects; Arrangement of sensors; Diagnostics; Actuators}
- F02M 25/0228 {-Adding fuel and water emulsion}
- U F02M 25/06 adding lubricant vapours or exhaust gases
- U F02M 25/07 adding exhaust gases; { Exhaust gas recirculation (EGR)}
- F02M 25/0701 {-Handling or preventing deposits, corrosion or wear caused by impurities, e.g. means or measures for preventing sticking of EGR valves ([F02M 25/0718](#) and [F02M 25/074](#) take precedence)}

- F02M 25/0702 . . . {-Detecting, diagnosing or alerting an abnormal function of the EGR system}
- F02M 25/0703 . . . {-having means for connecting parts of the EGR system to each other or to another engine part}
- F02M 25/0704 . . . {-EGR systems specially adapted for supercharged engines}
- U F02M 25/0706 {-for a single turbocharger}
- F02M 25/071 {-Mixed pressure loops, i.e. wherein recirculated exhaust gas is either taken out upstream of the turbine and reintroduced upstream of the compressor, or is taken out downstream of the turbine and reintroduced downstream of the compressor}
- F02M 25/0714 . . . {-Manufacturing or assembling of EGR systems; Special materials or coatings therefor; Design details not provided for in groups [F02M 25/0703](#) or [F02M 25/0734](#)}
- F02M 25/0715 . . . {-Details or layout of the EGR duct, e.g. arrangement in relation to engine parts or by having a cleaner, a cooler, an impeller or mixer in the recirculation duct}
- F02M 25/0717 {-Connections of the EGR duct to the exhaust system}
- F02M 25/0718 {-EGR in combination with means to clean engine-out exhaust gases (the means being installed in the recirculation duct [F02M 25/074](#))}
- F02M 25/0719 {-an EGR valve being located at or near the connection portion}
- F02M 25/072 {-Connections of the EGR duct to the intake system}
- F02M 25/0721 {-Heat shielding or protection means}
- F02M 25/0722 {-Means for improving the mixing of air and recirculated exhaust gases, e.g. multiple openings to the intake system; Venturis}
- F02M 25/0723 {-Feeding recirculated exhaust gases into the intake runner in close proximity to the intake valve or directly into the combustion chamber}
- F02M 25/0724 {-an EGR valve being located at or near the connection portion}
- F02M 25/0726 {-Coolers in the recirculation duct}
- F02M 25/0727 {-Layout or concepts, e.g. flow charts}
- F02M 25/0728 {-with coolers having a bypass}
- F02M 25/0729 {-characterised by details of the bypass valve}
- F02M 25/073 {-with air cooled heat exchangers}
- F02M 25/0731 {-with liquid cooled heat exchangers}
- F02M 25/0732 {-with a plurality of coolers}
- F02M 25/0734 {-Constructional details of the cooler, e.g. pipes, plates, ribs, insulation or materials}
- F02M 25/0735 {-the cooler being combined with another device e.g. valve, heater, compressor, filter, or being arranged on a special engine location}
- F02M 25/0736 {-Air cooled heat exchangers (layout or concepts thereof [F02M 25/073](#))}
- F02M 25/0737 {-Liquid cooled heat exchangers (layout or concepts thereof [F02M 25/0731](#))}
- F02M 25/0738 {-Temperature control}
- F02M 25/0739 {-Compressors or the like in the recirculation duct}
- F02M 25/074 {-Means installed in the EGR duct to clean or treat the recirculated gases, e.g. by catalyst, condensate trap, particulate filter, heater or by electric means}
- F02M 25/0742 {-Means for adding another fluid to the recirculation duct; Reformers}
- F02M 25/0743 {-Temporary storage of recirculated exhaust gas ([F02M 25/0752](#) takes precedence)}

- F02M 25/0744 {Two or more EGR valves disposed in parallel}
- F02M 25/0745 {Two or more EGR valves disposed in series}
- F02M 25/0746 {Timing means in the recirculation duct, e.g. Rotex chargers, cyclically operating valves, regenerators; Means to handle pressure pulsations}
- F02M 25/0747 {Special arrangements of the recirculation duct on the engine, e.g. cylinder head, liner, piston, spark plug, in the manifolds, or with a specially adapted combustion chamber}
- F02M 25/0748 {EGR specially adapted for multicylinder engines or engines having multiple EGR passages}
- F02M 25/0749 {EGR specially adapted for engines where exhaust from one cylinder or a cylinder group is directed to the intake of the engine}
- F02M 25/0751 {a main EGR passage being split-up into multiple passages}
- F02M 25/0752 . . . {Internal exhaust gas recirculation, i.e. the residual exhaust gases are trapped in the cylinder or pushed back from the intake or the exhaust manifold into the combustion chamber without the use of additional pipes}
- F02M 25/0753 . . . {Sensors in or related to EGR systems}
- F02M 25/0754 {for temperature, pressure or flow rate}
- F02M 25/0755 {for characterising a multi-component gas, e.g. for the composition, density or viscosity of the gas}
- F02M 25/0756 {EGR valve position sensors (details on the sensor installation in the valve housing [F02M 25/0794](#))}
- F02M 25/077 . . . {Details of EGR valves}
- F02M 25/0771 {related to the EGR valve actuator or actuation systems}
- F02M 25/0772 {the EGR valve being positioned by an electric actuator, e.g. a solenoid-type actuator}
- F02M 25/0773 {the actuator being a rotary actuator, e.g. stepper motor}
- F02M 25/0774 {the EGR valve being positioned by vacuum}
- F02M 25/0776 {having pressure modulation valves controlling the vacuum}
- F02M 25/0777 {using electronic means, e.g. electromagnetic valves}
- F02M 25/0778 {Constructional details of the pneumatic actuator or mounting thereof}
- F02M 25/0779 {the EGR valve being positioned by positive pressure; Check valves therefor}
- F02M 25/078 {the EGR valve being controlled by changing the air intake pressure}
- F02M 25/0781 {the EGR valve being controlled by exhaust pressure}
- F02M 25/0782 {the EGR valve being controlled by changing the exhaust back pressure}
- F02M 25/0784 {the EGR valve being controlled by fuel pressure}
- F02M 25/0785 {the EGR valve being directly controlled by the operator ([F02M 25/0786](#) takes precedence)}
- F02M 25/0786 {an intake air throttle and EGR valve being operated together}
- F02M 25/0787 {Constructional details of the EGR valve output members, e.g. type of valve, closing members or housings}
- F02M 25/0788 {Lift valves, e.g. poppet valves}
- F02M 25/0789 {Details of the pintle, spindle, springs, bearings, or the connection or sealing towards the actuator}
- F02M 25/079 {Details of the valve closing member, the valve seat or the flow passages}
- F02M 25/0792 {having two or more valve closing members}

- F02M 25/0793 {-Flap valves, rotary valves or other sliding valves; Resilient valves}
- F02M 25/0794 {-Details related to the EGR valve housing}
- F02M 25/0795 {-with means for heating or cooling the EGR valve}
- F02M 25/0796 {-Multi-way valves ([F02M 25/0729](#) takes precedence)}
- F02M 25/0797 {-Shielding or protection, means or methods therefor, e.g. to prevent damage or corrosion}
- F02M 25/0798 {-the EGR valve being combined with another device, e.g. with an intake valve or a compressor ([F02M 25/0786](#) and [F02M 25/0729](#) take precedence)}
- U F02M 25/08 adding fuel vapours drawn from engine fuel reservoir {(electrical control of purge system [F02D 41/003](#))}
- F02M 25/0836 {-Arrangement of valves controlling the admission of fuel vapour to an engine, e.g. valve being disposed between fuel tank or absorption canister and intake manifold}
- U F02M 35/00 **Combustion-air cleaners, air intakes, intake silencers, or induction systems specially adapted for, or arranged on, internal-combustion engines (air cleaners in general [B01D](#))****
- U F02M 35/02 Air cleaners
- F02M 35/0201 {-Housings; Casings; Frame constructions; Lids; Manufacturing or assembling thereof}
- F02M 35/0202 {-Manufacturing or assembling; Materials for air cleaner housings}
- F02M 35/0203 {-by using clamps, catches, locks or the like, e.g. for disposable plug-in filter cartridges}
- F02M 35/0204 {-for connecting or joining to other devices, e.g. pipes}
- F02M 35/0205 {-Details, e.g. sensors or measuring devices}
- F02M 35/0207 {-on the clean air side}
- F02M 35/0208 {-with sensing means on both, the air feeding side and the clean air side}
- F02M 35/0209 {-comprising flexible, resilient, movable or rotatable elements, e.g. with vibrating or contracting movements; Springs; Valves; Flaps ([F02M 35/06](#), [F02M 35/08](#) take precedence)}
- F02M 35/021 {-Arrangements of air flow meters in or on air cleaner housings}
- F02M 35/0212 {-Multiple cleaners}
- F02M 35/0214 {-arranged concentrically or coaxially}
- F02M 35/0215 {-arranged in parallel}
- F02M 35/0216 {-arranged in series, e.g. pre- and main filter in series}
- F02M 35/0217 {-acting by electric discharge; Electrostatic precipitators therefor}
- F02M 35/0218 {-acting by absorption or adsorption; trapping or removing vapours or liquids, e.g. originating from fuel}
- U F02M 35/022 acting by gravity, by centrifugal, or by other inertial forces, e.g. with moistened walls
- F02M 35/0223 {-by centrifugal forces, e.g. cyclones}
- F02M 35/0226 {-by gravity or by mass inertia, e.g. labyrinths, deflectors}
- U F02M 35/024 using filters, e.g. moistened ([F02M 35/026](#) takes precedence; cleaning of the filtering material [F02M 35/08](#))
- F02M 35/02408 {-Manufacturing filter elements}
- F02M 35/02416 {-Fixing, mounting, supporting or arranging filter elements; Filter element cartridges}

- F02M 35/02425 {Support structures increasing the stability or stiffness of the filter element}
- F02M 35/02433 {Special alignment with respect to the air intake flow, e.g. angled or in longitudinal flow direction}
- F02M 35/02441 {Materials or structure of filter elements, e.g. foams}
- F02M 35/0245 {Pleated, folded, corrugated filter elements, e.g. made of paper}
- F02M 35/02458 {consisting of multiple layers, e.g. coarse and fine filters; Coatings; Impregnations; Wet or moistened filter elements}
- F02M 35/02466 {Meshes; Grids; Perforated plates}
- F02M 35/02475 {characterised by the shape of the filter element}
- F02M 35/02483 {Cylindrical, conical, oval, spherical or the like filter elements; wounded filter elements}
- F02M 35/02491 {Flat filter elements, e.g. rectangular}
- F02M 35/04 specially arranged with respect to engine, { to intake system or specially adapted to vehicle}; -Mounting thereon; { Combinations with other devices-(combined with silencers [F02M 35/14](#))}
- F02M 35/042 {combined with other devices, e.g. heaters ([F02M 35/021](#), [F02M 35/06](#), [F02M 35/14](#) take precedence); for use other than engine air intake cleaning, e.g. air intake filters arranged in the fuel vapour recovery system}
- F02M 35/044 {Special arrangements of cleaners in or with respect to the air intake system, e.g. in the intake plenum, in ducts or with respect to carburettors}
- F02M 35/046 {Inline cleaners, i.e. the cleaner being arranged along the length of a wall of a pipe or manifold}
- F02M 35/048 {Arranging or mounting on or with respect to engines or vehicle bodies}
- U F02M 35/08 with means for removing dust, { particles or liquids} from cleaners; with means for indicating clogging; with by-pass means; { Regeneration of cleaners}
- F02M 35/082 {By-pass means}
- F02M 35/084 {Dust collection chambers or discharge sockets, e.g. chambers fed by gravity or closed by a valve}
- F02M 35/086 {Dust removal by flushing, blasting, pulsating or aspirating flow, washing or the like; Mechanical dust removal, e.g. by using scrapers}
- F02M 35/088 {Water, snow or ice proofing; Separation or drainage of water, snow or ice}
- F02M 35/09 Clogging indicators; { Diagnosis or testing of air cleaners-(sensors therefore [F02M 35/10373](#))}
- U F02M 35/10 Air intakes; Induction systems (using kinetic or wave energy of charge in induction systems for improving quantity of charge {[F02B 27/00](#)})
- F02M 35/10006 {characterised by the position of elements of the air intake system in direction of the air intake flow, i.e. between ambient air inlet and supply to the combustion chamber}
- F02M 35/10013 {Means upstream of the air filter; Connection to the ambient air}
- F02M 35/10019 {Means upstream of the fuel injection system, carburettor or plenum chamber ([F02M 35/10013](#) takes precedence)}
- F02M 35/10026 {Plenum chambers}
- F02M 35/10032 {specially shaped or arranged connecting duct between carburettor or air inlet duct and the plenum chamber; specially positioned carburettors or throttle bodies with respect to the plenum chamber}
- F02M 35/10039 {Intake ducts situated partly within or on the plenum chamber housing}
- F02M 35/10045 {Multiple plenum chambers; Plenum chambers having inner separation walls (for V-engines [F02M 35/116](#); for resonance charging [F02B 27/02](#))}

- F02M 35/10052 {special shapes or arrangements of plenum chambers; Constructional details}
- F02M 35/10059 {Swirl chamber upstream of the plenum chamber}
- F02M 35/10065 {Valves arranged in the plenum chamber}
- F02M 35/10072 . . . {Intake runners}
- F02M 35/10078 . . . {Connections of intake systems to the engine}
- F02M 35/10085 {having a connecting piece, e.g. a flange, between the engine and the air intake being foreseen with a throttle valve, fuel injector, mixture ducts or the like}
- F02M 35/10091 . . {characterised by details of intake ducts: shapes; connections; arrangements (ducts within or on the plenum chamber [F02M 35/10039](#))}
- F02M 35/10098 . . . {Straight ducts}
- F02M 35/10104 . . . {Substantially vertically arranged ducts}
- F02M 35/10111 . . . {Substantially V-, C- or U-shaped ducts in direction of the flow path}
- F02M 35/10118 . . . {with variable cross-sections of intake ducts along their length; Venturis; Diffusers}
- F02M 35/10124 . . . {Ducts with special cross-sections, e.g. non-circular cross-section}
- F02M 35/10131 . . . {Ducts situated in more than one plane; Ducts of one plane crossing ducts of another plane}
- F02M 35/10137 . . . {Flexible ducts, e.g. bellows or hoses}
- F02M 35/10144 . . . {Connections of intake ducts to each other or to another device}
- F02M 35/1015 . . {characterised by the engine type (engine intake manifolds [F02M 35/104](#))}
- F02M 35/10157 . . . {Supercharged engines}
- F02M 35/10163 {having air intakes specially adapted to selectively deliver naturally aspirated fluid or supercharged fluid}
- F02M 35/1017 . . . {Small engines, e.g. for handheld tools, or model engines; Single cylinder engines}
- F02M 35/10177 . . . {Engines having multiple fuel injectors or carburettors per cylinder}
- F02M 35/10183 . . . {Engines having intake ducts fed from a separate carburettor or injector, the idling system being considered as a separate carburettor}
- F02M 35/1019 . . . {Two-stroke engines; Reverse-flow scavenged or cross scavenged engines}
- F02M 35/10196 . . . {Carburetted engines}
- F02M 35/10203 . . . {Rotary, e.g. "Wankel", engines; Engines with cylinders in star arrangement; Radial piston engines; W-engines ([F02M 35/112](#) and [F02M 35/116](#) take precedence)}
- F02M 35/10209 . . {Fluid connections to the air intake system; their arrangement of pipes, valves or the like}
- F02M 35/10216 . . . {Fuel injectors; Fuel pipes or rails; Fuel pumps or pressure regulators}
- F02M 35/10222 . . . {Exhaust gas recirculation (EGR); Positive crankcase ventilation (PCV); Additional air admission, lubricant or fuel vapour admission}
- F02M 35/10229 . . . {the intake system acting as a vacuum or overpressure source for auxiliary devices; e.g. brake systems; Vacuum chambers (air storage chamber [F02B 21/00](#))}
- F02M 35/10242 . . {Devices or means connected to or integrated into air intakes; Air intakes combined with other engine or vehicle parts (filters [F02M 35/02](#); silencers [F02M 35/12](#) and [F02M 35/14](#); air coolers [F02B 29/04](#); heaters [F02M 31/00](#); air storage tanks [F02B 21/00](#); compressors [F02B 33/00](#); sensors [F02M 35/10373](#))}

- F02M 35/10249 . . . {-Electrical or electronic devices fixed to the intake system; Electric wiring (electric heaters [F02M 31/12](#); sensors [F02M 35/10373](#))}
- F02M 35/10255 . . . {-Arrangements of valves; Multi-way valves ([F02M 35/10032](#) takes precedence; valves in the plenum chamber [F02M 35/10065](#); check valves [F02M 35/10275](#))}
- F02M 35/10262 . . . {-Flow guides, obstructions, deflectors or the like (for generating a charge motion in the cylinder [F02B 31/00](#); for re-atomising condensed fuel or homogenising fuel-air mixture [F02M 29/00](#))}
- F02M 35/10268 . . . {-Heating, cooling or thermal insulating means (air coolers [F02B 29/04](#); thermal treatment of combustion-air, fuel or fuel-air mixture [F02M 31/00](#); details of the throttle valve housing [F02D 9/1035](#))}
- F02M 35/10275 . . . {-Means to avoid a change in direction of incoming fluid, e.g. all intake ducts diverging from plenum chamber at acute angles; Check valves; Flame arrestors for backfire prevention}
- F02M 35/10281 . . . {-Means to remove, re-atomise or redistribute condensed fuel; Means to avoid fuel particles from separating from the mixture (apparatus for re-atomising condensed fuel or homogenising fuel-air mixture [F02M 29/00](#); other apparatus for treating combustion-air, fuel or fuel-air mixture [F02M 33/00](#))}
- F02M 35/10288 . . . {-Air intakes combined with another engine part, e.g. cylinder head cover or being cast in one piece with the exhaust manifold, cylinder head or engine block}
- F02M 35/10295 . . . {-Damping means, e.g. tranquillising chamber to dampen air oscillations (intake silencers [F02M 35/12](#))}
- F02M 35/10301 . . . {-Flexible, resilient, pivotally or movable parts; Membranes ([F02M 35/10255](#) and [F02M 35/10032](#) take precedence)}
- F02M 35/10308 . . . {-Equalizing conduits, e.g. between intake ducts or between plenum chambers}
- F02M 35/10314 . . . {-Materials for intake systems (for sound damping [F02M 35/12](#); for air cleaners [F02M 35/02](#))}
- F02M 35/10321 . . . {-Plastics; Composites; Rubbers}
- F02M 35/10327 . . . {-Metals; Alloys (catalysts [F02M 27/02](#))}
- F02M 35/10334 . . . {-Foams; Fabrics; Porous media; Laminates; Ceramics; Coatings}
- F02M 35/1034 . . . {-Manufacturing and assembling intake systems}
- F02M 35/10347 . . . {-Moulding, casting or the like}
- F02M 35/10354 . . . {-Joining multiple sections together (joining plastic materials together in general [B29C 65/00](#))}
- F02M 35/1036 {-by welding, bonding or the like (welding plastic materials together in general [B29C 65/02](#))}
- F02M 35/10367 . . . {-Machining, e.g. milling, grinding, punching, sanding; Bending; Surface treatments}
- F02M 35/10373 . . . {-Sensors for intake systems (throttle position sensors [F02D 9/105](#))}
- F02M 35/1038 . . . {-for temperature or pressure}
- F02M 35/10386 . . . {-for flow rate (air flow meters in air cleaners [F02M 35/021](#); circuit arrangements for generating control signals by measuring intake air flow [F02D 41/18](#))}
- F02M 35/10393 . . . {-for characterising a multi-component mixture, e.g. for the composition such as humidity, density or viscosity}
- U F02M 35/104 . . . Intake manifolds
- F02M 35/1042 . . . {-characterised by provisions to avoid mixture or air supply from one plenum chamber to two successively firing cylinders}

- F02M 35/1045
 - • • {characterised by the charge distribution between the cylinders/combustion chambers or its homogenisation}
- F02M 35/1047
 - • • {characterised by some cylinders being fed from one side of engine block and the other cylinders being fed from the other side of engine block}
- U F02M 35/108
 - • • with primary and secondary intake passages
- F02M 35/1085
 - • • • {the combustion chamber having multiple intake valves (modifying induction systems for imparting a rotation to the charge in the cylinder and having multiple air inlets [F02B 31/08](#); shape or arrangement of intake or exhaust channels in cylinder heads [F02F 1/42](#))}
- U F02M 35/116
 - • • for engines with cylinders in V-arrangement or arranged oppositely relative to the main shaft ([F02M 35/108](#) takes precedence)
- F02M 35/1165
 - • • • {Boxer or pancake engines}
- F02M 35/12
 - Intake silencers { Sound modulation, transmission or amplification (intake silencers also used as exhaust silencer [F01N 13/007](#); filters for compressors [F04B 39/16](#))}
- F02M 35/1205
 - • {Flow throttling or guiding}
- F02M 35/1211
 - • • {by using inserts in the air intake flow path, e.g. baffles, throttles or orifices; Flow guides ([F02M 35/1244](#) takes precedence)}
- F02M 35/1216
 - • • {by using a plurality of holes, slits, protrusions, perforations, ribs or the like; Surface structures; Turbulence generators}
- F02M 35/1222
 - • • {by using adjustable or movable elements, e.g. valves, membranes, bellows, expanding or shrinking elements}
- F02M 35/1227
 - • • {by using multiple air intake flow paths, e.g. bypass, honeycomb or pipes opening into an expansion chamber}
- F02M 35/1233
 - • • {by using expansion chambers in the air intake flow path}
- F02M 35/1238
 - • • {by using secondary connections to the ambient, e.g. covered by a membrane or a porous member}
- F02M 35/1244
 - • {using interference; Masking or reflecting sound}
- F02M 35/125
 - • • {by using active elements, e.g. speakers}
- F02M 35/1255
 - • {using resonance}
- F02M 35/1261
 - • • {Helmholtz resonators}
- F02M 35/1266
 - • • {comprising multiple chambers or compartments}
- F02M 35/1272
 - • {using absorbing, damping, insulating or reflecting materials, e.g. porous foams, fibres, rubbers, fabrics, coatings or membranes}
- F02M 35/1277
 - • {Reinforcement of walls, e.g. with ribs or laminates; Walls having air gaps or additional sound damping layers}
- F02M 35/1283
 - • {Manufacturing or assembly; Connectors; Fixations}
- F02M 35/1288
 - • {combined with or integrated into other devices ([F02M 35/14](#) takes precedence); Plurality of air intake silencers ([F02M 35/1266](#) takes precedence)}
- F02M 35/1294
 - • {Amplifying, modulating, tuning or transmitting sound, e.g. directing sound to the passenger cabin; Sound modulation}
- U F02M 35/16
 - characterised by use in vehicles (predominant vehicle aspects, see the relevant classes for the vehicles)
- F02M 35/161
 - • {Arrangement of the air intake system in the engine compartment, e.g. with respect to the bonnet or the vehicle front face}
- F02M 35/162
 - • {Motorcycles; All-terrain vehicles, e.g. quads, snowmobiles; Small vehicles, e.g. forklifts}
- F02M 35/164
 - • {Heavy duty vehicles; e.g. trucks, trains, agricultural or construction machines}

- F02M 35/165
- F02M 35/167
- F02M 35/168

U F02M 37/00

Apparatus or systems for feeding liquid fuel from storage containers to carburettors or fuel-injection apparatus ({F02M 69/00 takes precedence; fuel injection apparatus characterised by their conduits and venting means F02M 55/00; fuel injection apparatus having a common rail F02M 63/0225; control of fuel feeding F02D 33/003; feeding liquid fuel to combustion apparatus, in general F23K 5/00; fuel supply to apparatus for generating combustion products of high pressure or high velocity F23R 3/28}); Arrangements for purifying liquid fuel specially adapted for, or arranged on, internal-combustion engines (separating apparatus, filters per se B01D; centrifuges B04B)

- F02M 37/0011
- F02M 37/0017
- F02M 37/0023
- F02M 37/0029
- F02M 37/0035
- F02M 37/0041
- F02M 37/0047
- F02M 37/0052
- F02M 37/0058
- F02M 37/0064
- F02M 37/007
- F02M 37/0076
- F02M 37/0082
- F02M 37/0088
- F02M 37/0094

U F02M 41/00

Fuel-injection apparatus with two or more injectors fed from a common pressure-source sequentially by means of a distributor

NOTE

- in this group the following indexing codes are used: [F02M 2700/1329](#)

- U F02M 41/08
- U F02M 41/14

- F02M 2041/1438
- • • {Arrangements or details pertaining to the devices classified in [F02M 41/14](#) and subgroups}
- U F02M 51/00 Fuel-injection apparatus characterised by being operated electrically**
- U F02M 51/06
- Injectors peculiar thereto { with means directly operating the valve needle}
- U F02M 51/0603
- • {using piezo-electric or magnetostrictive operating means}
- F02M 51/0607
- • • {-the actuator being hollow, e.g. with needle passing through the hollow space}
- U F02M 53/00 Fuel-injection apparatus characterised by having heating, cooling or thermally-insulating means**
- NOTE
- in this group the following indexing codes are used : [F02M 2700/077](#)
- U F02M 53/04
- Injectors with heating, cooling, or thermally-insulating means
- F02M 53/043
- • {-with cooling means other than air cooling}
- F02M 53/046
- • {-with thermally-insulating means}
- F02M 55/00 Fuel-injection apparatus characterised by their fuel conduits or their venting means; { Arrangements of conduits between fuel tank and pump [F02M 37/00](#)-(venting in general [B01D 19/00](#))}**
- F02M 55/008
- {-Arrangement of fuel passages inside of injectors}
- U F02M 57/00 Fuel-injectors combined or associated with other devices**
- NOTE
- in this group the following indexing codes are used: **F02M2700/07J**, [F02M 2700/1335](#)
- F02M 57/005
- {-the devices being sensors}
- U F02M 57/02
- Injectors structurally combined with fuel-injection pumps
- U F02M 57/022
- • {characterised by the pump drive}
- U F02M 57/025
- • • {hydraulic, e.g. with pressure amplification}
- F02M 57/026
- • • • {-Construction details of pressure amplifiers, e.g. fuel passages or check valves arranged in the intensifier piston or head, particular diameter relationships, stop members, arrangement of ports or conduits}
- U F02M 59/00 Pumps specially adapted for fuel-injection and not provided for in groups [F02M 39/00](#) to [F02M 57/00](#), { e.g. rotary cylinder-block type pumps}(general features of pumps [F04](#))**
- NOTE
- in this group the following indexing codes are used: **F02M2700/07G**, **F02M2700/13E**, [F02M 2700/1323](#), [F02M 2700/1341](#), [F02M 2700/1352](#), [F02M 2700/1388](#)
- U F02M 59/02
- of reciprocating-piston {or reciprocating-cylinder} type
- F02M 59/025
- • {-characterised by a single piston}
- F02M 59/027
- • • {-Unit-pumps, i.e. single piston and cylinder pump-units, e.g. for cooperating with a camshaft}
- F02M 59/04
- • characterised by special arrangement of cylinders with respect to piston-driving shaft, e.g. arranged parallel to that shaft {or swash-plate type pumps-(with rotary valve [F02M 59/362](#))}
- F02M 59/08
- • characterised by two or more pumping elements with conjoint outlet {or several pumping elements feeding one engine cylinder-(feeding common rails [F02M 63/0225](#))}

- U F02M 59/20
 - Varying fuel delivery in quantity or timing (for distributor pumps [F02M 41/123](#), [F02M 41/1411](#))
- U F02M 59/36
 - • by variably-timed valves controlling fuel passages {to pumping elements or overflow passages}
- U F02M 59/366
 - • • {Valves being actuated electrically}
- F02M 59/367
 - • • • {Pump inlet valves of the check valve type being open when actuated}
- F02M 59/368
 - • • • {-Pump inlet valves being closed when actuated}
- U F02M 59/44
 - Details, components parts, or accessories not provided for in, or of interest apart from, the apparatus of groups [F02M 59/02](#) to [F02M 59/42](#); {Pumps having transducers, e.g. to measure displacement of pump rack or piston}
- U F02M 59/46
 - • Valves (in general [F16K](#))
- F02M 59/464
 - • • {-Inlet valves of the check valve type}
- U F02M 61/00**

Fuel-injectors not provided for in groups [F02M 39/00](#) to [F02M 57/00](#) or [F02M 67/00](#)

NOTE

- in this group the following indexing codes are used: [F02M 2700/07](#), [F02M2700/07B](#), [F02M 2700/074](#)
- U F02M 61/16
 - Details not provided for in, or of interest apart from, the apparatus of groups [F02M 61/02](#) to [F02M 61/14](#)
- U F02M 61/18
 - • Injection nozzles, e.g. having valve seats; {Details of valve member seated ends, not otherwise provided for}
- U F02M 61/1806
 - • • {characterised by the arrangement of discharge orifices, e.g. orientation or size}
- F02M 61/1813
 - • • • {-Discharge orifices having different orientations with respect to valve member direction of movement, e.g. orientations being such that fuel jets emerging from discharge orifices collide with each other}
- F02M 61/182
 - • • • {-Discharge orifices being situated in different transversal planes with respect to valve member direction of movement}
- F02M 61/1826
 - • • • {-Discharge orifices having different sizes}
- F02M 61/1833
 - • • • {-Discharge orifices having changing cross sections, e.g. being divergent}
- F02M 61/184
 - • • • {-Discharge orifices having non circular sections}
- F02M 61/1846
 - • • • {-Dimensional characteristics of discharge orifices}
- U F02M 61/1853
 - • • {Orifice plates}
- F02M 61/186
 - • • • {-Multi-layered orifice plates}
- F02M 61/1866
 - • • {-Valve seats or member ends having multiple cones}
- F02M 61/1873
 - • • {-Valve seats or member ends having circumferential grooves or ridges, e.g. toroidal}
- F02M 61/188
 - • • {-Spherical or partly spherical shaped valve member ends}
- F02M 61/1886
 - • • {-Details of valve seats not covered by groups [F02M 61/1866](#) to [F02M 61/188](#)}
- F02M 61/1893
 - • • {-Details of valve member ends not covered by groups [F02M 61/1866](#) to [F02M 61/188](#)}
- F02M 61/20
 - • Closing valves mechanically, e.g. arrangements of springs or weights {or permanent magnets; Damping of valve lift-[F02M 61/205](#) takes precedence}

- U F02M 63/00** **Other fuel-injection apparatus having pertinent characteristics not provided for in groups [F02M 39/00](#) to [F02M 57/00](#) or [F02M 67/00](#); Details, component parts, or accessories of fuel-injection apparatus, not provided for in, or of interest apart from, the apparatus of groups [F02M 39/00](#) to [F02M 61/00](#) or [F02M 67/00](#); { Combination of fuel pump with other devices, e.g. lubricating oil pump}**
- NOTE
- in this group the following indexing codes are used: [F02M 2700/05](#), [F02M 2700/072](#)
- F02M 63/0003 · {Fuel-injection apparatus having a cyclically-operated valve for connecting a pressure source, e.g. constant pressure pump or accumulator, to an injection valve held closed mechanically, e.g. by springs, and automatically opened by fuel pressure (having a distributor [F02M 41/16](#); low pressure fuel injection [F02M 69/14](#))}
- F02M 63/001 · {Fuel-injection apparatus having injection valves held closed mechanically, e.g. by springs, and opened by a cyclically-operated mechanism for a time ([F02M 67/12](#) takes precedence; operated by fluid pressure [F02M 47/00](#); operated electrically [F02M 51/06](#); opened by fuel pressure [F02M 61/00](#))}
- U F02M 63/0012 · {Valves (for fuel metering see the relevant groups, e.g. [F02M 59/34](#); inlet or outlet check valves for fuel injection pumps [F02M 59/46](#); for fuel injectors see the relevant groups, e.g. [F02M 61/00](#))}
- U F02M 63/0014 · {characterised by the valve actuating means}
- U F02M 63/0015 · · · {electrical, e.g. using solenoid}
- F02M 63/0017 · · · · {using electromagnetic operating means}
- F02M 63/0019 · · · · · {characterised by the arrangement of electromagnets or fixed armatures}
- F02M 63/0021 · · · · · {characterised by the arrangement of mobile armatures}
- F02M 63/0022 · · · · · · {the armature and the valve being allowed to move relatively to each other}
- F02M 63/0031 · · {characterized by the type of valves, e.g. special valve member details, valve seat details, valve housing details}
- F02M 63/0033 · · · {Lift valves, i.e. having a valve member that moves perpendicularly to the plane of the valve seat}
- F02M 63/0035 · · · · {Poppet valves, i.e. having a mushroom-shaped valve member that moves perpendicularly to the plane of the valve seat}
- F02M 63/0036 · · · · · {with spherical or partly spherical shaped valve member ends}
- F02M 63/004 · · · {Sliding valves, e.g. spool valves, i.e. whereby the closing member has a sliding movement along a seat for opening and closing}
- F02M 63/0042 · · · · {combined with valve seats of the lift valve type}
- F02M 63/005 · · · {Pressure relief valves}
- F02M 63/0052 · · · · {with means for adjusting the opening pressure, e.g. electrically controlled}
- F02M 63/0054 · · · {Check valves ([F02M 59/462](#), [F02M 59/464](#) take precedence)}
- F02M 63/0056 · · · {Throttling valves, e.g. having variable opening positions throttling the flow}
- U F02M 63/007 · · {Details not provided for in, or of interest apart from, the apparatus of the groups [F02M 63/0014](#) to [F02M 63/0059](#)}
- F02M 63/0071 · · · {characterised by guiding or centering means in valves including the absence of any guiding means, e.g. "flying arrangements"}
- F02M 63/0073 · · · {Pressure balanced valves}

- F02M 63/0075
 - • • {-Stop members in valves, e.g. plates or disks limiting the movement of armature, valve or spring}
- F02M 63/0077
 - • • {-Valve seat details}
- F02M 63/0078
 - • • {-Valve member details, e.g. special shape, hollow or fuel passages in the valve member}
- F02M 63/008
 - • • • {-Hollow valve members, e.g. members internally guided}
- U F02M 63/02
 - Fuel-injection apparatus having several injectors fed by a common pumping element, or having several pumping elements feeding a common injector; Fuel-injection apparatus having provision for cutting-out pumps, pumping elements, or injectors; Fuel-injection apparatus having provisions for variably interconnecting pumping elements and injectors alternatively
- U F02M 63/0225
 - {-Fuel-injection apparatus having a common rail feeding several injectors ([F02M 63/0003](#) takes precedence); Means for varying pressure in common rails; Pumps feeding common rails}
- F02M 63/023
 - • • {-Means for varying pressure in common rails (pressure control [F02D 41/3845](#))}
- F02M 63/0235
 - • • • {-by bleeding fuel pressure}
- F02M 63/024
 - • • • • {-between the low pressure pump and the high pressure pump}
- F02M 63/0245
 - • • • • {-between the high pressure pump and the common rail}
- F02M 63/025
 - • • • • {-from the common rail}
- F02M 63/026
 - • • • • {-Means for reducing the pressure in common rails at power off (pressure control [F02D 41/3845](#))}
- F02M 63/0265
 - • • • {-Pumps feeding common rails}
- F02M 63/027
 - • • • • {-More than one high pressure pump feeding a single common rail}
- F02M 63/0275
 - • • • {-Arrangement of common rails}
- F02M 63/028
 - • • • • {-Returnless common rail system}
- F02M 63/0285
 - • • • • {-having more than one common rail}
- F02M 63/029
 - • • • • • {-per cylinder bank; e.g. storing different fuels or fuels at different pressure levels per cylinder bank}
- F02M 63/0295
 - • • • • • • {-for V- or star- or boxer-engines}
- U **F02M 65/00**
 - Testing fuel-injection apparatus, e.g. testing injection timing {(testing of ignition [F02P 17/00](#); measuring fuel consumption [G01F 9/00](#)); Cleaning of fuel-injection apparatus}**
- F02M 65/001
 - {-Measuring fuel delivery of a fuel injector}
- F02M 65/006
 - {-Measuring or detecting fuel leakage of fuel injection apparatus}
- F02M 69/00**
 - Low-pressure fuel-injection apparatus (electrically operated [F02M 51/00](#)); { Apparatus with both continuous and intermittent injection; Apparatus injecting different types of fuel}**
- NOTE
- in this group the following indexing codes are used: [F02M2700/43C](#), [F02B 2720/15](#)
- U F02M 69/04
 - Injectors peculiar thereto
- U F02M 69/042
 - • {-Positioning of injectors with respect to engine, e.g. in the air intake conduit (mounting of injectors [F02M 61/14](#))}
- F02M 69/043
 - • • {-for injecting into the intake conduit upstream of an air throttle valve}
- F02M 69/044
 - • • {-for injecting into the intake conduit downstream of an air throttle valve}
- F02M 69/045
 - • • • {-for injecting into the combustion chamber ([F02M 69/046](#) takes precedence)}

- F02M 69/046
- U F02M 69/46
 - · · {-for injecting into both the combustion chamber and the intake conduit}
- F02M 69/50
 - Details, component parts or accessories not provided for in, or of interest apart from, the apparatus covered by groups [F02M 69/02](#) to [F02M 69/44](#)
 - · Arrangement of fuel distributors, {e.g. with means for supplying equal portion of metered fuel to injectors-~~([F02M 69/147](#) takes precedence)}~~}
- U **F02M 2700/00** **Supplying, feeding or preparing air, fuel, fuel air mixtures or auxiliary fluids for a combustion engine; Use of exhaust gas; Compressors for piston engines**
- U F02M 2700/43
 - Arrangements for supplying air, fuel or auxiliary fluids to a combustion space of mixture compressing engines working with liquid fuel
- U F02M 2700/4302
 - · whereby air and fuel are sucked into the mixture conduit
- F02M 2700/4323
 - · Throttling devices (*not control systems thereof*)~~(not control systems thereof)~~

Project: N/A (F02N)**F02N**

STARTING OF COMBUSTION ENGINES (-starting of free-piston combustion engines [F02B 71/02](#) ; starting of gas-turbine plants [F02C 7/26](#)-); **STARTING AIDS FOR SUCH ENGINES, NOT OTHERWISE PROVIDED FOR**

NOTES

Attention is drawn to the notes preceding class [F01](#).

The starting of engines which are not explicitly stated to be combustion engines will be classified in this subclass insofar as their starting is equivalent to that of combustion engines.

- F02N 1/00** **Starting apparatus having hand cranks** (-with intermediate power storage [F02N 5/00](#) - [F02N 15/00](#)-)
- F02N 1/005
 - {Safety means (-[F02N 1/02](#) takes precedence-)}
- F02N 3/00** **Other muscle-operated starting apparatus** (-with intermediate power storage [F02N 5/00](#) - [F02N 15/00](#)-)
- F02N 3/04
 - having foot-actuated levers
- U **F02N 7/00** **Starting apparatus having fluid-driven auxiliary engines or apparatus**
- F02N 7/06
 - the engines being of reciprocating-piston type (-of internal-combustion type [F02N 7/10](#)-)
- F02N 7/10
 - characterised by using auxiliary engines or apparatus of combustion type (-by using explosive cartridges [F02N 13/00](#)-)
- F02N 7/12
 - · the engines being of rotary type, e.g. turbines (-[F02N 7/14](#) takes precedence-)
- U **F02N 9/00** **Starting of engines by supplying auxiliary pressure fluid to their working chambers**
- F02N 9/02
 - the pressure fluid being generated directly by combustion (-by using explosive cartridges [F02N 13/00](#)-)
- F02N 11/00** **Starting of engines by means of electric motors** (-arrangement or mounting of prime-movers consisting of electric motors and internal combustion engines for mutual or common propulsion [B60K 6/20](#)-)
- F02N 11/08
 - Circuits {or control means} specially adapted for starting of engines
- F02N 11/0803
 - · {characterised by means for initiating engine start or stop (-[F02N 11/0814](#) takes precedence-)}
- U F02N 11/0814
 - · {comprising means for controlling automatic idle-start-stop}

- U F02N 11/0818
 - • • {Conditions for starting or stopping the engine or for deactivating the idle-start-stop mode}
- F02N 11/0833
 - • • • {Vehicle conditions (~~F02N 11/0822~~ , ~~F02N 11/0825~~ take precedence)}
- F02N 11/10
 - Safety devices (~~F02N 11/08~~ takes precedence)
- F02N 11/101
 - • {for preventing engine starter actuation or engagement (~~preventing unauthorised use or theft of vehicles B60R 25/04~~)}
- F02N 11/105
 - • • {when the engine is already running (~~F02N 11/0848~~ takes precedence)}
- F02N 11/14
 - Starting of engines by means of electric starters with external current supply (~~F02N 11/12~~ takes precedence)
- U F02N 13/00** **Starting of engines, or driving of starting apparatus by use of explosives, e.g. stored in cartridges**
- F02N 13/02
 - Cartridges specially adapted therefor (~~gas cartridges in general F42B 3/04~~)
- F02N 15/00** **Other power-operated starting apparatus; Component parts, details, or accessories, not provided for in, or of interest apart from groups F02N 5/00 to F02N 13/00**
- F02N 15/10
 - Safety devices not otherwise provided for
- U F02N 19/00** **Starting aids for combustion engines, not otherwise provided for**
- F02N 19/02
 - Aiding engine start by thermal means, e.g. using lighted wicks (~~using electrically-heated glow-plugs F02P 19/02~~)
- F02N 19/04
 - • by heating of fluids used in engines (~~heating of lubricants F01M 5/02~~)

Project: N/A (F02P)

- U F02P 3/00** **Other installations**
- U F02P 3/06
 - having capacitive energy storage (piezo-electric or electrostatic ignition [F02P 3/12](#))
- U F02P 3/08
 - • Layout of circuits (for low tension [F02P 3/10](#))
- F02P 3/0853
 - • • {for control of the dwell or anti-dwell time}
- F02P 3/0876
 - • • {the storage capacitor being charged by means of an energy converter (DC-DC converter) or of an intermediate storage inductance}
- U F02P 5/00** **Advancing or retarding ignition; Control therefor**
- U F02P 5/04
 - automatically, as a function of the working conditions of the engine or vehicle or of the atmospheric conditions (dependent on position of personal controls of engine [F02P 5/02](#))
- U F02P 5/145
 - • using electrical means
- U F02P 5/15
 - • • digital data processing
- F02P 5/1518
 - • • • {using two or more central computing units, e.g. interpolation}
- U F02P 17/00** **Testing of ignition installations, e.g. in combination with adjusting (testing fuel injection apparatus [F02M 65/00](#); testing ignition installations in general [F23Q 23/00](#)); Testing of ignition timing in compression-ignition engines**
- F02P 17/12
 - Testing characteristics of the spark, ignition voltage or current (testing of sparking plugs [H01T 13/60](#))
- U F02P 19/00** **Incandescent ignition, e.g. during starting of internal combustion engines; Combination of incandescent and spark ignition**
- U F02P 19/02
 - electric, e.g. layout of circuits of apparatus having glowing plugs
- F02P 19/021
 - • {characterised by power delivery controls}
- F02P 19/022
 - • • {using intermittent current supply}

- F02P 19/023
 - F02P 19/025
 - F02P 19/026
 - F02P 19/027
 - F02P 19/028
- • • {-Individual control of the glow plugs}
 - • {-with means for determining glow plug temperature or glow plug resistance}
 - • {-Glow plug actuation during engine operation}
 - • {-Safety devices, e.g. for diagnosing the glow plugs or the related circuits}
 - • {-the glow plug being combined with or used as a sensor}

Project: N/A (F03B)

- U F03B 7/00** **Water wheels {of swinging flap type [F03B 17/06](#)}**
 - F03B 7/006
 - {-of the endless-chain type}
- U F03B 11/00** **Parts or details not provided for in, or of interest apart from, the preceding groups (controlling [F03B 15/00](#)), {e.g. wear-protection couplings, between turbine and generator}**
 - F03B 11/002
 - {-Injecting air or other fluid ([F03D 11/0025](#), [F03B 11/04](#), [F03B 15/00](#) take precedence)}
- U F03B 13/00** **Adaptations of machines or engines for special use; Combinations of machines or engines with driving or driven apparatus (if the apparatus aspects are predominant, see the relevant subclasses for such apparatus, e.g. [H02K 7/18](#)); Power stations or aggregates (incorporating only machines or engines of positive-displacement type [F03C](#); hydraulic engineering aspects [E02B](#); {combinations with wind energy converters [F03D 9/008](#))}**
 - F03B 13/08
 - Machine or engine aggregates in dams or the like; -Conduits therefor, {e.g. diffusors-(bulb groups [F03B 13/105](#))}
- U F03B 17/00** **Other machines or engines**
 - F03B 17/005
 - {-Installations wherein the liquid circulates in a closed loop ([F03B 13/06](#) takes precedence); Alleged perpetua mobilia of this or similar kind-(perpetua mobilia using hydrostatic thrust or buoyancy [F03B 17/04](#))}
 - F03B 17/06
 - using liquid flow {with predominantly kinetic energy conversion}, e.g. of swinging-flap type, {"run-of-river", "ultra-low head"} ([F03B 13/264](#) takes precedence)}

Project: N/A (F03C)

- U F03C 99/00** **Subject matter not provided for in other groups of this subclass**
 - F03C 99/005
 - {-Free-piston type engines}

Project: N/A (F03D)

- U F03D 1/00** **Wind motors with rotation axis substantially in wind direction (controlling [F03D 7/00](#))**
 - F03D 1/001
 - {-Assembly thereof (fixing wind engaging part to rotor [F03D 1/0658](#)); Erecting methods; Equipments therefor-(foundations [F03D 11/045](#))}
 - F03D 1/003
 - {-Maintenance or repair; Equipment therefor}
 - F03D 1/005
 - {-Transport; Equipments therefor}
 - F03D 1/006
 - {-Commisioning}
 - F03D 1/008
 - • {-Balancing static or dynamic imbalances}
- U F03D 1/06**
 - F03D 1/0608
 - Rotors
 - • {-characterised by their form}
 - F03D 1/0625
 - • • {-of the whole rotor, i.e. form features of the rotor unit}
 - F03D 1/0633
 - • • {-of the blades}
 - F03D 1/0641
 - • • • {-of the section profile of the blades}

- F03D 1/065
 - • {-characterised by their construction, i.e. structural design details ([F03D 1/001](#) takes preference)}
- F03D 1/0666
 - • • {-of the whole rotor}
- F03D 1/0675
 - • • {-of the blades}
- F03D 1/0683
 - • • • {-of the section profile of the blades}
- F03D 1/0691
 - • • {-of the hub}
- U F03D 7/00**
 - • • • • **Controlling wind motors**
- U F03D 7/02
 - the wind motors having rotation axis substantially in wind direction
- F03D 7/0204
 - • {-for orientation in relation to wind direction}
- F03D 7/0208
 - • • {-Orientating out of wind}
- F03D 7/0212
 - • • • {-the rotating axis remaining horizontal}
- F03D 7/0216
 - • • • {-the rotating axis changing to vertical position}
- F03D 7/022
 - • {-Adjusting aerodynamic properties of the blades}
- F03D 7/0224
 - • • {-Adjusting blade pitch}
- F03D 7/0228
 - • • • {-of the blade tips only}
- F03D 7/0232
 - • • {-with flaps or slats (with aerodynamic drag devices on the blades for braking [F03D 7/0252](#))}
- F03D 7/0236
 - • • {-by changing the active surface of the wind engaging parts, e.g. reefing, telescoping, furling or coning}
- F03D 7/024
 - • • {-of individual blades}
- F03D 7/0244
 - • {-for braking}
- F03D 7/0248
 - • • {-by mechanical means acting on the power train}
- F03D 7/0252
 - • • {-with aerodynamic drag devices on the blades}
- F03D 7/0256
 - • {-Stall control (adjusting the blades in stall position [F03D 7/0224](#))}
- F03D 7/026
 - • {-for starting-up}
- F03D 7/0264
 - • {-for stopping or in emergency situation (orientating out of wind [F03D 7/0208](#))}
- F03D 7/0268
 - • • {-Parking or storm protection}
- F03D 7/0272
 - • {-by measures acting on the electrical generator (controlling electric generator per se [H02P](#))}
- F03D 7/0276
 - • {-Controlling rotor speed, e.g. variable speed}
- F03D 7/028
 - • {-Controlling motor output power}
- F03D 7/0284
 - • • {-in relation to the state of the electric grid (supplying or distributing electric power [H02J](#))}
- F03D 7/0288
 - • • • {-to prevent instantaneous damage to any part of the motor}
- F03D 7/0292
 - • • • {-to increase fatigue life}
- F03D 7/0296
 - • {-to prevent, counteract or reduce vibration or noise}
- U F03D 7/04
 - • Automatic control; Regulation
- F03D 7/041
 - • • {-by means of a mechanical governor}
- F03D 7/042
 - • • {-by means of an electrical or electronic controller}
- F03D 7/043
 - • • • {-characterised by the type of control logic}
- F03D 7/044
 - • • • • {-with PID control}
- F03D 7/045
 - • • • • {-with model-based controls}
- F03D 7/046
 - • • • • {-with learning or adaptive control, e.g. self-tuning, fuzzy logic or neural network}
- F03D 7/047
 - • • • • {-characterised by the controller architecture, e.g. multiple processors or data communications}

F03D 7/048 {-Controlling wind farms}

F03D 9/00 Adaptations of wind motors for special use; Combinations of wind motors with apparatus driven thereby (aspects predominantly concerning driven apparatus)(aspects predominantly concerning driven apparatus)

F03D 9/002 . {-the apparatus being an electrical generator (F03D 9/021 takes precedence; details of electrical generators specifically adapted to wind turbines [H02K 7/183](#))}

U F03D 11/00 Details, component parts, or accessories not provided for in, or of interest apart from, the preceding groups

F03D 11/0016 . {-Cleaning}

F03D 11/0025 . {-Ice detection; Deicing means}

F03D 11/0033 . {-Lightning protection}

F03D 11/0041 . {-Warning systems for air traffic}

F03D 11/005 . {-Arrangement of components within nacelle or tower}

F03D 11/0058 . . {-of electrical components}

F03D 11/0066 . . . {-Cabling}

F03D 11/0075 . . {-of mechanical components}

F03D 11/0083 . {-Measures to avoid shadow flicker on surroundings}

F03D 11/0091 . {-Monitoring; Diagnostics; Testing; Equipments therefor}

U F03D 11/02 . Transmission of power, e.g. using hollow exhausting blades {gearings per se [F16H](#)}

F03D 11/028 . . {-without gearing, i.e. gearless drive}

U F03D 11/04 . Mounting structures

F03D 11/045 . . {-Foundations specifically suited for wind motors}

Project: N/A (F03H)

U F03H 1/00 Using plasma to produce a reactive propulsive thrust (generating plasma [H05H 1/00](#)){(ion sources per se [H01J 27/02](#), ion sources for plasma processing or ion beams [H01J 37/08](#))}

F03H 1/0006 . {-Details applicable to different types of plasma thrusters (arrangements specially adapted for fitting plasma engines in or to cosmonautic vehicles [B64G 1/405](#))}

F03H 1/0012 . . {-Means for supplying the propellant}

F03H 1/0018 . . {-Arrangements or adaptations of power supply systems (for cosmonautic vehicles [B64G 1/42](#))}

F03H 1/0025 . . {-Neutralisers, i.e. means for keeping electrical neutrality}

F03H 1/0031 . . {-Thermal management, heating or cooling parts of the thruster (temperature control for cosmonautic vehicles [B64G 1/50](#))}

F03H 1/0037 . {-Electrostatic ion thrusters}

F03H 1/0043 . . {-characterised by the acceleration grid (extraction optics for ion sources [H01J 27/024](#))}

F03H 1/005 . . {-using field emission, e.g. Field Emission Electric Propulsion [FEED]-]}

F03H 1/0056 . . {-with an acceleration grid and an applied magnetic field}

F03H 1/0062 . . {-grid-less with an applied magnetic field}

F03H 1/0068 . . . {-with a central channel, e.g. end-Hall type}

F03H 1/0075 . . . {-with an annular channel; Hall-effect thrusters with closed electron drift}

F03H 1/0081 . {-Electromagnetic plasma thrusters}

- F03H 1/0087 · {-Electro-dynamic thrusters, e.g. pulsed plasma thrusters}
- F03H 1/0093 · {-Electro-thermal plasma thrusters, i.e. thrusters heating the particles in a plasma (resistojets per se [B64G 1/406](#))}

Project: N/A (F04B)

- U F04B 1/00** **Multi-cylinder machines or pumps characterised by number or arrangements of cylinders ([F04B 3/00](#) takes precedence; fluid-driven pumps [F04B 9/08](#); control of reciprocating machines or pumps in general [F04B 49/00](#))**
- U F04B 1/12 · having cylinder axes coaxial with, or parallel or inclined to main shaft axis
- F04B 1/14 · · {-having stationary cylinders}
- U F04B 1/26 · · Control
- U F04B 1/30 · · · for machines or pumps with rotary cylinder block
- F04B 1/306 · · · · {by turning the swash plate (*with fixed inclination*)}{~~with fixed inclination~~}
- U F04B 9/00** **Piston machines or pumps characterised by the driving or driven means to or from their working members**
- U F04B 9/08 · the means being fluid
- U F04B 9/10 · · the fluid being liquid
- U F04B 9/103 · · · having only one pumping chamber
- U F04B 9/105 · · · · reciprocating movement of the pumping member being obtained by a double-acting liquid motor
- F04B 9/1056 · · · · · {-with fluid-actuated inlet or outlet valve (mechanically controlled [F04B 7/00](#))}
- U F04B 27/00** **Multi-cylinder pumps characterised by number or arrangement of cylinders ([F04B 25/00](#) takes precedence; control of reciprocating machines or pumps in general [F04B 49/00](#))**
- U F04B 27/08 · having cylinders coaxial with, or parallel or inclined to, main shaft axis
- U F04B 27/14 · · Control
- U F04B 27/16 · · · of pumps with stationary cylinders
- U F04B 27/18 · · · · by varying the relative positions of a swash plate and a cylinder block
- U F04B 27/1804 · · · · · {Controlled by crankcase pressure}
- F04B 2027/1886 · · · · · · {~~Open (not controlling)~~}*Open (not controlling)* fluid passage-}
- U F04B 39/00** **Component parts, details, or accessories, of pumps or pumping systems, not otherwise provided for in, or of interest apart from, groups [F04B 25/00](#) to [F04B 37/00](#) (for controlling [F04B 49/00](#))**
- U F04B 39/02 · Lubrication (of machines or engines in general [F01M](#))
- F04B 39/0284 · · {-Constructional details, e.g. reservoirs in the casing (swash-plate compressors [F04B 27/0878](#), [F04B 27/109](#))}
- U F04B 43/00** **Machines, pumps, or pumping installations having flexible working members (pumps or pumping installations specially adapted for elastic fluids [F04B 45/00](#))**
- U F04B 43/12 · having peristaltic action
- F04B 43/1215 · · {having no backing plate (*deforming of the tube only by rollers*)}{~~deforming of the tube only by rollers~~}
- U F04B 53/00** **Component parts, details or accessories not provided for in, or of interest apart from, groups [F04B 1/00](#) to [F04B 23/00](#) or [F04B 39/00](#) to [F04B 47/00](#)**
- U F04B 53/14 · Pistons, piston-rods or piston-rod connections

- F04B 53/141
- · {-Intermediate liquid piston between the driving piston and the pumped liquid ([F04B 43/06](#) and [F04B 43/10](#) take precedence)}

U F04B 2203/00**Motor parameters**

- U F04B 2203/02
F04B 2203/0213

- of rotating electric motors
- · Pulses per unit of time (*pulse motor*)(~~pulse-motor~~)

Project: N/A (F04C)**U F04C 2/00**

Rotary-piston machines or pumps (with non-parallel axes of co-operating members [F04C 3/00](#); with the working-chamber walls at least partly resiliently deformable [F04C 5/00](#); with fluid ring or the like [F04C 7/00](#); rotary-piston pumps specially adapted for elastic fluids [F04C 18/00](#); rotary-piston machines or pumps in which the working-fluid is exclusively displaced by, or exclusively displaces, one or more reciprocating pistons [F04B](#))

NOTE

Group [F04C 2/30](#) takes precedence over groups [F04C 2/02](#) to [F04C 2/28](#)

- U F04C 2/02
- of arcuate-engagement type, i.e. with circular translatory movement of co-operating members, each member having the same number of teeth or tooth-equivalents
- U F04C 2/04
- · of internal axis type
- F04C 2/045
- · · {-having a C-shaped piston}
- F04C 2/06
- · of other than internal-axis type ([F04C 2/063](#) takes precedence)
- U F04C 2/08
- of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing
- U F04C 2/082
- · {Details specially related to intermeshing engagement type machines or pumps}
- F04C 2/088
- · · {-Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement}
- U F04C 2/30
- having the characteristics covered by two or more groups [F04C 2/02](#), [F04C 2/08](#), [F04C 2/22](#), [F04C 2/24](#) or having the characteristics covered by one of these groups together with some other type of movement between co-operating members
- U F04C 2/32
- · having both the movement defined in groups [F04C 2/02](#) and relative reciprocation between co-operating members
- F04C 2/321
- · · {-with vanes hinged to the inner member and reciprocating with respect to the inner member}
- F04C 2/322
- · · {-with vanes hinged to the outer member and reciprocating with respect to the outer member}
- U F04C 13/00**
- Adaptations of machines or pumps for special use, e.g. for extremely high pressures (of pumps specially adapted for elastic fluids [F04C 25/00](#))**
- F04C 13/005
- {-Removing contaminants, deposits or scale from the pump; Cleaning}
- U F04C 14/00**
- Control of, monitoring of, or safety arrangements for, machines, pumps or pumping installations (of pumps or pumping installations specially adapted for elastic fluids [F04C 28/00](#))**
- U F04C 14/06
- specially adapted for stopping, starting, idling or no-load operation
- F04C 14/065
- · {-Capacity control using a multiplicity of units or pumping capacities, e.g. multiple chambers, individually switchable or controllable}
- U F04C 14/18
- characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings [F04C 14/10](#))

- F04C 14/185
- • {by varying the useful pumping length of the cooperating members in the axial direction}
- U F04C 15/00** **Component parts, details or accessories of machines, pumps or pumping installations, not provided for in groups [F04C 2/00](#) to [F04C 14/00](#) (of pumps specially adapted for elastic fluids [F04C 18/00](#) to [F04C 29/00](#))**
- U F04C 15/0003
- {Sealing arrangements in rotary-piston machines or pumps (sealing in general [F16J](#))}
- F04C 15/0034
- • {for other than the working fluid, i.e. the sealing arrangements are not between working chambers of the machine}
- U F04C 15/0042
- {Systems for the equilibration of forces acting on the machines or pump (interstice adjustment other than by fluid pressure [F01C 21/102](#))}
- F04C 15/0049
- • {Equalization of pressure pulses (silencing for compressors [F04C 29/06](#))}
- U F04C 15/0057
- {Driving elements, brakes, couplings, transmission specially adapted for machines or pumps (brakes, couplings, transmissions per se [F16](#), [B60](#))}
- F04C 15/0084
- • {Brakes, braking assemblies}
- U F04C 18/00** **Rotary-piston pumps specially adapted for elastic fluids (with fluid ring or the like [F04C 19/00](#); rotary-piston pumps in which the working-fluid is exclusively displaced by one or more reciprocating pistons [F04B](#))**
- NOTE
- Group [F04C 18/30](#) takes precedence over groups [F04C 18/02](#) to [F04C 18/28](#) and [F04C 18/48](#) to [F04C 18/56](#).
- U F04C 18/02
- of arcuate-engagement type, i.e. with circular translatory movement of co-operating members, each member having the same number of teeth or tooth-equivalents
- U F04C 18/0207
- • {both members having co-operating elements in spiral form}
- U F04C 18/0246
- • • {Details concerning the involute wraps or their base, e.g. geometry}
- F04C 18/0253
- • • • {Details concerning the base}
- F04C 18/0261
- • • • • {Details of the ports, e.g. location, number, geometry}
- F04C 18/0269
- • • • • {Details concerning the involute wraps}
- F04C 18/0276
- • • • • {Different wall heights}
- F04C 18/0284
- • • • • {Details of the wrap tips}
- F04C 18/0292
- • • • • {Ports or channels located in the wrap}
- U F04C 18/04
- • of internal-axis type
- F04C 18/045
- • • {having a C-shaped piston}
- U F04C 18/08
- of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing
- U F04C 18/082
- • {Details specially related to intermeshing engagement type pumps}
- F04C 18/088
- • • {Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement}
- U F04C 18/30
- having the characteristics covered by two or more of groups [F04C 18/02](#), [F04C 18/08](#), [F04C 18/22](#), [F04C 18/24](#), [F04C 18/48](#), or having the characteristics covered by one of these groups together with some other type of movement between co-operating members
- U F04C 18/32
- • having both the movement defined in group [F04C 18/02](#) and relative reciprocation between the co-operating members
- F04C 18/321
- • • {with vanes hinged to the inner member and reciprocating with respect to the inner member}

- F04C 18/322
- · · {with vanes hinged to the outer member and reciprocating with respect to the outer member}
- U F04C 27/00 Sealing arrangements in rotary-piston pumps specially adapted for elastic fluids**
- F04C 27/008
- {for other than working fluid, i.e. the sealing arrangements are not between working chambers of the machine}
- U F04C 28/00 Control of, monitoring of, or safety arrangements for, pumps or pumping installations specially adapted for elastic fluids**
- U F04C 28/06
- specially adapted for stopping, starting, idling or no-load operation
- F04C 28/065
- · {Capacity control using a multiplicity of units or pumping capacities, e.g. multiple chambers, individually switchable or controllable}
- U F04C 28/18
- characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings [F04C 28/10](#))
- F04C 28/185
- · {by varying the useful pumping length of the cooperating members in the axial direction}
- U F04C 29/00 Component parts, details or accessories of pumps or pumping installations, not provided for in groups [F04C 18/00](#) to [F04C 28/00](#)**
- U F04C 29/04
- Heating; Cooling (of machines or engines in general [F01P](#)); Heat insulation (heat insulation in general [F16L 59/00](#))
- F04C 29/047
- · {Cooling of electronic devices installed inside the pump housing, e.g. inverters}
- WARNING
WARNING this group is pending a reorganisation, see also [F04C 29/04](#)
- U F04C 29/06
- Silencing (gas-flow silencers or exhaust apparatus for machines or engines in general [F01N](#))
- WARNING
{ WARNING Subgroups [F04C 29/061](#) to [F04C 29/068](#) pending a reorganisation, see also [F04C 29/06](#)}
- F04C 29/061
- · {Silencers using overlapping frequencies, e.g. Helmholtz resonators}
- F04C 29/063
- · {Sound absorbing materials}
- F04C 29/065
- · {Noise dampening volumes, e.g. muffler chambers}
- F04C 29/066
- · · {with means to enclose the source of noise}
- F04C 29/068
- · {the silencing means being arranged inside the pump housing}
- U F04C 2240/00 Components**
- U F04C 2240/80
- Other components
- F04C 2240/808
- · ~~Electronic circuits (e.g. inverters)~~ *Electronic circuits (e.g. inverters)* installed inside the machine

Project: N/A (F04D)

- F04D 1/00 - F04D 15/00 Pumping liquids, or liquids and elastic fluids, by rotary pumps (-pumping liquids and elastic fluids at the same time [F04D 31/00](#)-)**
- F04D 1/00 Radial-flow pumps, e.g. centrifugal pumps; Helico-centrifugal pumps (-adapted for pumping specific fluids [F04D 7/00](#) ; priming or boosting [F04D 9/00](#)-)**
- F04D 1/06
- Multi-stage pumps (-[F04D 1/02](#) , [F04D 13/10](#) take precedence-)
- F04D 3/00 Axial-flow pumps (-priming or boosting [F04D 9/00](#)-)**

- F04D 5/00** **Pumps with circumferential or transverse flow**{(-control thereof [F04D 15/005](#)-)}
- F04D 5/002 · {Regenerative pumps}{(-for elastic fluids [F04D 23/008](#)-)}
- F04D 7/00** **Pumps adapted for handling specific fluids, e.g. by selection of specific materials for pumps or pump parts** (-[F04D 11/005](#) , [F04D 29/22](#) take precedence)
- U F04D 9/00** **Priming; Preventing vapour lock**
- F04D 9/001 · {Preventing vapour lock}{(-[F04D 9/041](#) takes precedence-)}
- F04D 9/002 · · {by means in the very pump}{(-[F04D 9/041](#) takes precedence-)}
- U F04D 9/004** · {Priming of not self-priming pumps}
- F04D 9/005 · · {by adducting or recycling liquid}{(-[F04D 9/006](#) takes precedence-)}
- F04D 9/007 · {Preventing loss of prime, siphon breakers}{(-stopping of pumps [F04D 15/02](#)-)}
- U F04D 9/04** · Using priming pumps; Using booster pumps to prevent vapour-lock
- F04D 9/041 · · {the priming pump having evacuating action}{(-[F04D 9/043](#) and [F04D 9/06](#) take precedence-)}
- F04D 11/00** **Other rotary non-positive-displacement pumps**{(-pumping installations or systems [F04D 13/00](#)-)}
- F04D 13/00** **Pumping installations or systems** (-controlling [F04D 15/00](#)-)
- F04D 13/02 · Units comprising pumps and their driving means (predominant aspects of the driving means, see the relevant classes for such means)
- U F04D 13/06** · · the pump being electrically driven
- F04D 13/0686 · · · {Mechanical details of the pump control unit}{(-pump control [F04D 15/00](#)-)}
- F04D 13/12 · Combinations of two or more pumps}{(-combinations with priming pumps or booster pumps to counteract vapour-lock [F04D 9/04](#)-)}
- F04D 13/14 · · the pumps being all of centrifugal type}{(-deviation valves [F04D 15/0016](#)-)}
- U F04D 15/00** **Control, e.g. regulation, of pumps, pumping installations or systems**
- F04D 15/0027 · {Varying behaviour or the very pump}{(-[F04D 15/0055](#) and [F04D 29/46](#) take precedence-)}
- F04D 15/0077 · {Safety measures}{(-[F04D 15/02](#) takes precedence-)}
- U F04D 15/02** · Stopping of pumps, or operating valves, on occurrence of unwanted conditions
- F04D 15/0209 · · {responsive to a condition of the working fluid}{(-[F04D 15/029](#) takes precedence-)}
- F04D 17/00** **Radial-flow pumps e.g. centrifugal pumps; Helico-centrifugal pumps** (-[F04D 21/00](#) takes precedence)
- U F04D 17/08** · Centrifugal pumps
- U F04D 17/10** · · for compressing or evacuating
- U F04D 17/12** · · · Multi-stage pumps
- F04D 17/14 · · · · with means for changing the flow-path through the stages, e.g. series-parallel, e.g. side-loads,(-surge control [F04D 27/02](#)-)
- U F04D 17/16** · · for displacing without appreciable compression
- F04D 17/167 · · · {Operating by means of fibrous or porous elements}{(-suction filters [F04D 29/701](#)-); e.g. with sponge rotors}
- F04D 17/18 · · characterised by use of centrifugal force of liquids entrained in pumps{ e.g. by means of an auxiliary liquid; fluid ring compressors [F04C 19/00](#)-}

- F04D 19/00** **Axial-flow pumps** (~~F04D 21/00~~ takes precedence-); { pump comprising axial flow and radial flow stages [F04D 17/025](#) }
- U F04D 19/02 • Multi-stage pumps
- F04D 19/026 • • {with a plurality of shafts rotating at different speeds (~~F04D 19/022~~ takes precedence-)}
- F04D 23/00** **Other rotary non-positive-displacement pumps** (~~pumping installations or systems F04D 25/00-~~)
- F04D 23/008 • {Regenerative pumps (for liquids or for liquids and elastic fluids [F04D 5/002](#))}
- F04D 25/00** **Pumping installations or systems** (~~controlling F04D 27/00-~~)
- F04D 25/02 • Units comprising pumps and their driving means (predominant aspect of the driving means, see the relevant classes for such means)
- F04D 25/022 • • {comprising a yielding coupling, e.g. hydraulic (a magnetic coupling [F04D 25/026](#))}
- F04D 25/04 • • the pump being fluid-driven{(pumps driven by exhaust gases [F02B 37/00](#) , [F02B 39/00](#) ; turbochargers [F02C 6/12-](#))}
- F04D 25/06 • • the pump being electrically driven (~~F04D 25/08~~ takes precedence-)
- F04D 25/068 • • • {Mechanical details of the pump control unit (pump control details [F04D 27/00](#))}
- U F04D 25/08 • • the working fluid being air, e.g. for ventilation
- U F04D 25/10 • • • the unit having provisions for automatically changing direction of output air
- F04D 25/105 • • • • {by changing rotor axis direction, e.g. oscillating fans (~~interconnecting rotary motion and oscillating motion F16H-~~)}
- F04D 25/16 • Combinations of two or more pumps {Producing two or more separate gas flows}
- U F04D 27/00** **Control, e.g. regulation, of pumps, pumping installations or systems**
- WARNING
This group is not complete pending a reorganisation. See also group [F04D 27/02](#) which covers also control in general not focussing on surge control
- F04D 27/003 • {by throttling (~~F04D 27/002~~ takes precedence-)}
- WARNING
This group is not complete pending a reorganisation. See also group [F04D 27/0253](#))
- F04D 27/02 • Surge control{(surge detection [F04D 27/001-](#))}
- F04D 27/0207 • • {by bleeding, bypassing or recycling fluids} (~~influencing the boundary layer by an uncontrolled bleeding of the working fluid [F04D 29/681-](#)~~)
- F04D 27/0253 • • {by throttling (~~F04D 27/0246~~ takes precedence-)}
- F04D 29/00** **Details, component parts, or accessories** (~~machine elements in general F16-~~)
- F04D 29/02 • Selection of particular materials (~~for handling specific liquids [F04D 7/00](#) { [F04D 23/001](#) }~~)
- F04D 29/04 • Shafts or bearings, or assemblies thereof (~~specially adapted for elastic fluid pumps [F04D 29/05-](#)~~)
- F04D 29/042 • • Axially shiftable rotors [F04D 29/041](#) takes precedence { control by creating a by-pass [F04D 15/0027-](#)}
- U F04D 29/05 • Shafts or bearings, or assemblies thereof, specially adapted for elastic fluid pumps

- F04D 29/052
 - • Axially shiftable rotors [F04D 29/051](#) takes precedence { control by creating a by-pass [F04D 27/0246](#)-}
- F04D 29/06
 - Lubrication{(-[F04D 13/0606](#) , [F04D 13/0646](#) , [F04D 13/0653](#) take precedence-)}
- F04D 29/18
 - Rotors {specially for elastic fluids [F04D 29/26](#)-}
- F04D 29/181
 - • {Axial flow rotors (-[F04D 29/185](#) take precedence-)}
- F04D 29/186
 - • {Shaftless rotors (-[F04D 13/024](#) takes precedence-)}
- U F04D 29/22
 - • specially for centrifugal pumps
- F04D 29/2205
 - • • {Conventional flow pattern (-[F04D 29/18](#) takes precedence-)}
- F04D 29/2216
 - • • • {Shape, geometry (-[F04D 29/2211](#) takes precedence-)}
- F04D 29/2222
 - • • • {Construction and assembly (-[F04D 29/2211](#) takes precedence-)}
- F04D 29/2238
 - • • {Special flow patterns (-[F04D 11/005](#) takes precedence-)}
- U F04D 29/2261
 - • • {with special measures}
- F04D 29/2266
 - • • • {for sealing or thrust balance (-[F04D 29/04](#) and [F04D 29/16](#) take precedence-)}
- U F04D 29/26
 - Rotors specially for elastic fluids
- F04D 29/28
 - • for centrifugal or helico-centrifugal pumps {for radial-flow or helico-centrifugal pumps}
- F04D 29/32
 - • for axial flow pumps{ multistage rotors [F01D 5/00](#)-}
- U F04D 29/321
 - • • {for axial flow compressors}
- F04D 29/322
 - • • • {blade mountings (-[F01D 5/30](#) takes precedence-)}
- F04D 29/324
 - • • • {blades (-[F01D 5/282](#) takes precedence-)}
- F04D 29/325
 - • • {for axial flow fans (-blade mountings [F04D 29/34](#) , blades [F04D 29/38](#)-)}
- F04D 29/34
 - • • Blade mountings{ for axial flow compressors [F04D 29/322](#)-}
- F04D 29/36
 - • • • adjustable{ flexible blades [F04D 29/382](#)-}
- F04D 29/38
 - • • Blades{(-for axial flow compressors [F04D 29/324](#)-)}
- F04D 29/40
 - Casings; Connections of working fluid{ bleed or by-pass valves [F04D 15/0011](#) , [F04D 27/0215](#)-}
- U F04D 29/42
 - • for radial or helico-centrifugal pumps
- U F04D 29/4206
 - • • {especially adapted for elastic fluid pumps}
- F04D 29/422
 - • • • {Discharge tongues (-[F04D 17/04](#) takes precedence-)}
- U F04D 29/426
 - • • {especially adapted for liquid pumps}
- F04D 29/428
 - • • • {Discharge tongues (-[F04D 17/04](#) takes precedence-)}
- U F04D 29/44
 - • • Fluid-guiding means, e.g. diffusers
- U F04D 29/46
 - • • • adjustable
- F04D 29/48
 - • • • • for unidirectional fluid flow in reversible pumps{ rotors for reverse action [F04D 29/2283](#)-}
- F04D 29/50
 - • • • • for reversing fluid flow{ rotors for reverse action [F04D 29/2283](#)-}
- U F04D 29/52
 - • for axial pumps
- U F04D 29/522
 - • • {especially adapted for elastic fluid pumps}
- F04D 29/526
 - • • • {Details of the casing section radially opposing blade tips (-ducts [F04D 29/545](#)-)}
- U F04D 29/54
 - • • Fluid-guiding means, e.g. diffusers
- F04D 29/541
 - • • • {Specially adapted for elastic fluid pumps (-[F04D 29/56](#) takes precedence-)}
- F04D 29/542
 - • • • • {Bladed diffusers (-fixing blades to stators [F01D 9/042](#)-)}
- F04D 29/548
 - • • • {Specially adapted for liquid pumps (-[F04D 29/56](#) takes precedence-)}

- F04D 29/58 · Cooling ~~(-of machines or engines in general F01P-)~~; Heating; Diminishing heat transfer{ for the motor of air-pump units F04D 25/082 ; cooling of shafts or bearings F04D 29/04-}
- U F04D 29/582 · · {specially adapted for elastic fluid pumps}
- F04D 29/584 · · · {cooling or heating the machine ~~(-F04D 29/5846 , F04D 29/5853 take precedence-)~~}
- U F04D 29/586 · · {specially adapted for liquid pumps}
- F04D 29/588 · · · {cooling or heating the machine ~~(-F04D 29/5886 , F04D 29/5893 take precedence-)~~}
- F04D 29/60 · Mounting; Assembling; Disassembling{ F04D 13/10 takes precedence-}
- F04D 29/66 · Combating cavitation, whirls, noise, vibration or the like ~~(-gas-flow silencers for machines or engines in general F01N-)~~; Balancing ~~(-surge control F04D 27/02-)~~
- U F04D 29/661 · · {especially adapted for elastic fluid pumps}
- F04D 29/662 · · · {Balancing of rotors ~~(-compensating unbalance G01M 1/36-)~~}
- F04D 29/669 · · {especially adapted for liquid pumps ~~(-F04D 29/18 takes precedence-)~~}
- F04D 29/68 · · by influencing boundary layers~~(-by bleeding elastic fluid F04D 27/0215-)~~}
- F04D 33/00** **Non-positive-displacement pumps with other than pure rotation, e.g. of oscillating type** ~~(-F04D 35/00 takes precedence; hand-held fans A45B-)~~
- F04D 35/00** **Pumps producing waves in liquids, i.e. wave.producers** ~~(-for bath tubs A47K 3/10-)~~

Project: N/A (F05B)

- U F05B 2220/00** **Application**
- F05B 2220/90 · in vehicles adapted for vertical or short take off and landing ~~(v/stol vehicles), (v/ stol-vehicles)~~; (gas turbines providing direct vertical lift F05B 2220/308)
- U F05B 2260/00** **Function**
- U F05B 2260/20 · Heat transfer, e.g. cooling
- F05B 2260/207 · · using a phase changing mass, ~~(e.g. heat absorbing by melting or boiling)~~~~(e.g. heat-absorbing-by-melting-or-boiling)~~
- U F05B 2270/00** **Control**
- U F05B 2270/10 · Purpose of the control system
- U F05B 2270/103 · · to affect the output of the engine
- F05B 2270/1033 · · · Power ~~(if explicitly mentioned)~~~~(if explicitly mentioned)~~

Project: N/A (F05C)

- U F05C 2201/00** **Metals**
- U F05C 2201/04 · Heavy metals
- U F05C 2201/0469 · · Other heavy metals
- U F05C 2201/0475 · · · Copper or alloys thereof
- F05C 2201/0478 · · · · Bronze ~~(Cu/Sn alloy)~~~~(Cu/Sn-alloy)~~
- F05C 2201/0481 · · · · Brass ~~(Cu/Zn alloy)~~~~(Cu/Zn-alloy)~~

Project: N/A (F05D)

- U F05D 2220/00** **Application**
- F05D 2220/90 · in vehicles adapted for vertical or short take off and landing ~~(v/stol vehicles)~~~~(v/ stol-vehicles)~~

- U F05D 2260/00** **Function**
- U F05D 2260/60 · Fluid transfer
- F05D 2260/61 · · Removal of CO₂ (removal of CO₂ from waste gases [B01D 53/62](#))

Project: N/A (F15B)**F15B**

SYSTEMS ACTING BY MEANS OF FLUIDS IN GENERAL; FLUID-PRESSURE ACTUATORS, e.g. SERVO-MOTORS; DETAILS OF FLUID-PRESSURE SYSTEMS, NOT OTHERWISE PROVIDED FOR ({{ hydraulically or pneumatically operated lifting devices for soil-working machines [A01B 63/10](#) ; hydraulic drawing presses [B21D](#); hydraulic or pneumatic manipulators [B25J](#); hydraulic or pneumatic tipping devices for vehicles [B60P 1/00](#) ; hydraulic or pneumatic remote control for railway signals [B61L 7/04](#) ; hydraulic or pneumatic mine supports [E21D 15/44](#) }; motors, turbines, compressors, blowers, pumps [F01](#) to [F04](#) ; fluid signal amplifiers, relays [F15C](#) } ; fluid dynamics [F15D](#); fluid clutches or brakes [F16D](#); fluid springs [F16F](#); fluid gearing [F16H](#); pistons, cylinders packing [F16J](#); valves, taps, cocks, actuating-floats [F16K](#); safety valves with auxiliary fluid operation of the main valve [F16K 17/10](#) ; fluid-operating means for valves [F16K 31/12](#) ; pipes, pipe joints [F16L](#); lubricating [F16N](#))

NOTE

In this subclass, the following terms are used with the meaning stated:

- "Telemotor" means a system or device in which a substantially constant amount of fluid is trapped between an input member and an output member to act as a fluid link;

- "Servomotor" means a fluid-pressure actuator, e.g. a piston and cylinder, directly controlled by a valve or other device

which is responsive to operation of an initial controlling member; "Servomotor" does not cover a telemotor. The initial

controlling member may be adjacent to the servomotor or at a distance, and may be, for example a hand lever.

- U F15B 1/00** **Installations or systems with accumulators; Supply reservoir or sump assemblies**
- F15B 1/02 · Installations or systems with accumulators ({{ energy recuperation means [F15B 21/14](#) } ; devices damping pulsations or vibrations for fluids for use in, or connection with, pipes or pipe systems [F16L 55/04](#)-)
- F15B 1/027 · · having accumulator charging devices (control of fluid pressure in general [G05D 16/00](#)-)
- F15B 1/04 · · Accumulators (connection of valves to inflatable elastic bodies [B60C 29/00](#)-)
- U F15B 1/08 · · · using a gas cushion; Gas charging devices; Indicators or floats therefor
- U F15B 1/10 · · · · with flexible separating means
- F15B 1/12 · · · · · attached at their periphery (-[F15B 1/16](#) takes precedence-)
- F15B 1/125 · · · · · {characterised by the attachment means (-[F15B 1/14](#) takes precedence-)}
- U F15B 1/26 · Supply reservoir or sump assemblies
- F15B 1/265 · · {with pressurised main reservoir (-systems with accumulators [F15B 1/02](#)-)}
- F15B 3/00** **Intensifiers or fluid-pressure converters, e.g. pressure exchangers; Conveying pressure from one fluid system to another, without contact between the fluids**(-fluid-driven pumps [F04B 9/08](#)-)

- F15B 5/00** Transducers converting variations of physical quantities, e.g. expressed by variations in positions of members, into fluid-pressure variations or vice-versa; Varying fluid pressure as a function of variations of a plurality of fluid pressures or variations of other quantities (~~F15B 9/00~~ takes precedence; for measuring or controlling ~~G01~~ , ~~G05~~)
- F15B 5/006 · {with electrical means, e.g. electropneumatic transducer (~~F15B 5/003~~ takes precedence)}
- F15B 7/00 - F15B 9/00** **Fluid-pressure actuator systems (systems peculiar to the control of a particular machine or apparatus covered in a single other class, see the class for such machine or apparatus)**
- NOTE**
This heading relates to moving members into one or more definite positions by means of fluid pressure. Pump, motor and control features so far as not peculiar to this purpose are classified in the relevant classes.
- F15B 7/00** **Systems in which the movement produced is definitely related to the output of a volumetric pump; Telemotors**{(for control in motor vehicles ~~B60K~~ ; in ships ~~B63H 25/00~~ ; in aircraft ~~B64C 13/00~~ ; combinations of telemotor and servomotor systems ~~F15B 17/00~~)}
- F15B 7/001 · {with multiple inputs (input units ~~F15B 7/08~~ , e.g. for dual control)}
- F15B 7/005 · {with rotary or crank input (input units ~~F15B 7/08~~)}
- F15B 7/04 · in which the ratio between pump stroke and motor stroke varies with the resistance against the motor (in brake-actuating systems for motor vehicles ~~B60T~~)
- F15B 7/06 · Details (~~F15B 15/00~~ takes precedence)
- F15B 7/10 · · Compensation of the liquid content in a system (~~F15B 7/08~~ takes precedence; pressure-maintaining arrangements for brake master cylinders ~~B60T 11/228~~)
- F15B 9/00** **Servomotors with follow-up action, [e.g. obtained by feed-back control], i.e. in which the position of the actuated member conforms with that of the controlling member**{(~~F15B 11/10~~ takes precedence)}
- U F15B 9/02 · with servomotors of the reciprocable or oscillatable type
- F15B 9/03 · · with electrical control means{(~~F15B 9/07~~ , ~~F15B 9/09~~ , ~~F15B 9/17~~ take precedence)}
- F15B 9/08 · · controlled by valves affecting the fluid feed or the fluid outlet of the servomotor (~~F15B 9/06~~ takes precedence)
- F15B 9/16 · Systems essentially having two or more interacting servomotors, {e.g. multi-stage (~~F15B 18/00~~ , ~~F15B 20/00~~ take precedence; servo-operated pilot valves for the following stage ~~F15B 13/042~~)}
- F15B 11/00** **Servomotor systems without provision for follow-up action; {Circuits therefor}** (~~F15B 3/00~~ takes precedence)
- F15B 11/003 · {Systems with load-holding valves (locking valve details ~~F15B 13/01~~)}
- U F15B 11/02 · Systems essentially incorporating special features for controlling the speed or actuating force of an output member
- F15B 11/022 · · {in which a rapid approach stroke is followed by a slower, high-force working stroke (~~F15B 11/0325~~ takes precedence)}
- F15B 11/024 · · by means of differential connection of the servomotor lines, e.g. regenerative circuits{(interconnecting valve details ~~F15B 13/021~~)}
- F15B 11/028 · · for controlling the actuating force (~~F15B 11/024~~ takes precedence)
- F15B 11/032 · · · by means of fluid-pressure converters (fluid-pressure converters per se ~~F15B 3/00~~)

- F15B 11/036
 - • • by means of servomotors having a plurality of working chambers (-servomotors per se [F15B 15/00-](#))
- F15B 11/04
 - • for controlling the speed (-[F15B 11/024](#) takes precedence-)
- F15B 11/0406
 - • • {during starting or stopping (-[F15B 11/048](#) takes precedence-)}
- F15B 11/042
 - • • by regulating means in feed line,{i.e. "meter in"} (-[F15B 11/046](#) , [F15B 11/05](#) take precedence-)
- F15B 11/0423
 - • • • {by controlling pump output or bypass, other than to maintain constant speed (-adjusting pump output or bypass to maintain constant speed [F15B 11/055-](#))}
- F15B 11/044
 - • • by regulating means in return line,{i.e. "meter out"} (-[F15B 11/046](#) , [F15B 11/05](#) take precedence-)
- F15B 11/05
 - • • specially adapted to maintain constant speed, e.g. pressure-compensated, load-responsive((-[F15B 11/161](#) takes precedence-) ; counterbalance valves [F15B 11/0445](#) ; valves for load sensing [F15B 13/0416](#)-}
- F15B 11/055
 - • • • {by adjusting the pump output or bypass (-pump control [F04B 49/00-](#))}
- U F15B 11/06
 - involving features specific to the use of a compressible medium, e.g. air, steam
- F15B 11/072
 - • Combined pneumatic-hydraulic systems (-[F15B 11/032](#) takes precedence-)
- U F15B 11/08
 - with only one servomotor
- F15B 11/10
 - • in which the servomotor position is a function of the pressure {also pressure regulators as operating means for such systems, the device itself may be a position indicating system}
- F15B 11/12
 - • providing distinct intermediate positions; with step-by-step action{ with a number of pistons in a single cylinder step-by-step action obtained by combining two or more servomotors [F15B 11/18](#) ; (-for restricting the stroke [F15B 15/24-](#))}
- F15B 11/121
 - • • {providing distinct intermediate positions (-[F15B 11/13](#) takes precedence-)}
- F15B 11/126
 - • • • {by means of actuators of the standard type with special circuit controlling means (-[F15B 11/125](#) takes precedence-)}
- F15B 11/13
 - • • using {separate dosing}chambers of predetermined volume
- F15B 11/15
 - • with special provision for automatic return((-fluid gearing with oscillating input or output [F16H 43/00-](#))}
- F15B 11/16
 - with two or more servomotors((-for soil-shifting machines [E02F 9/22-](#))}
- U F15B 11/161
 - • {with sensing of servomotor demand or load}
- F15B 11/162
 - • • {for giving priority to particular servomotors or users (-priority valve details [F15B 13/022](#) ; for power steering [B62D 5/07-](#))}
- F15B 11/168
 - • • {with an isolator valve(duplicating valve){with an isolator valve (duplicating valve), i.e. at least one load sense (LS) pressure is derived from a work port load sense pressure but is not a work port pressure itself}
- F15B 11/20
 - • controlling several interacting or sequentially-operating members (-fluid distribution or supply devices for the control of two or more servomotors [F15B 13/06-](#))
- F15B 11/205
 - • • {the position of the actuator controlling the fluid flow to the subsequent actuator (-telescopic booms [B66C 23/70-](#))}
- F15B 13/00**
 - Details of servomotor systems ({ [F15B 1/04](#) , [F15B 1/26](#) , [F15B 3/00](#) , [F15B 7/08](#) , [F15B 11/02](#) , [F15B 11/10](#) , [F15B 15/00](#) take precedence; Valves for servomotor systems })**
- F15B 13/01
 - Locking-valves or other detent,{i.e. load-holding}, devices (-associated with the actuator [F15B 15/26](#) ; { systems with load-holding valves [F15B 11/003](#) })

- F15B 13/02
- Fluid distribution or supply devices characterised by their adaptation to the control of servomotors ({{ [F15B 11/15](#) takes precedence } ; multiple-way valves [F16K 11/00-](#))
- WARNING**
Subgroups [F15B 13/023](#) to [F15B 13/029](#) are not complete, see [F15B 13/02](#)
- F15B 13/021
- • {Valves for interconnecting the fluid chambers of an actuator (-regenerative circuits [F15B 11/024-](#))}
- F15B 13/022
- • {Flow-dividers; Priority valves (-circuits for giving priority to particular servomotors [F15B 11/162](#) ; priority valves for power steering [B62D 5/07-](#))}
- U F15B 13/04
- • for use with a single servomotor
- U F15B 13/0401
- • • {Valve members; Fluid interconnections therefor}
- U F15B 13/0402
- • • • {for linearly sliding valves, e.g. spool valves}
- F15B 13/0403
- • • • • {a secondary valve member sliding within the main spool, e.g. for regeneration flow (-[F15B 13/0418](#) takes precedence-)}
- F15B 13/0416
- • • {with means or adapted for load sensing (-fluid systems with load sensing [F15B 11/05](#) , [F15B 11/161-](#))}
- F15B 13/042
- • • operated by fluid pressure{(-[F15B 13/0401](#) , [F15B 13/0416](#) take precedence-)}
- F15B 13/0422
- • • • {with manually-operated pilot valves, e.g. joysticks (-arrangements of handles or pedals for cranes [B66C 13/54](#) ; control levers for dredgers and soil shifting machines [E02F 9/2004](#) ; similar mechanical control actuators [G05G 9/047-](#))}
- F15B 13/043
- • • • with electrically-controlled pilot valves{ electrically-operated main valves [F15B 13/044-](#)}
- F15B 13/0433
- • • • • {the pilot valves being pressure control valves (-[F15B 13/0435](#) , [F15B 13/0436](#) , [F15B 13/0438](#) take precedence-)}
- F15B 13/044
- • • operated by electrically-controlled means, e.g. solenoids, torque-motors{(-electrically-controlled pilot valves [F15B 13/043-](#))}
- F15B 13/10
- Special arrangements for operating the actuated device {with or}without using fluid pressure, e.g. for emergency use
- F15B 13/16
- Special measures for feedback,{e.g. by a follow-up device (-servomotors with follow-up action [F15B 9/00](#) ; devices with means or adapted for load sensing [F15B 13/0416-](#))}
- F15B 15/00**
- Fluid-actuated devices for displacing a member from one position to another (-motors for continuous movement [F01](#) to [F03-](#)); Gearing associated therewith**
- F15B 15/08
- characterised by the construction of the motor unit (-pistons, cylinders, packing [F16J-](#))
- F15B 15/082
- • {the motor being of the slotted cylinder type (-locking mechanisms therefor [F15B 15/265-](#))}
- F15B 15/084
- • {the motor being of the rodless piston type, e.g. with cable, belt or chain (-locking mechanisms therefor [F15B 15/265-](#))}
- F15B 15/10
- • the motor being of diaphragm type (-connection of valves to inflatable elastic bodies [B60C 29/00](#); diaphragms, bellows [F16J 3/00](#) ; { clutches with a fluid-actuated elastic clutching member [F16D 25/04](#) })
- U F15B 15/14
- • of the straight-cylinder type
- F15B 15/1404
- • • {in clusters, e.g. multiple cylinders in one block (-servomotors having a plurality of working chambers [F15B 11/036](#) ; motors with two or more independently movable working pistons [F15B 15/1409-](#))}

- F15B 15/1409
 - • • {with two or more independently movable working pistons (-systems [F15B 11/12](#) , [F15B 11/18](#)-)}
- U F15B 15/1423
 - • • {Component parts; Constructional details}
- F15B 15/1428
 - • • • {Cylinders (-[F15B 15/1438](#) takes precedence-)}
- F15B 15/1433
 - • • • {End caps (-[F15B 15/1438](#) takes precedence-)}
- F15B 15/1457
 - • • • {Piston rods (-[F15B 15/1447](#) takes precedence-)}
- F15B 15/1466
 - • • • {Hollow piston sliding over a stationary rod inside the cylinder (-systems for controlling the actuator force [F15B 11/036](#)-)}
- F15B 15/1471
 - • • • {Guiding means other than in the end cap (-[F15B 15/1466](#) takes precedence-)}
- F15B 15/18
 - Combined units comprising both motor and pump((-telemotors [F15B 7/00](#)-)}
- F15B 15/20
 - Other details {e.g. assembly with regulating devices}
- F15B 15/204
 - • {Control means for piston speed or actuating force without external control, e.g. control valve inside the piston (-[F15B 11/02](#) , [F15B 15/22](#) take precedence-)}
- F15B 15/26
 - • Locking mechanisms((-locking valves not combined with the actuator [F15B 13/01](#)-)}
- F15B 20/00**
 - Safety arrangements; Applications of safety devices (safety devices in general [F16P](#),{ [F16P 3/22](#) }); Emergency measures**
- F15B 20/008
 - {Valve failure (-[F15B 18/00](#) takes precedence-)}
- U **F15B 21/00**
 - Common features; Fluid-pressure systems, or details thereof, not covered by any preceding group**
- F15B 21/006
 - {Compensation or avoidance of ambient pressure variation (-systems with a pressurised main reservoir [F15B 1/265](#)-)}
- F15B 21/02
 - Servomotor systems with programme control derived from a store or timing device; Control devices therefor ({ programme control in washing-machines [D06F 33/04](#) } ; programme control in general [G05B 19/00](#)-)}
- U F15B 21/04
 - Special measures taken in connection with the properties of the fluid, e.g. for venting, compensating for changes of viscosity, cooling, filtering, preventing churning
- F15B 21/044
 - • {Deaeration, venting, bleeding; Removal or measurement of undissolved gas (-preventing cavitation [F15B 21/047](#)-)}
- F15B 21/045
 - • {Viscosity or temperature compensation (-warming up fluid systems [F15B 21/042](#)-)}
- F15B 21/047
 - • {Preventing foaming, churning or cavitation (-supply reservoir or sump assemblies [F15B 1/26](#)-)}
- F15B 21/048
 - • {Compressed air preparation units, e.g. comprising air driers or condensers, filters, oilers or lubricators, pressure regulators (-for steam traps [F16T](#) ; for mist lubrication [F16N 7/32](#) ; for air conditioning [F24F](#)-)}
- F15B 21/08
 - Servomotor systems incorporating electrically operated control means (-[F15B 21/02](#) , { [F15B 21/065](#) }take precedence)
- F15B 21/10
 - Delay devices or arrangements ({ hydraulic braking [F15B 11/076](#) } ; associated with fluid motors or actuators [F15B 15/22](#)-)}
- F15B 21/12
 - Fluid oscillators or pulse generators (-fluid oscillators predominantly used for computing or control purposes [F15C 1/22](#) , [F15C 3/16](#)-)}
- F15B 21/14
 - Energy recuperation means (-for vehicles [B60T 1/10](#)-); {Means for reducing energy consumption (-regenerative circuits [F15B 11/024](#)-)}
- U **F15B 2211/00**
 - Circuits for servomotor systems**
- U F15B 2211/30
 - Directional control

- U F15B 2211/305 • • characterised by the type of valves
- U F15B 2211/3056 • • • Assemblies of multiple valves
- U F15B 2211/30565 • • • • having multiple valves for a single output member, e.g. for creating higher valve function by use of multiple valves like two 2/2-valves replacing a 5/3-valve
- F15B 2211/30575 • • • • • in a Wheatstone Bridge arrangement (*also half bridges*)(~~also half bridges~~)
- F15B 2211/3058 • • • • • having additional valves for interconnecting the fluid chambers of a double-acting actuator, e.g. for regeneration mode or for floating mode (-directional control valves having a regenerative position [F15B 2211/3133](#) ; directional control valves having a floating position [F15B 2211/3127](#)-)

Project: N/A (F15C)**U F15C 1/00****Circuit elements having no moving parts**

- F15C 1/001 • {for punched-card machines (punched-card machines [G06K](#)); for typewriters (typewriters [B41J](#)); for keyboards; for conveying cards or tape; for conveying through tubes (transport through tubes [B65G 51/00](#), [B65G 53/00](#)); for computers (non-electric computers [G06C](#), [G06D](#), [G06G](#)); for dc-ac transducers for information processing (dc-ac converters [H02M](#)); for signal transmission-(telegraphic apparatus [H04L](#))}
- F15C 1/002 • {for controlling engines, turbines, compressors (*starting, speed regulation, temperature control or the like*)(~~starting, speed regulation, temperature control or the like~~)(control of internal-combustion piston engines [F02D](#); of turbines [F01D](#), [F02C](#); of fans [F04D 27/00](#); speedometers [G01P](#))}
- F15C 1/003 • {-for process regulation, (*e.g. chemical processes, in boilers or the like*)(~~e.g. chemical processes, in boilers or the like~~); for machine tool control (*e.g. sewing machines, automatic washing machines*)(~~e.g. sewing machines, automatic washing machines~~); for liquid level control; for controlling various mechanisms; for alarm circuits; for ac-dc transducers for control purposes (automatic washing machines [D06F 33/00](#); electric regulation of mechanical working machines [B23Q 35/00](#), [G05B 19/00](#); valve-controlled servomotors [F15B 9/08](#); thread feeding devices for sewing machines [D05B 51/00](#); special provisions on lathes [B23B 25/00](#), [B23Q](#); non-electric signal transmission [G08C 23/00](#))}
- F15C 1/006 • {for aeronautics; for rockets (*drives, controls*)(~~drives, controls~~); for satellites; for air cushion vehicles; for controlling vessels or torpedoes (injectors [F04F 5/00](#); aircraft control by jet reaction [B64C 15/00](#); air pressure regulation in aircraft [B64D 13/04](#); instruments adapted to be mounted in aircraft [B64D 43/00](#))}
- F15C 1/02 • Details, {e.g. special constructional devices for circuits with fluid elements, such as resistances, capacitive circuit elements; devices preventing reaction coupling in composite elements (servomotor systems adapted for maintaining constant speed [F15B 11/05](#)); Switch boards; Programme devices-(hydraulic programme control [F15B 21/02](#))}
- F15C 1/04 • • Means for controlling fluid streams to fluid devices, e.g. by electric signals {or other signals, no mixing taking place between the signal and the flow to be controlled-(fluid information or pulse transducers [F15B 5/00](#); electric regulation with electro-fluid amplifiers [G05B 7/02](#); fluid operating means for indicating or recording members in measuring instruments [G01D 5/42](#); distribution or supply devices for servomotors with electrically-controlled pilot valves [F15B 13/043](#))}

- F15C 1/06
- • Constructional details; -Selection of specified materials {Constructional realisation of one single element; Canal shapes; Jet nozzles; Assembling an element with other devices, only if the element forms the main part-([F15C 5/00](#) takes precedence)}

NOTE

Group [F15C 1/22](#) takes precedence over groups [F15C 1/08](#) to [F15C 1/20](#).

- F15C 1/08
- Boundary-layer devices, e.g. wall-attachment amplifiers {coanda effect-(fluid oscillators of pulse generators [F15B 21/12](#))}

U F15C 3/00 Circuit elements having moving parts (valves, construction of valves [F16K](#))**NOTE**

Group [F15C 3/16](#) takes precedence over groups [F15C 3/02](#) to [F15C 3/14](#).

- F15C 3/06
- using balls {or pill-shaped disks-(using fluid drops or similar deformable bodies [F15C 3/002](#))}

Project: N/A (F15D)**U F15D 1/00 Influencing flow of fluids**

- F15D 1/002
- {-by influencing the boundary layer ([F15D 1/06](#) and [F15D 1/12](#) take precedence)}

WARNING

[F15D 1/002](#) and subgroups are not complete pending a reorganisation, see also [F15D 1/06](#), [F15D 1/065](#) and [F15D 1/12](#)

- U F15D 1/0025
- • {-using passive means, i.e. without external energy supply }
- F15D 1/003
- • • {-comprising surface features, e.g. indentations or protrusions ([F15D 1/0055](#), [F15D 1/006](#) take precedence)}
- F15D 1/0035
- • • • {-in the form of riblets }
- F15D 1/004
- • • • • {-oriented essentially parallel to the direction of flow }
- F15D 1/0045
- • • • • {-oriented essentially perpendicular to the direction of flow }
- F15D 1/005
- • • • • {-in the form of dimples }
- F15D 1/0055
- • • • • {-comprising apertures in the surface, through which fluid is withdrawn from or injected into the flow }
- F15D 1/006
- • • • • {-comprising moving surfaces, wherein the surface, or at least a portion thereof is moved or deformed by the fluid flow }
- F15D 1/0065
- • • • • {-using active means, e.g. supplying external energy or injecting fluid }
- F15D 1/007
- • • • • {-comprising surfaces being moved by external supplied energy }
- F15D 1/0075
- • • • • {-comprising electromagnetic or electrostatic means for influencing the state of the fluid, e.g. for ionising the fluid or for generating a plasma }
- F15D 1/008
- • • • • {-comprising fluid injection or suction means }
- F15D 1/0085
- • • • • {-Methods of making characteristic surfaces for influencing the boundary layer }
- F15D 1/009
- • • • • {-by means of vortex rings }

WARNING

Not complete pending a reorganisation, see also [F15D 1/00](#)

- F15D 1/0095
- {-by means of injecting jet pulses of fluid wherein the injected fluid is taken from the fluid and re-injected again, e.g. synthetic jet actuators ([F15D 1/008](#) takes precedence)}

WARNING

Not complete pending a reorganisation, see also [F15D 1/00](#)

- U F15D 1/02
- in pipes or conduits
- F15D 1/025
- • {-by means of orifice or throttle elements}

WARNING

Not complete pending a reorganisation, see also [F15D 1/02](#)

Project: N/A (F16B)

- U F16B 1/00** **Devices for securing together, or preventing relative movement between, constructional elements or machine parts**

- F16B 1/0071
- {-with markings, colours, indicators or the like (for indicating tensile load [F16B 31/02](#))}

- U F16B 2/00** **Friction-grip releasable fastenings (for cables or ropes, e.g. cleats [F16G 11/00](#)){connections of rods or tubes, e.g. of non-circular section, mutually, including resilient connections [F16B 7/00](#)}**

- U F16B 2/02
- Clamps, i.e. with gripping action effected by positive means other than the inherent resistance to deformation of the material of the fastening

- U F16B 2/18
- • using cams, levers, eccentrics, or toggles {(for connections of rods or tubes engaged telescopically [F16B 7/1418](#), [F16B 7/1427](#), [F16B 7/1454](#))}

- F16B 2/185
- • • {-using levers}

- U F16B 5/00** **Joining sheets or plates, {e.g. panels}, to one another or to strips or bars parallel to them ({[F16B 17/002](#) takes precedence}; by sticking together [F16B 11/00](#); dowel connections [F16B 13/00](#); pins, including deformable elements [F16B 19/00](#); covering of walls [E04F 13/00](#); fastening signs, plates, panels or boards to a supporting structure, fastening readily-detachable elements, e.g. letters to signs, plates, panels, or boards, [G09F 7/00](#))**

- U F16B 5/0004
- {Joining sheets, plates or panels in abutting relationship ([F16B 5/01](#) takes precedence)}

- U F16B 5/0008
- • {by moving the sheets, plates or panels substantially in their own plane, perpendicular to the abutting edge}

- F16B 5/0028
- • • {-using I-shaped connectors (with flanges moving towards each other [F16B 5/0068](#))}

- U F16B 5/02
- by means of fastening members using screw-thread ({[F16B 5/0004](#) takes precedence}; construction of screw-threaded connections [F16B 25/00](#) to [F16B 39/00](#))

- F16B 5/0275
- • {-the screw-threaded element having at least two axially separated threaded portions ([F16B 5/0283](#) takes precedence)}

- U F16B 5/06
- by means of clamps or clips ({[F16B 5/0004](#) takes precedence}; friction-grip releasable fastenings in general [F16B 2/00](#))

- U F16B 5/0607
- • {joining sheets or plates to each other ([F16B 5/0692](#), [F16B 21/082](#) take precedence)}

- U F16B 5/0621
- • • {in parallel relationship (fastened by a drive-pin [F16B 19/1081](#); fastened by a device locking by rotation [F16B 21/02](#))}

- F16B 5/0642
- • • • {-the plates being arranged one on top of the other and in full close contact with each other}

- F16B 5/065
 - • • • {the plates being one on top of the other and distanced from each other, e.g. by using protrusions to keep contact and distance}
- F16B 5/0657
 - • • • {at least one of the plates providing a raised structure, e.g. of the doghouse type, for connection with the clamps or clips of the other plate}
- F16B 5/0664
 - • • • {at least one of the sheets or plates having integrally formed or integrally connected snap-in-features}
- U F16B 5/12
 - Fastening strips or bars to sheets or plates, e.g. rubber strips, decorative strips for motor vehicles, by means of clips (friction- grip releasable fastenings in general [F16B 2/00](#); fastening rods or tubular parts to flat surfaces at an angle [F16B 9/00](#))
- F16B 5/123
 - • {Auxiliary fasteners specially designed for this purpose}
- F16B 5/125
 - • • {one of the auxiliary fasteners is comprising wire or sheet material or is made thereof}
- F16B 5/126
 - • {at least one of the sheets, plates, bars or strips having integrally formed or integrally connected snap-in-features}
- F16B 5/128
 - • {a strip with a C- or U-shaped cross section being fastened to a plate such that the fastening means remain invisible, e.g. the fastening being completely enclosed by the strip}
- U **F16B 11/00**

Connecting constructional elements or machine parts by sticking or pressing them together, e.g. cold pressure welding (non-electric welding in general [B23K](#); methods of using adhesives independently of the form of the surfaces joined [C09J 5/00](#))
- F16B 11/006
 - {by gluing (gluing of plastics material [B29C 65/48](#))}
- U **F16B 19/00**

Bolts without screw-thread; Pins, including deformable elements (in screwed connections [F16B 29/00](#)); Rivets (means for preventing withdrawal [F16B 21/00](#))
- U F16B 19/04
 - Rivets; Spigots or the like fastened by riveting (lead seals [G09F 3/00](#))
- U F16B 19/08
 - • Hollow rivets; Multi-part rivets
- U F16B 19/10
 - • • fastened by expanding mechanically
- NOTES
- Subject matter relating to hollow or single-part rivets fastened by a pull-through mandrel is classified in [F16B 19/1045](#)
- Subject matter relating to hollow or single-part rivets fastened by a drive pin is classified in [F16B 19/1081](#)
- U F16B 19/1027
 - • • • {Multi-part rivets}
- U F16B 19/1036
 - • • • • {Blind rivets}
- U F16B 19/1045
 - • • • • • {fastened by a pull - mandrel or the like ([F16B 19/109](#) takes precedence)}
- F16B 19/1054
 - • • • • • • {the pull-mandrel or the like being frangible}
- F16B 19/1072
 - • • • • • • {the pull-mandrel or the like comprising a thread and being rotated with respect to the rivet, thereby mechanically expanding and fastening the rivet (nuts fastened by riveting [F16B 37/067](#))}
- U **F16B 21/00**

Means for preventing relative axial movement of a pin, spigot, shaft or the like and a member surrounding it (riveted or deformable spigots [F16B 19/04](#); for gudgeon pins [F16J 1/18](#)); Stud-and-socket releasable fastenings
- U F16B 21/06
 - Releasable fastening devices with snap-action {(quickly-detachable or mountable nuts to threaded bolts [F16B 37/0842](#))}
- U F16B 21/07
 - • in which the socket has a resilient part {([F16B 21/065](#) takes precedence)}

- F16B 21/071
 - • • {the socket being integrally formed with a component to be fastened, e.g. a sheet, plate or strip}
- F16B 21/073
 - • • {the socket having a resilient part on its inside}
- F16B 21/075
 - • • • {the socket having resilient parts on its inside and outside}
- F16B 21/076
 - • • {the socket having a resilient part on its outside ([F16B 21/075](#) takes precedence)}
- F16B 21/078
 - • • {the socket having a further molded-in or embedded component, e.g. a ring with snap-in teeth molded into it ([F16B 21/065](#) takes precedence)}
- U F16B 21/08
 - • in which the stud, pin, or spigot has a resilient part ({[F16B 21/065](#), [F16B 21/125](#), [F16B 21/165](#), [F16B 37/043](#) take precedence); wall-dowels [F16B 13/00](#))
- F16B 21/084
 - • • {with a series of flexible ribs or fins extending laterally from the shank of the stud, pin or spigot, said ribs or fins deforming predominantly in a direction parallel to the direction of insertion of the shank}
- F16B 21/086
 - • • {the shank of the stud, pin or spigot having elevations, ribs, fins or prongs intended for deformation or tilting predominantly in a direction perpendicular to the direction of insertion}
- F16B 21/088
 - • • {the stud, pin or spigot being integrally formed with the component to be fastened, e.g. forming part of the sheet, plate or strip}
- U **F16B 25/00**

Screws that cut thread in the body into which they are screwed, e.g. wood screws ({[F16B 35/065](#) takes precedence; joining sheets or plates using screws with two separate threads [F16B 5/0275](#), using screws with adjustment sleeves [F16B 5/0283](#))}

 - F16B 25/001
 - {characterised by the material of the body into which the screw is screwed}
 - F16B 25/0015
 - • {the material being a soft organic material, e.g. wood or plastic ([F16B 25/0031](#) takes precedence)}
 - F16B 25/0021
 - • {the material being metal, e.g. sheet-metal or aluminium ([F16B 25/0031](#) takes precedence)}
 - F16B 25/0026
 - • {the material being a hard non-organic material, e.g. stone, concrete or drywall ([F16B 25/0031](#) takes precedence)}
 - F16B 25/0031
 - • {the screw being designed to be screwed into different materials, e.g. a layered structure or through metallic and wooden parts}
 - F16B 25/0036
 - {characterised by geometric details of the screw}
 - F16B 25/0042
 - • {characterised by the geometry of the thread, the thread being a ridge wrapped around the shaft of the screw}
 - F16B 25/0047
 - • • {the ridge being characterised by its cross-section in the plane of the shaft axis}
 - F16B 25/0052
 - • • {the ridge having indentations, notches or the like in order to improve the cutting behaviour}
 - F16B 25/0057
 - • • {the screw having distinct axial zones, e.g. multiple axial thread sections with different pitch or thread cross-sections}
 - F16B 25/0063
 - • • • {with a non-threaded portion on the shaft of the screw}
 - F16B 25/0068
 - • • {with multiple-threads, e.g. a double thread screws}
 - F16B 25/0073
 - • • {characterised by its pitch, e.g. a varying pitch}
 - F16B 25/0078
 - • {with a shaft of non-circular cross-section or other special geometric features of the shaft}
 - F16B 25/0084
 - • {characterised by geometric details of the tip}
 - F16B 25/0089
 - • {the screw having wings}
 - F16B 25/0094
 - • {the screw being assembled or manufactured from several components, e.g. a tip out of a first material welded to shaft of a second material}

- U F16B 33/00 Features common to bolt and nut**
- F16B 33/06
- Surface treatment of parts furnished with screw-thread, e.g. for preventing seizure {or fretting- (corrosion preventing means [F16B 33/008](#); settable coatings for locking threaded members [F16B 39/225](#); deformable coatings for locking threaded members [F16B 39/34](#))}
- U F16B 37/00 Nuts or like thread-engaging members {(specially shaped for rotations by a tool [F16B 23/00](#))}**
- U F16B 37/04
- Devices for fastening nuts to surfaces, e.g. sheets, plates {(nuts fastened behind a wall by a toggle-mechanism [F16B 13/0808](#); threaded inserts [F16B 37/122](#); measures against loss of bolts, nuts or pins [F16B 41/002](#))}
- U F16B 37/06
- • by means of welding or riveting
- U F16B 37/062
- • • {by means of riveting}
- U F16B 37/065
- • • • {by deforming the material of the nut}
- F16B 37/067
- • • • • {-the material of the nut being deformed by a threaded member generating axial movement of the threaded part of the nut, e.g. blind rivet type}
- F16B 37/08
- Quickly-detachable {or mountable} nuts, e.g. consisting of two or more parts-;
 - Nuts movable along the bolt after tilting the nut {not used, see subgroups}

Project: N/A (F16C)

- U F16C 1/00 Flexible shafts (flexible shafts in dental machines for boring or cutting [A61C 1/18](#)); Mechanical means for transmitting movement in a flexible sheathing**
- U F16C 1/10
- Means for transmitting linear movement in a flexible sheathing, e.g. "Bowden-mechanisms" (guiding-sheathings [F16C 1/26](#))
- F16C 1/101
- • {-Intermediate connectors for joining portions of split flexible shafts and/or sheathings}
- F16C 1/102
- • {-Arrangements to mount end fittings of the sheathings to support walls or brackets}
- F16C 1/103
- • • {-to a hole in the wall or bracket}
- F16C 1/105
- • • {-to a slot in the bracket}
- F16C 1/106
- • {-Plurality of transmitting means, e.g. two or more parallel "Bowden cables"}
- F16C 1/107
- • {-Sealing details}
- F16C 1/108
- • {-Reducing or controlling of vibrations, e.g. by resilient damping of noise}
- U F16C 1/12
- • Arrangements for transmitting movement to or from the flexible member
- U F16C 1/14
- • • Construction of the end-piece of the flexible member; Attachment thereof to the flexible member
- F16C 1/145
- • • • {-Attachment of the end-piece to the flexible member}
- U F16C 1/20
- • Construction of flexible members moved to and fro in the sheathing
- F16C 1/205
- • • {-Details of the outer surface of the flexible member, e.g. coatings}
- U F16C 1/22
- • Adjusting; Compensating length
- F16C 1/223
- • • {-by adjusting the effective length of the flexible member}
- F16C 1/226
- • • {-by adjusting the effective length of the sheathing}
- U F16C 1/26
- Construction of guiding-sheathings or guiding-tubes
- F16C 1/262
- • {-End fittings; Attachment thereof to the sheathing or tube}
- F16C 1/265
- • • {-with a swivel tube connected to the end-fitting of a sheathing, e.g. with a spherical joint}
- F16C 1/267
- • {-Details of the inner surface of the sheathing or tube, e.g. coatings}

- U F16C 3/00** Shafts (flexible shafts [F16C 1/00](#); marine propeller shafts, paddle wheel shafts [B63H 23/34](#)); Axles; Cranks; eccentrics
- U F16C 3/02
F16C 3/023
- Shafts; Axles
 - · {-made of several parts, e.g. by welding}
- U F16C 7/00** Connecting-rods or like links pivoted at both ends (coupling-rods for locomotive driving-wheels [B61C 17/10](#)); Construction of connecting-rod heads (heads rigid with crossheads [F16C 5/00](#))
- U F16C 7/02
F16C 7/026
- Constructions of connecting-rods with constant length
 - · {-made of fibre reinforced resin}
- U F16C 9/00** Bearings for crankshafts or connecting-rods; Attachment of connecting-rods (lubrication of connecting-rods in connection with crankshafts [F16C 3/14](#); connections to crossheads [F16C 5/00](#); to pistons [F16J 1/14](#))
- U F16C 9/04
F16C 9/045
- Connecting-rod bearings; Attachments thereof
 - · {-the bearing cap of the connecting rod being split by fracturing}
- U F16C 11/00** Pivots; Pivotal connections (arrangements of steering linkage connections [B62D 7/16](#))
- U F16C 11/04
F16C 11/06
- Pivotal connections (hinges for doors, windows or wings [E05D](#))
 - · Ball-joints; -Other joints having more than one degree of angular freedom, i.e. universal joints (universal joints in which flexibility is produced by means of pivots or sliding or rolling connecting parts [F16D 3/16](#)-)
 - · · {-Construction of the male part}
 - · · · {-made from two or more parts}
 - · · {-Special features relating to lubrication}
 - · · {-Manufacture of ball-joints and parts thereof, e.g. assembly of ball-joints}
 - · · · {-with at least one separate part to retain the ball member in the socket; Quick-release systems}
 - · · {-Mounting of ball-joints, e.g. fixing them to a connecting rod}
- U F16C 11/08
F16C 11/083
F16C 11/086
- · · with resilient bearings
 - · · · {-by means of parts of rubber or like materials}
 - · · · · {-with an elastomeric member in the blind end of a socket}
- U F16C 13/00** Rolls, drums, discs, or the like (guide rollers in feeding webs [B65H 27/00](#); calender rolls, bearings therefor [D21G 1/02](#); rotary drums or rollers for heat-exchange or heat-transfer apparatus [F28F 5/02](#) ; special adaptations, see the relevant classes); Bearings or mountings therefor
- U F16C 13/02
F16C 13/022
F16C 13/024
- Bearings
 - · {-supporting a hollow roll mantle rotating with respect to a yoke or axle}
 - · · {-adjustable for positioning, e.g. radial movable bearings for controlling the deflection along the length of the roll mantle}
 - · · · {-by fluid pressure}
 - · · · · {-with a plurality of supports along the length of the roll mantle, e.g. hydraulic jacks}
- U F16C 17/00
- U F16C 17/00** Sliding-contact bearings for exclusively rotary movement ([F16C 32/06](#) takes precedence; adjustable bearings [F16C 23/00](#), [F16C 25/00](#))
- U F16C 17/02
F16C 17/022
F16C 17/024
- for radial load only
 - · {-with a pair of essentially semicircular bearing sleeves}
 - · {-with flexible leaves to create hydrodynamic wedge, e.g. radial foil bearings}

- F16C 17/026
 - • {with helical grooves in the bearing surface to generate hydrodynamic pressure, e.g. herringbone grooves}
- F16C 17/028
 - • {with fixed wedges to generate hydrodynamic pressure, e.g. multi-lobe bearings}
- U F16C 17/04
 - for axial load only
- F16C 17/042
 - • {with flexible leaves to create hydrodynamic wedge, e.g. axial foil bearings}
- F16C 17/045
 - • {with grooves in the bearing surface to generate hydrodynamic pressure, e.g. spiral groove thrust bearings}
- F16C 17/047
 - • {with fixed wedges to generate hydrodynamic pressure}
- U F16C 17/10
 - for both radial and axial load
- F16C 17/102
 - • {with grooves in the bearing surface to generate hydrodynamic pressure}
- F16C 17/105
 - • • {with at least one bearing surface providing angular contact, e.g. conical or spherical bearing surfaces}
- F16C 17/107
 - • • {with at least one surface for radial load and at least one surface for axial load}
- U F16C 17/12
 - characterised by features not related to the direction of the load
- U F16C 17/24
 - • with devices affected by abnormal or undesired positions, e.g. for preventing overheating, for safety
- F16C 17/243
 - • • {related to temperature and heat, e.g. for preventing overheating}
- F16C 17/246
 - • • {related to wear, e.g. sensors for measuring wear}
- U F16C 19/00**
 - Bearings with rolling contact, for exclusively rotary movement (adjustable bearings [F16C 23/00](#), [F16C 25/00](#); { electrically insulating bearings [H02K 5/173](#)})**
- U F16C 19/02
 - with bearing balls essentially of the same size in one or more circular rows
- U F16C 19/14
 - • for both radial and axial load
- U F16C 19/16
 - • • with a single row of balls
- F16C 19/163
 - • • • {with angular contact}
- F16C 19/166
 - • • • • {Four-point-contact ball bearings}
- U F16C 19/18
 - • • with two or more rows of balls
- F16C 19/181
 - • • • {with angular contact}
- F16C 19/182
 - • • • • {in tandem arrangement}
- F16C 19/183
 - • • • • {with two rows at opposite angles}
- F16C 19/184
 - • • • • • {in O-arrangement}
- F16C 19/185
 - • • • • • • {with two raceways provided integrally on a part other than a race ring, e.g. a shaft or housing}
- F16C 19/186
 - • • • • • • • {with three raceways provided integrally on parts other than race rings, e.g. third generation hubs}
- F16C 19/187
 - • • • • • • • • {with all four raceways integrated on parts other than race rings, e.g. fourth generation hubs}
- F16C 19/188
 - • • • • {with at least one row for radial load in combination with at least one row for axial load}
- U F16C 19/22
 - with bearing rollers essentially of the same size in one or more circular rows, e.g. needle bearings
- F16C 19/225
 - • {Details of the ribs supporting the end of the rollers}
- U F16C 19/30
 - • for axial load mainly
- F16C 19/305
 - • • {consisting of rollers held in a cage}
- U F16C 19/34
 - • for both radial and axial load

- U F16C 19/36 . . . with a single row of rollers
- F16C 19/361 {with cylindrical rollers}
- F16C 19/362 {the rollers being crossed within the single row}
- F16C 19/364 {with tapered rollers, i.e. rollers having essentially the shape of a truncated cone}
- U F16C 19/38 . . . with two or more rows of rollers
- F16C 19/381 {with at least one row for radial load in combination with at least one row for axial load}
- F16C 19/383 {with tapered rollers, i.e. rollers having essentially the shape of a truncated cone}
- F16C 19/385 {with two rows, i.e. double-row tapered roller bearings}
- F16C 19/386 {in O-arrangement}
- F16C 19/388 {with four rows, i.e. four row tapered roller bearings}
- U F16C 19/44 . . Needle bearings
- U F16C 19/46 . . . with one row or needles
- F16C 19/463 {consisting of needle rollers held in a cage, i.e. subunit without race rings}
- F16C 19/466 {comprising needle rollers and an outer ring, i.e. subunit without inner ring}
- U F16C 19/49 . Bearings with both balls and rollers
- F16C 19/492 . . {with two or more rows with angular contact}
- F16C 19/495 . . . {with two rows}
- F16C 19/497 {in O-arrangement}
- U F16C 19/50 . Other types of ball or roller bearings
- F16C 19/502 . . {with rolling elements in rows not forming a full circle}
- F16C 19/505 . . {with the diameter of the rolling elements of one row differing from the diameter of those of another row}
- F16C 19/507 . . {with rolling elements journaled in one of the moving parts, e.g. stationary rollers to support a rotating part}
- U F16C 19/52 . with devices affected by abnormal or undesired conditions
- F16C 19/522 . . {related to load on the bearing, e.g. bearings with load sensors or means to protect the bearing against overload}
- F16C 19/525 . . {related to temperature and heat, e.g. insulation}
- F16C 19/527 . . {related to vibration and noise}
- U F16C 19/54 . Systems consisting of a plurality of bearings with rolling friction (spindle bearings [F16C 35/08](#))
- F16C 19/541 . . {Systems consisting of juxtaposed rolling bearings including at least one angular contact bearing}
- F16C 19/542 . . . {with two rolling bearings with angular contact}
- F16C 19/543 {in O-arrangement}
- F16C 19/545 . . {Systems comprising at least one rolling bearing for radial load in combination with at least one rolling bearing for axial load}
- F16C 19/546 . . {Systems with spaced apart rolling bearings including at least one angular contact bearing}
- F16C 19/547 . . . {with two angular contact rolling bearings}
- F16C 19/548 {in O-arrangement}

- U F16C 23/00 Bearings for exclusively rotary movement adjustable for aligning or positioning (F16C 27/00 takes precedence; { hydrostatic bearings F16C 32/067})**
- U F16C 23/02 · Sliding-contact bearings
 - U F16C 23/04 · · self-adjusting
 - F16C 23/041 · · · {-with edge relief}
 - F16C 23/043 · · · {-with spherical surfaces, e.g. spherical plain bearings}
 - F16C 23/045 · · · · {-for radial load mainly, e.g. radial spherical plain bearings}
 - F16C 23/046 · · · · · {-with split outer rings}
 - F16C 23/048 · · · · {-for axial load mainly}
 - U F16C 23/06 · Ball or roller bearings
 - U F16C 23/08 · · self-adjusting
 - F16C 23/088 · · · {-by means of crowning}
- U F16C 25/00 Bearings for exclusively rotary movement adjustable for wear or play (F16C 27/00 takes precedence)**
- U F16C 25/02 · Sliding-contact bearings
 - U F16C 25/04 · · self-adjusting
 - F16C 25/045 · · · {-with magnetic means to preload the bearing}
 - U F16C 25/06 · Ball or roller bearings
 - U F16C 25/08 · · self-adjusting
 - F16C 25/083 · · · {-with resilient means acting axially on a race ring to preload the bearing}
 - F16C 25/086 · · · {-with magnetic means to preload the bearing}
- U F16C 27/00 Elastic or yielding bearings or bearing supports, for exclusively rotary movement (shock-damping bearings for watches or clocks G04B 31/02)**
- U F16C 27/04 · Ball or roller bearings, e.g. with resilient rolling bodies
 - F16C 27/045 · · {-with a fluid film, e.g. squeeze film damping}
- U F16C 29/00 Bearings for parts moving only linearly (F16C 32/06 takes precedence; incorporated in flexible shafts F16C 1/28){ parts of bearings in general and special methods for making bearings or parts thereof in general F16C 33/00}**
- F16C 29/001 · {-adjustable for alignment or positioning}
 - F16C 29/002 · {-Elastic or yielding linear bearings or bearing supports}
 - F16C 29/004 · {-Fixing of a carriage or rail, e.g. rigid mounting to a support structure or a movable part}
 - F16C 29/005 · {-Guide rails or tracks for a linear bearing, i.e. adapted for movement of a carriage or bearing body there along}
 - F16C 29/007 · {-Hybrid linear bearings, i.e. including more than one bearing type, e.g. sliding contact bearings as well as rolling contact bearings}
 - F16C 29/008 · {-Systems with a plurality of bearings, e.g. four carriages supporting a slide on two parallel rails}
 - U F16C 29/04 · Ball or roller bearings
 - F16C 29/043 · · {-with two massive rectangular rails having facing grooves}
 - F16C 29/045 · · {-having rolling elements journaled in one of the moving parts}
 - F16C 29/046 · · · {-with balls journaled in pockets}
 - U F16C 29/06 · · in which the rolling bodies circulate partly without carrying load

- F16C 29/0602 . . . {-Details of the bearing body or carriage or parts thereof, e.g. methods for manufacturing or assembly}
- F16C 29/0604 {-of the load bearing section}
- F16C 29/0607 {-of parts or members for retaining the rolling elements, i.e. members to prevent the rolling elements from falling out of the bearing body or carriage}
- F16C 29/0609 {-of the ends of the bearing body or carriage where the rolling elements change direction, e.g. end caps}
- F16C 29/0611 {-of the return passages, i.e. the passages where the rolling elements do not carry load}
- F16C 29/0614 . . . {-with a shoe type bearing body, e.g. a body facing one side of the guide rail or track only}
- F16C 29/0616 {-for supporting load essentially in a single direction}
- F16C 29/0619 {-with rollers or needles}
- F16C 29/0621 {-for supporting load in essentially two directions, e.g. by multiple points of contact or two rows of rolling elements}
- F16C 29/0623 {-with balls}
- F16C 29/0626 {-with rollers}
- F16C 29/0628 {-crossed within a row}
- F16C 29/063 . . . {-with a bearing body, e.g. a carriage or part thereof, provided between the legs of a U-shaped guide rail or track}
- F16C 29/0633 . . . {-with a bearing body defining a U-shaped carriage, i.e. surrounding a guide rail or track on three sides}
- F16C 29/0635 {-whereby the return paths are provided as bores in a main body of the U-shaped carriage, e.g. the main body of the U-shaped carriage is a single part with end caps provided at each end}
- F16C 29/0638 {-with balls}
- F16C 29/064 {-with two rows of balls, one on each side of the rail}
- F16C 29/0642 {-with four rows of balls}
- F16C 29/0645 {-with load directions in O-arrangement}
- F16C 29/0647 {-with load directions in X-arrangement}
- F16C 29/065 {-with rollers}
- F16C 29/0652 {-whereby the return paths are at least partly defined by separate parts, e.g. covers attached to the legs of the main body of the U-shaped carriage}
- F16C 29/0654 {-with balls}
- F16C 29/0657 {-with two rows of balls, one on each side of the rail}
- F16C 29/0659 {-with four rows of balls}
- F16C 29/0661 {-with load directions in O-arrangement}
- F16C 29/0664 {-with load directions in X-arrangement}
- F16C 29/0666 {-with rollers}
- F16C 29/0669 {-whereby the main body of the U-shaped carriage is an assembly of at least three major parts, e.g. an assembly of a top plate with two separate legs attached thereto in the form of bearing shoes (bearing shoes per se [F16C 29/0614](#))}
- F16C 29/0671 {-with balls}
- F16C 29/0673 {-with rollers}

- F16C 29/0676
 - • • {-with a bearing body or carriage almost fully embracing the guide rail or track, e.g. a circular sleeve with a longitudinal slot for the support posts of the rail}
- F16C 29/0678
 - • • {-with a bearing body, i.e. the body carrying the circulating rolling elements, provided in the interior of a sleeve-like guide member defining the opposing raceways, e.g. in a telescopic shaft (telescopic shafts with built-in bearings [F16C 3/035](#); yielding coupling allowing axial displacement by rolling elements [F16D 3/065](#))}
- F16C 29/068
 - • • {-with the bearing body fully encircling the guide rail or track}
- F16C 29/0683
 - • • • {-the bearing body encircles a rail or rod of circular cross-section, i.e. the linear bearing is not suited to transmit torque}
- F16C 29/0685
 - • • • • {-with balls}
- F16C 29/0688
 - • • • • {-whereby a sleeve surrounds the circulating balls and thicker part of the sleeve form the load bearing tracks}
- F16C 29/069
 - • • • • {-whereby discrete load bearing elements, e.g. discrete load bearing plates or discrete rods, are provided in a retainer and form the load bearing tracks}
- F16C 29/0692
 - • • • {-the bearing body encircles a guide rail or track of non-circular cross-section, e.g. with grooves or protrusions, i.e. the linear bearing is suited to transmit torque (telescopic shafts with built-in bearings [F16C 3/035](#); yielding coupling allowing axial displacement by rolling elements [F16D 3/065](#))}
- F16C 29/0695
 - • • • • {-with balls}
- F16C 29/0697
 - • • • • {-with polygonal guide rail or track}
- U F16C 29/08
 - Arrangements for covering or protecting the ways {(protective coverings for parts of machine tools [B23Q 11/08](#))}
- F16C 29/084
 - • {-fixed to the carriage or bearing body movable along the guide rail or track}
- F16C 29/086
 - • • {-Seals being essentially U-shaped, e.g. for a U-shaped carriage}
- F16C 29/088
 - • • {-Seals extending in the longitudinal direction of the carriage or bearing body}
- U F16C 29/12
 - Arrangements for adjusting play
- F16C 29/123
 - • {-using elastic means}
- F16C 29/126
 - • {-using tapered surfaces or wedges}
- U F16C 32/00**
 - Bearings not otherwise provided for**
- U F16C 32/04
 - using magnetic or electric supporting means
- F16C 32/0402
 - • {-combined with other supporting means, e.g. hybrid bearings with both magnetic and fluid supporting means}
- F16C 32/0404
 - • {-Electrostatic bearings}
- F16C 32/0406
 - • {-Magnetic bearings}
- F16C 32/0408
 - • • {-Passive magnetic bearings}
- F16C 32/041
 - • • • {-with permanent magnets on one part attracting the other part}
- F16C 32/0412
 - • • • • {-for radial load mainly}
- F16C 32/0414
 - • • • • {-with facing axial projections}
- F16C 32/0417
 - • • • • {-for axial load mainly}
- F16C 32/0419
 - • • • • {-with facing radial projections}
- F16C 32/0421
 - • • • • {-for both radial and axial load}
- F16C 32/0423
 - • • • • {-with permanent magnets on both parts repelling each other}
- F16C 32/0425
 - • • • • {-for radial load mainly}

- F16C 32/0427 {-for axial load mainly}
- F16C 32/0429 {-for both radial and axial load, e.g. conical magnets}
- F16C 32/0431 {-with bearings for axial load combined with bearings for radial load}
- F16C 32/0434 {-for parts moving linearly}
- F16C 32/0436 {-with a conductor on one part movable with respect to a magnetic field, e.g. a body of copper on one part and a permanent magnet on the other part}
- F16C 32/0438 {-with a superconducting body, e.g. a body made of high temperature superconducting material such as YBaCuO}
- F16C 32/044 {-Active magnetic bearings}
- F16C 32/0442 {-with devices affected by abnormal, undesired or non-standard conditions such as shock-load, power outage, start-up or touchdown}
- F16C 32/0444 {-Details of devices to control the actuation of the electromagnets}
- F16C 32/0446 {-Determination of the actual position of the moving member, e.g. details of sensors}
- F16C 32/0448 {-by using the electromagnet itself as sensor, e.g. sensorless magnetic bearings}
- F16C 32/0451 {-Details of controllers, i.e. the units determining the power to be supplied, e.g. comparing elements, feedback arrangements with P.I.D. control}
- F16C 32/0453 {-for controlling two axes, i.e. combined control of x-axis and y-axis}
- F16C 32/0455 {-including digital signal processing (DSP) and analog/digital conversion (A/D, D/A)}
- F16C 32/0457 {-Details of the power supply to the electromagnets}
- F16C 32/0459 {-Details of the magnetic circuit}
- F16C 32/0461 {-of stationary parts of the magnetic circuit}
- F16C 32/0463 {-with electromagnetic bias, e.g. by extra bias windings}
- F16C 32/0465 {-with permanent magnets provided in the magnetic circuit of the electromagnets}
- F16C 32/0468 {-of moving parts of the magnetic circuit, e.g. of the rotor}
- F16C 32/047 {-Details of housings; Mounting of active magnetic bearings}
- F16C 32/0472 {-for linear movement}
- F16C 32/0474 {-for rotary movement}
- F16C 32/0476 {-with active support of one degree of freedom, e.g. axial magnetic bearings}
- F16C 32/0478 {-with permanent magnets to support radial load}
- F16C 32/048 {-with active support of two degrees of freedom, e.g. radial magnetic bearings}
- F16C 32/0482 {-with three electromagnets to control the two degrees of freedom}
- F16C 32/0485 {-with active support of three degrees of freedom}
- F16C 32/0487 {-with active support of four degrees of freedom}
- F16C 32/0489 {-with active support of five degrees of freedom, e.g. two radial magnetic bearings combined with an axial bearing}
- F16C 32/0491 {-with electromagnets acting in axial and radial direction, e.g. with conical magnets}
- F16C 32/0493 {-integrated in an electrodynamic machine, e.g. self-bearing motor}
- F16C 32/0495 {-generating torque and axial force}
- F16C 32/0497 {-generating torque and radial force}

- U F16C 32/06
 - with moving member supported by a fluid cushion formed, at least to a large extent, otherwise than by movement of the shaft, e.g. hydrostatic air-cushion bearings
- F16C 32/0603
 - · {-supported by a gas cushion, e.g. an air cushion}
- F16C 32/0607
 - · · {-the gas being retained in a gap, e.g. squeeze film bearings}
- F16C 32/0611
 - · · · {-by means of vibrations}
- F16C 32/0614
 - · · {-the gas being supplied under pressure, e.g. aerostatic bearings}
- F16C 32/0618
 - · · · {-via porous material}
- F16C 32/0622
 - · · · {-via nozzles, restrictors}
- F16C 32/0625
 - · · · {-via supply slits}
- F16C 32/0629
 - · {-supported by a liquid cushion, e.g. oil cushion}
- F16C 32/0633
 - · · {-the liquid being retained in a gap}
- F16C 32/0637
 - · · · {-by a magnetic field, e.g. ferrofluid bearings}
- F16C 32/064
 - · · {-the liquid being supplied under pressure}
- F16C 32/0644
 - · · · {-Details of devices to control the supply of liquids to the bearings}
- F16C 32/0648
 - · · · · {-by sensors or pressure-responsive control devices in or near the bearings}
- F16C 32/0651
 - · · · {-Details of the bearing area per se}
- F16C 32/0655
 - · · · · {-of supply openings}
- F16C 32/0659
 - · · · · {-of pockets or grooves}
- F16C 32/0662
 - · {-Details of hydrostatic bearings independent of fluid supply or direction of load}
- F16C 32/0666
 - · · {-of bearing pads}
- F16C 32/067
 - · · {-of bearings adjustable for aligning, positioning, wear or play}
- F16C 32/0674
 - · · · {-by means of pre-load on the fluid bearings}
- F16C 32/0677
 - · · {-of elastic or yielding bearings or bearing supports}
- F16C 32/0681
 - · {-Construction or mounting aspects of hydrostatic bearings, for exclusively rotary movement, related to the direction of load}
- F16C 32/0685
 - · · {-for radial load only}
- F16C 32/0688
 - · · · {-with floating bearing elements}
- F16C 32/0692
 - · · {-for axial load only}
- F16C 32/0696
 - · · {-for both radial and axial load}
- U **F16C 33/00**
 - **Parts of bearings; Special methods for making bearings or parts thereof (metal-working or like operations, see the relevant classes)**
- U F16C 33/02
 - Parts of sliding-contact bearings
- U F16C 33/04
 - · Brasses; Bushes; linings
- F16C 33/043
 - · · {-Sliding surface consisting mainly of ceramics, cermets or hard carbon, e.g. diamond like carbon [DLC] }
- F16C 33/046
 - · · {-divided or split, e.g. half-bearings or rolled sleeves}
- U F16C 33/06
 - · · Sliding surface mainly made of metal ([F16C 33/24](#) to [F16C 33/28](#) take precedence; { casting metal bearing surfaces [B22D 15/02](#), [B22D 19/08](#)})
- U F16C 33/10
 - · · · Construction relative to lubrication {(lubrication in general [F16N](#))}
- F16C 33/1005
 - · · · · {-with gas, e.g. air, as lubricant}
- F16C 33/101
 - · · · · · {-Details of the bearing surface, e.g. means to generate pressure such as lobes or wedges}
- F16C 33/1015
 - · · · · · · {-Pressure generating grooves}

- F16C 33/102 {-with grease as lubricant}
- F16C 33/1025 {-with liquid, e.g. oil, as lubricant}
- F16C 33/103 {-retained in or near the bearing}
- F16C 33/1035 {-by a magnetic field acting on a magnetic liquid}
- F16C 33/104 {-in a porous body, e.g. oil impregnated sintered sleeve}
- F16C 33/1045 {-Details of supply of the liquid to the bearing}
- F16C 33/105 {-Conditioning, e.g. metering, cooling, filtering}
- F16C 33/1055 {-from radial inside, e.g. via a passage through the shaft and/or inner sleeve}
- F16C 33/106 {-Details of distribution or circulation inside the bearings, e.g. details of the bearing surfaces to affect flow or pressure of the liquid}
- F16C 33/1065 {-Grooves on a bearing surface for distributing or collecting the liquid}
- F16C 33/107 {-Grooves for generating pressure}
- F16C 33/1075 {-Wedges, e.g. ramps or lobes, for generating pressure}
- F16C 33/108 {-with a plurality of elements forming the bearing surfaces, e.g. bearing pads}
- F16C 33/1085 {-Channels or passages to recirculate the liquid in the bearing}
- F16C 33/109 {-Lubricant compositions or properties, e.g. viscosity}
- F16C 33/1095 {-with solids as lubricant, e.g. dry coatings, powder}
- U F16C 33/12 Structural composition; Use of special materials or surface treatments, e.g. for rust-proofing
- F16C 33/121 {-Use of special materials}
- F16C 33/122 {-Multilayer structures of sleeves, washers or liners}
- F16C 33/124 {-Details of overlays}
- F16C 33/125 {-Details of bearing layers, i.e. the lining}
- F16C 33/127 {-Details of intermediate layers, e.g. nickel dams}
- F16C 33/128 {-Porous bearings, e.g. bushes of sintered alloy}
- U F16C 33/14 Special methods of manufacture; Running-in
- F16C 33/145 {-of sintered porous bearings}
- U F16C 33/20 Sliding surface consisting mainly of plastics ([F16C 33/22](#) to [F16C 33/28](#) take precedence)
- F16C 33/201 {-Composition of the plastic}
- F16C 33/203 {-Multilayer structures, e.g. sleeves comprising a plastic lining}
- F16C 33/205 {-with two layers}
- F16C 33/206 {-with three layers}
- F16C 33/208 {-Methods of manufacture, e.g. shaping, applying coatings}
- U F16C 33/30 Parts of ball or roller bearings
- F16C 33/303 {-of hybrid bearings, e.g. rolling bearings with steel races and ceramic rolling elements}
- F16C 33/306 {-Means to synchronise movements}
- U F16C 33/34 Rollers; Needles
- U F16C 33/36 with bearing-surfaces other than cylindrical, e.g. tapered; with grooves in the bearing surfaces
- F16C 33/363 {-with grooves in the bearing-surfaces}
- F16C 33/366 {-Tapered rollers, i.e. rollers generally shaped as truncated cones}

- U F16C 33/37
 - • Loose spacing bodies
- F16C 33/3706
 - • • {-with concave surfaces conforming to the shape of the rolling elements, e.g. the spacing bodies are in sliding contact with the rolling elements}
- F16C 33/3713
 - • • {-with other rolling elements serving as spacing bodies, e.g. the spacing bodies are in rolling contact with the load carrying rolling elements}
- U F16C 33/38
 - • Ball cages
- F16C 33/3806
 - • • {-Details of interaction of cage and race, e.g. retention, centring}
- F16C 33/3812
 - • • {-formed of interconnected segments, e.g. chains}
- F16C 33/3818
 - • • {-formed of unconnected segments}
- F16C 33/3825
 - • • {-formed as a flexible belt, e.g. spacers connected by a thin film}
- F16C 33/3831
 - • • {-with hybrid structure, i.e. with parts made of distinct materials}
- F16C 33/3837
 - • • {-Massive or moulded cages having cage pockets surrounding the balls, e.g. machined window cages}
- F16C 33/3843
 - • • • {-formed as one-piece cages, i.e. monoblock cages}
- F16C 33/385
 - • • • {-made from metal, e.g. cast or machined window cages}
- F16C 33/3856
 - • • • {-made from plastic, e.g. injection moulded window cages}
- F16C 33/3862
 - • • • {-comprising two annular parts joined together}
- F16C 33/3868
 - • • • {-made from metal, e.g. two cast parts joined by rivets}
- F16C 33/3875
 - • • • {-made from plastic, e.g. two injection moulded parts joined by a snap fit}
- F16C 33/3881
 - • • • {-with more than three parts, e.g. two end rings connected by individual stays}
- F16C 33/3887
 - • • {-Details of individual pockets, e.g. shape or ball retaining means}
- F16C 33/3893
 - • • {-with rolling elements with smaller diameter than the load carrying balls, e.g. cages with counter-rotating spacers}
- U F16C 33/40
 - • • for multiple rows of balls
- F16C 33/405
 - • • • {-with two or more juxtaposed cages joined together or interacting with each other}
- U F16C 33/41
 - • • comb-shaped
- F16C 33/412
 - • • • {-Massive or moulded comb cages, e.g. snap ball cages}
- F16C 33/414
 - • • • {-formed as one-piece cages, i.e. monoblock comb cages}
- F16C 33/416
 - • • • • {-made from plastic, e.g. injection moulded comb cages}
- F16C 33/418
 - • • • {-Details of individual pockets, e.g. shape or ball retaining means}
- U F16C 33/42
 - • • made from wire or sheet metal strips ([F16C 33/40](#), [F16C 33/41](#) take precedence)
- F16C 33/422
 - • • • {-made from sheet metal}
- F16C 33/425
 - • • • • {-from a single part, e.g. ribbon cages with one corrugated annular part}
- F16C 33/427
 - • • • • {-from two parts, e.g. ribbon cages with two corrugated annular parts}
- U F16C 33/44
 - • • Selection of substances ([F16C 33/40](#), [F16C 33/41](#) take precedence)
- F16C 33/445
 - • • • {-Coatings}
- U F16C 33/46
 - • Cages for rollers or needles
- F16C 33/4605
 - • • {-Details of interaction of cage and race, e.g. retention or centring}
- F16C 33/4611
 - • • {-with hybrid structure, i.e. with parts made of distinct materials}
- F16C 33/4617
 - • • {-Massive or moulded cages having cage pockets surrounding the rollers, e.g. machined window cages}
- F16C 33/4623
 - • • • {-formed as one-piece cages, i.e. monoblock cages}

- F16C 33/4629 {-made from metal, e.g. cast or machined window cages}
- F16C 33/4635 {-made from plastic, e.g. injection moulded window cages}
- F16C 33/4641 {-comprising two annular parts joined together}
- F16C 33/4647 {-made from metal, e.g. two cast parts joined by rivets}
- F16C 33/4652 {-made from plastic, e.g. two injection moulded parts joined by a snap fit}
- F16C 33/4658 {-comprising three annular parts, i.e. three piece roller cages}
- F16C 33/4664 {-with more than three parts, e.g. two end rings connected by individual stays}
- F16C 33/467 {-Details of individual pockets, e.g. shape or roller retaining means}
- F16C 33/4676 {-of the stays separating adjacent cage pockets, e.g. guide means for the bearing-surface of the rollers}
- F16C 33/4682 {-of the end walls, e.g. interaction with the end faces of the rollers}
- F16C 33/4688 {-with rolling elements with smaller diameter than the load carrying rollers, e.g. cages with counter-rotating spacers}
- F16C 33/4694 {-Single-split roller or needle cages}
- U F16C 33/48 for multiple rows of rollers or needles
- F16C 33/485 {-with two or more juxtaposed cages joined together or interacting with each other}
- U F16C 33/49 comb-shaped
- F16C 33/491 {-applied as pairs for retaining both ends of the rollers or needles}
- F16C 33/492 {-joined by rods}
- F16C 33/494 {-Massive or moulded comb cages}
- F16C 33/495 {-formed as one piece cages, i.e. monoblock comb cages}
- F16C 33/497 {-made from metal, e.g. cast or machined comb cages}
- F16C 33/498 {-made from plastic, e.g. injection moulded comb cages}
- U F16C 33/50 formed of interconnected members, e.g. chains
- F16C 33/502 {-formed of arcuate segments retaining one or more rollers or needles}
- F16C 33/504 {-with two segments, e.g. two semicircular cage parts}
- F16C 33/506 {-formed as a flexible belt}
- F16C 33/508 {-formed of links having an H-shape, i.e. links with a single stay placed between two rollers and with two end portions extending along the end faces of the two rollers}
- U F16C 33/51 formed of unconnected members
- F16C 33/513 {-formed of arcuate segments for carrying one or more rollers}
- F16C 33/516 {-with two segments, e.g. double-split cages with two semicircular parts}
- U F16C 33/52 with no part entering between, or touching, the bearing surfaces of the rollers ([F16C 33/50](#) takes precedence)
- F16C 33/523 {-with pins extending into holes or bores on the axis of the rollers}
- F16C 33/526 {-extending through the rollers and joining two lateral cage parts}
- U F16C 33/54 made from wire, strips, or sheet metal ([F16C 33/48](#), [F16C 33/49](#) take precedence)
- F16C 33/541 {-Details of individual pockets, e.g. shape or roller retaining means}
- F16C 33/542 {-made from sheet metal}
- F16C 33/543 {-from a single part}
- F16C 33/545 {-rolled from a band}

- F16C 33/546 {-with a M- or W-shaped cross section}
- F16C 33/547 {-from two parts, e.g. two discs or rings joined together}
- F16C 33/548 {-with more than three parts, e.g. two end rings connected by a plurality of stays or pins}
- U F16C 33/56 . . . Selection of substances ([F16C 33/48](#), [F16C 33/49](#) take precedence)
- F16C 33/565 {-Coatings}
- U F16C 33/58 . . . Raceways; Race rings
- F16C 33/581 . . . {-integral with other parts, e.g. with housings or machine elements such as shafts or gear wheels}
- F16C 33/583 . . . {-Details of specific parts of races}
- F16C 33/585 {-of raceways, e.g. ribs to guide the rollers}
- F16C 33/586 {-outside the space between the races, e.g. end faces or bore of inner ring}
- F16C 33/588 . . . {-Races of sheet metal}
- U F16C 33/66 . . . Special parts or details in view of lubrication
- F16C 33/6603 {-with grease as lubricant}
- F16C 33/6607 {-Retaining the grease in or near the bearing}
- F16C 33/6611 {-in a porous or resinous body, e.g. a cage impregnated with the grease}
- F16C 33/6614 {-in recesses or cavities provided in retainers, races or rolling elements}
- F16C 33/6618 {-in a reservoir in the sealing means}
- F16C 33/6622 {-Details of supply and/or removal of the grease, e.g. purging grease}
- F16C 33/6625 {-Controlling or conditioning the grease supply}
- F16C 33/6629 {-Details of distribution or circulation inside the bearing, e.g. grooves on the cage or passages in the rolling elements}
- F16C 33/6633 {-Grease properties or compositions, e.g. rheological properties}
- F16C 33/6637 {-with liquid lubricant}
- F16C 33/664 {-Retaining the liquid in or near the bearing}
- F16C 33/6644 {-by a magnetic field acting on a magnetic liquid}
- F16C 33/6648 {-in a porous or resinous body, e.g. a cage impregnated with the liquid}
- F16C 33/6651 {-in recesses or cavities provided in retainers, races or rolling elements}
- F16C 33/6655 {-in a reservoir in the sealing means}
- F16C 33/6659 {-Details of supply of the liquid to the bearing, e.g. passages or nozzles}
- F16C 33/6662 {-the liquid being carried by air or other gases, e.g. mist lubrication}
- F16C 33/6666 {-from an oil bath in the bearing housing, e.g. by an oil ring or centrifugal disc}
- F16C 33/667 {-related to conditioning, e.g. cooling, filtering}
- F16C 33/6674 {-related to the amount supplied, e.g. gaps to restrict flow of the liquid}
- F16C 33/6677 {-from radial inside, e.g. via a passage through the shaft and/or inner ring}
- F16C 33/6681 {-Details of distribution or circulation inside the bearing, e.g. grooves on the cage or passages in the rolling elements}
- F16C 33/6685 {-Details of collecting or draining, e.g. returning the liquid to a sump}
- F16C 33/6688 {-Lubricant compositions or properties, e.g. viscosity}
- F16C 33/6692 {-Liquids other than oil, e.g. water, refrigerants, liquid metal}
- F16C 33/6696 {-with solids as lubricant, e.g. dry coatings, powder}

- U F16C 33/72 · Sealings
- F16C 33/726 · · {-with means to vent the interior of the bearing}
- U F16C 33/74 · · of sliding-contact bearings
- F16C 33/741 · · · {-by means of a fluid}
- F16C 33/743 · · · · {-retained in the sealing gap}
- F16C 33/745 · · · · · {-by capillary action}
- F16C 33/746 · · · · · {-by a magnetic field}
- F16C 33/748 · · · · {-flowing to or from the sealing gap, e.g. vacuum seals with differential exhaust}
- U F16C 33/76 · · of ball or roller bearings
- F16C 33/762 · · · {-by means of a fluid}
- F16C 33/763 · · · · {-retained in the sealing gap}
- F16C 33/765 · · · · · {-by a magnetic field}
- F16C 33/766 · · · · · {-by pumping action}
- F16C 33/767 · · · {-integral with the race}
- F16C 33/768 · · · {-between relatively stationary parts, i.e. static seals}
- U F16C 33/78 · · · with a diaphragm, disc, or ring, with or without resilient members
 {[F16C 33/761](#) takes precedence}
- F16C 33/7803 · · · · {-suited for particular types of rolling bearings}
- F16C 33/7806 · · · · · {-for spherical roller bearings}
- F16C 33/7809 · · · · · · {-for needle roller bearings}
- F16C 33/7813 · · · · · · {-for tapered roller bearings}
- F16C 33/7816 · · · · · {-Details of the sealing or parts thereof, e.g. geometry, material}
- F16C 33/782 · · · · · · {-of the sealing region}
- F16C 33/7823 · · · · · · · {-of sealing lips}
- F16C 33/7826 · · · · · · · · {-of the opposing surface cooperating with the seal, e.g. a shoulder surface of a bearing ring}
- F16C 33/783 · · · · · · · · {-of the mounting region}
- F16C 33/7833 · · · · · · · · {-Special methods of manufacture}
- F16C 33/7836 · · · · · · · · {-floating with respect to both races}
- F16C 33/784 · · · · · · · · {-mounted to a groove in the inner surface of the outer race and extending toward the inner race}
- F16C 33/7843 · · · · · · · · · {-with a single annular sealing disc}
- F16C 33/7846 · · · · · · · · · · {-with a gap between the annular disc and the inner race}
- F16C 33/785 · · · · · · · · · · · {-Bearing shields made of sheet metal}
- F16C 33/7853 · · · · · · · · · · · · {-with one or more sealing lips to contact the inner race}
- F16C 33/7856 · · · · · · · · · · · · · {-with a single sealing lip}
- F16C 33/7859 · · · · · · · · · · · · · · {-with a further sealing element}
- F16C 33/7863 · · · · · · · · · · · · · · {-mounted to the inner race e.g. a flinger to use centrifugal effect}
- F16C 33/7866 · · · · · · · · · · · · · · · {-with sealing lips}
- F16C 33/7869 · · · · · · · · · · · · · · · · {-mounted with a cylindrical portion to the inner surface of the outer race and having a radial portion extending inward}
- F16C 33/7873 · · · · · · · · · · · · · · · · · {-with a single sealing ring of generally L-shaped cross-section}
- F16C 33/7876 · · · · · · · · · · · · · · · · · · {-with sealing lips}
- F16C 33/7879 · · · · · · · · · · · · · · · · · · · {-with a further sealing ring}

- F16C 33/7883 {mounted to the inner race and of generally L-shape, the two sealing rings defining a sealing with box-shaped cross-section}
- F16C 33/7886 {mounted outside the gap between the inner and outer races, e.g. sealing rings mounted to an end face or outer surface of a race}
- F16C 33/7889 {mounted to an inner race and extending toward the outer race}
- F16C 33/7893 {mounted to a cage or integral therewith}
- F16C 33/7896 {with two or more discrete sealings arranged in series}
- U F16C 33/80 . . . Labyrinth sealings {[F16C 33/761](#) takes precedence}
- F16C 33/805 {in addition to other sealings, e.g. dirt guards to protect sealings with sealing lips}

- U F16C 35/00 Rigid support of bearing units; Housings, e.g. caps, covers ([F16C 23/00](#) takes precedence)**
- U F16C 35/04 . . in the case of ball or roller bearings
- F16C 35/042 . . {Housings for rolling element bearings for rotary movement}
- F16C 35/045 . . . {with a radial flange to mount the housing}
- F16C 35/047 . . . {with a base plate substantially parallel to the axis of rotation, e.g. horizontally mounted pillow blocks}
- U F16C 35/06 . . Mounting { or dismounting} of ball or roller bearings; Fixing them onto shaft or in housing
- F16C 35/062 . . . {Dismounting of ball or roller bearings}

- U F16C 37/00 Cooling of bearings**
- F16C 37/002 . . {of fluid bearings}
- F16C 37/005 . . {of magnetic bearings}
- F16C 37/007 . . {of rolling bearings}

- U F16C 39/00 Relieving load on bearings**
- U F16C 39/06 . . using magnetic means
- U F16C 39/063 . . {Permanent magnets}
- F16C 39/066 . . . {with opposing permanent magnets repelling each other}

- U F16C 41/00 Other accessories, { e.g. devices integrated in the bearing not relating to the bearing function as such}**
- F16C 41/001 . . {Integrated brakes or clutches for stopping or coupling the relatively movable parts}
- F16C 41/002 . . {Conductive elements, e.g. to prevent static electricity}
- F16C 41/004 . . {Electro-dynamic machines, e.g. motors, generators, actuators}
- F16C 41/005 . . {Fluid passages not relating to lubrication or cooling}
- F16C 41/007 . . {Encoders, e.g. parts with a plurality of alternating magnetic poles}
- F16C 41/008 . . {Identification means, e.g. markings, RFID-tags; Data transfer means}

- U F16C 43/00 Assembling bearings**
- U F16C 43/04 . . Assembling rolling-contact bearings
- F16C 43/045 . . . {Mounting or replacing seals}
- U F16C 43/06 . . Placing rolling bodies in cages or bearings
- F16C 43/065 . . . {in cages}
- U F16C 43/08 . . . by deforming the cages or the races
- F16C 43/083 {by plastic deformation of the cage}
- F16C 43/086 {by plastic deformation of the race}

Project: N/A (F16D)

F16D 1/00 - F16D 9/00	Couplings {for transmitting mechanical rotation}{-fluid couplings F16D 31/00 to F16D 39/00 ; couplings or joints specially adapted for deep-drilling rods or sucker rods E21B ; for transmitting motion through a wall without relatively-moving surfaces F16J 15/50 }
F16D 1/00	Couplings for rigidly connecting two coaxial shafts or other movable machine elements (-attachment of wheels to axles for railway carriages B60B ; for attachment of cranks to their shafts F16C 3/10 -)
F16D 1/06	• for attachment of a member on a shaft or on a shaft-end (-attachment of marine propellers on shafts B63H 23/34 -)
U F16D 1/064	• • non-disconnectable
F16D 1/072	• • involving plastic deformation (-plastic welding F16D 1/068 -)
U F16D 1/08	• • with clamping hub; with hub and longitudinal key
F16D 1/0805	• • • {with radial clamping due to deformation of a resilient body or a body of fluid (- F16D 1/091 takes precedence; elastic couplings F16D 3/80 ; fluid pressure clutches F16D 25/04 -)}
F16D 1/0817	• • • {with radial clamping due to rotation along an eccentric surface, e.g. arcuate wedging elements (-similar clutches F16D 17/00 ; similar free-wheel clutches F16D 41/06 -)}
F16D 1/0823	• • • {with radial clamping of a helical wrap spring on the shaft or in the hub bore (-similar clutches F16D 13/025 , F16D 13/08 , F16D 27/025 , F16D 27/105 ; similar slip couplings F16D 7/022 ; similar free-wheel clutches F16D 41/206 -)}
F16D 1/0829	• • • {with radial loading of both hub and shaft by an intermediate ring or sleeve (- F16D 1/0817 , F16D 1/0823 , F16D 1/093 take precedence-)}
F16D 1/0852	• • • {with radial clamping between the mating surfaces of the hub and shaft (- F16D 1/0805 to F16D 1/0817 , F16D 1/09 take precedence-)}
F16D 1/0858	• • • • {due to the elasticity of the hub (<i>including shrink fits</i>)}(including shrink fits)
F16D 1/09	• • • with radial clamping due to axial loading of at least one pair of conical surfaces{-tapered keys F16D 1/0882 -}
F16D 2001/0906	• • • • {-using a hydraulic fluid to clamp or disconnect, not provided for in F16D 1/091 -}
F16D 1/093	• • • • using one or more elastic segmented conical rings forming at least one of the conical surfaces, the rings being expanded or contracted to effect clamping (- F16D 1/091 takes precedence-)
F16D 1/095	• • • • • with clamping effected by ring contraction only{-for connecting two abutting shafts F16D 1/02 -}
U F16D 1/10	• Quick-acting couplings in which the parts are connected by simply bringing them together axially
U F16D 1/108	• • having retaining means rotating with the coupling and acting by interengaging parts, i.e. positive coupling
F16D 1/116	• • • the interengaging parts including a continuous or interrupted circumferential groove in the surface of one of the coupling parts (-circlips for retaining hubs on shafts F16B 21/18 -)
F16D 1/12	• allowing adjustment of the parts about the axis (-during motion F16D 3/10 -)
F16D 3/00	Yielding couplings, i.e. with means permitting movement between the connected parts during the drive (-couplings disconnectable simply by axial movement F16D 1/10 ; slip couplings F16D 7/00 -)
F16D 3/02	• adapted to specific functions (universal joints, see the appropriate groups)

- F16D 3/12
- specially adapted for accumulation of energy to absorb shocks or vibration (-by making use of fluid elements [F16D 3/80](#)-)
- U F16D 3/16
- Universal joints in which flexibility is produced by means of pivots or sliding or rolling connecting parts
- F16D 3/20
- one coupling part entering a sleeve of the other coupling part and connected thereto by sliding or rolling members (-[F16D 3/18](#) , [F16D 3/24](#) take precedence-)
- NOTE
- "coupling parts" means the driving member and the driven member of the coupling to be mounted on and rotate as a unit with the shafts or their equivalents between which the coupling is placed. An intermediate member interconnecting these parts is regarded as such an equivalent.
- U F16D 3/22
- the rolling members being balls, rollers, or the like, guided in grooves or sockets in both coupling parts
- U F16D 3/223
- the rolling members being guided in grooves in both coupling parts
- F16D 3/229
- Prismatic coupling parts having each groove centre-line lying on planes parallel to the axis of the respective coupling part (-[F16D 3/224](#) , [F16D 3/226](#) take precedence-)
- F16D 3/26
- Hooke`s joints or other joints with an equivalent intermediate member to which each coupling part is pivotally or slidably connected (-[F16D 3/18](#) , [F16D 3/20](#) take precedence-)
- F16D 3/38
- with a single intermediate member with trunnions or bearings arranged on two axes perpendicular to one another (-[F16D 3/36](#) takes precedence-)
- U F16D 3/382
- {constructional details of other than the intermediate member}
- F16D 3/385
- {Bearing cup; Bearing construction; Bearing seal; Mounting of bearing on the intermediate member (-mounting of bearing in fork [F16D 3/382](#)-)}
- F16D 3/50
- with the coupling parts connected by one or more intermediate members (-[F16D 3/16](#) takes precedence-)
- F16D 3/60
- comprising pushing or pulling links attached to both parts (-[F16D 3/64](#) takes precedence-)
- F16D 3/72
- with axially-spaced attachments to the coupling parts (-[F16D 3/56](#) takes precedence-)
- F16D 3/725
- {with an intermediate member made of fibre-reinforced resin (-made of rubber-like material [F16D 3/74](#) ; shafts made of fibre-reinforced resin [F16C 3/026](#)-)}
- F16D 3/74
- the intermediate member or members being made of rubber or other {rubber-like}flexible material
- F16D 3/80
- in which a fluid is used (-fluid couplings allowing continuous slip [F16D 31/00](#) to [F16D 35/00](#)-)
- F16D 3/82
- with a coupling element in the form of a pneumatic tube (-similar clutches [F16D 25/04](#)-)
- F16D 7/00**
- Slip couplings, e.g. slipping on overload, for absorbing shock (-combined with yielding shaft couplings [F16D 3/14](#) ; fluid slip couplings [F16D 31/00](#) to [F16D 35/00](#)-)**
- F16D 7/02
- of the friction type (couplings in which overload initiates a decrease of coupling pressure or a disconnection, see the relevant groups for clutches{ e.g. for friction overload clutches [F16D 43/21](#) })
- F16D 7/021
- {with radially applied torque-limiting friction surfaces (-[F16D 7/022](#) takes precedence-)}

- F16D 7/04
- of the ratchet type (-similar gearings based on repeated accumulation and delivery of inertia-energy [F16H 33/08](#) ; { overload clutches of the ratchet type [F16D 43/202](#) })
- F16D 7/042
- • {with at least one part moving axially between engagement and disengagement (-[F16D 7/08](#) takes precedence-)}
- F16D 7/048
- • {with parts moving radially between engagement and disengagement (-[F16D 7/10](#) takes precedence-)}
- U F16D 9/00** **Couplings with safety member for disconnecting, e.g. breaking or melting member**
- U F16D 9/06
- by breaking due to shear stress
- F16D 9/08
- • over a single area encircling the axis of rotation, e.g. shear necks on shafts (-[F16D 9/10](#) takes precedence-)
- F16D 9/10
- • having a part movable after disconnection so as to provide reconnection, e.g. advanceable shear pins
- F16D 11/00 - F16D 23/00** **Clutches with mechanically-actuated clutching members (-automatic clutches [F16D 41/00](#) to [F16D 45/00](#)-)**
- F16D 11/00** **Clutches in which the members have interengaging parts (-arrangements for synchronisation [F16D 23/02](#)-)**
- F16D 11/08
- actuated by moving a non-rotating part axially (actuating-mechanism in the relevant groups)
- F16D 11/14
- with clutching members movable only axially (-[F16D 11/02](#) , [F16D 11/08](#) take precedence-)
- F16D 11/16
- with clutching members movable otherwise than only axially (-[F16D 11/02](#) , [F16D 11/08](#) take precedence-)
- F16D 13/00** **Friction clutches (-arrangements for synchronisation [F16D 23/02](#)-)**
- U F16D 13/02
- disengaged by the contact of a part mounted on the clutch with a stationarily-mounted member
- F16D 13/025
- • {with a helical band or equivalent member with two or more turns embracing a drum or the like (-electromagnetically actuated [F16D 27/105](#)-)}
- F16D 13/04
- with means for actuating or keeping engaged by a force derived at least partially from one of the shafts to be connected (-automatic clutches [F16D 43/00](#)-)
- F16D 13/06
- • with clutching members movable otherwise than only axially (-[F16D 13/08](#) , [F16D 13/12](#) take precedence-)
- F16D 13/08
- with a helical band or equivalent member, which may be built up from linked parts, with more than one turn embracing a drum or the like, with or without an additional clutch actuating the end of the band (-[F16D 13/02](#) takes precedence; { similar slip couplings [F16D 7/022](#) ; similar clutches electromagnetically actuated [F16D 27/025](#) , [F16D 27/105](#) } ; similar free-wheel clutches [F16D 41/20](#) ; similar brakes [F16D 49/02](#)-)
- F16D 13/10
- with clutching members co-operating with the periphery of a drum, a wheel-rim, or the like (-[F16D 13/02](#) to [F16D 13/08](#) take precedence; similar brakes [F16D 49/00](#)-)
- F16D 13/12
- with an expansible band or coil co-operating with the inner surface of a drum or the like (-[F16D 13/02](#) takes precedence; similar brakes [F16D 51/02](#)-)
- F16D 13/14
- with outwardly-movable clutching members co-operating with the inner surface of a drum or the like (-[F16D 13/02](#) , [F16D 13/06](#) , [F16D 13/12](#) take precedence; similar brakes [F16D 51/00](#)-)
- F16D 13/20
- with clutching members co-operating with both the periphery and the inner surface of a drum or wheel-rim (-similar brakes [F16D 53/00](#)-)

- F16D 13/22 · with axially-movable clutching members (-similar brakes [F16D 55/00-](#))
- F16D 13/24 · · with conical friction surfaces {cone clutches}
- U F16D 13/38 · · with flat clutching surfaces, e.g. discs
- F16D 13/385 · · · {double clutches, i.e. comprising two friction disc mounted on one driven shaft (-with two concentric driven shafts [F16D 21/06-](#))}
- F16D 13/52 · · · Clutches with multiple lamellae {Clutches in which three or more axially moveable members are fixed alternately to the shafts to be coupled and are pressed from one side towards an axially-located member(-[F16D 13/385](#) takes precedence-)}
- F16D 13/58 · Details{(-tools for assembling or disassembling clutches [B25B 27/0064-](#))}
- F16D 13/583 · · {Diaphragm-springs, e.g. Belleville (-co-operation with a disengaging thrust ring or bearing [F16D 23/14-](#))}
- F16D 13/60 · · Clutching elements (-friction lining or attachment thereof [F16D 69/00-](#))
- F16D 13/62 · · · Clutch-bands; Clutch shoes; Clutch-drums (-brake-bands, brake-shoes, brake-drums [F16D 65/00-](#))
- F16D 13/64 · · · Clutch-plates; Clutch-lamellae (-brake-plates, brake-lamellae [F16D 65/12-](#))
- F16D 13/68 · · · · Attachments of plates or lamellae to their supports{(-one or more discs connected to the linings transmitting torque to one or more discs connected to the hub by helical springs in windows in the discs, i.e. rotary vibration dampers [F16F 15/12-](#))}
- F16D 13/70 · · Pressure members, e.g. pressure plates, for clutch-plates or lamellae; Guiding arrangements for pressure members{(-clutch flywheels comprising two or more masses with a rotational damper [F16F 15/12-](#))}
- U F16D 13/75 · · Features relating to adjustment, e.g. slack adjusters
- F16D 13/752 · · · {the adjusting device being located in the actuating mechanism arranged outside the clutch}(-adjusting "Bowden" mechanisms [F16C 1/22-](#))}
- F16D 15/00 Clutches with wedging balls or rollers or with other wedgeable separate clutching members (-freewheels, freewheel clutches [F16D 41/00-](#))**
- F16D 21/00 Systems comprising a plurality of actuated clutches}(-for synchronisation [F16D 23/04-](#))**
- F16D 21/02 · for interconnecting three or more shafts or other transmission members in different ways (-in endless-track vehicles [B62D-](#))
- F16D 21/08 · Serially-arranged clutches interconnecting two shafts only when all the clutches are engaged (-[F16D 13/08](#) , [F16D 13/12](#) take precedence-)
- U F16D 23/00 Details of mechanically-actuated clutches not specific for one distinct type**
- F16D 23/02 · Arrangements for synchronisation, also for power-operated clutches (-shape or mounting of interengaging parts of clutch members to facilitate engagement [F16D 11/08-](#))
- F16D 23/04 · · with an additional friction clutch (-synchro rings per se [F16D 23/025-](#))
- F16D 23/08 · · with a blocking mechanism that only releases the clutching member on synchronisation (-in combination with an additional friction clutch [F16D 23/06-](#))
- F16D 23/12 · Mechanical clutch-actuating mechanisms arranged outside the clutch as such (-specific for combined clutches [F16D 21/00](#) ; mechanisms specific for synchronisation [F16D 23/02-](#))
- F16D 23/14 · · Clutch-actuating sleeves {or bearings}; Actuating members directly connected to clutch-actuating sleeves {or bearings}

- F16D 25/00 - F16D 29/00** **Clutches actuated non-mechanically (arrangements for synchronisation F16D 23/02; fluid clutches F16D 31/00 to F16D 39/00; automatic clutches F16D 41/00 to F16D 45/00; dynamo-electric clutches H02K 49/00; clutches using electrostatic attraction H02N 13/00-)**
- F16D 25/04 • in which the fluid actuates an elastic clutching, {i.e. elastic actuating} member, e.g. a diaphragm or a pneumatic tube (~~F16D 25/02~~ takes precedence; coupling using a pneumatic tube ~~F16D 3/82-~~)
- F16D 25/06 • in which the fluid actuates a piston incorporated in, {i.e. rotating with} the clutch (~~F16D 25/02~~ takes precedence-)
- F16D 25/08 • with fluid-actuated member not rotating with a clutching member (~~F16D 25/02~~ takes precedence-) { ~~F16D 25/048~~ takes precedence- }
- U F16D 25/082 • • {the line of action of the fluid-actuated members co-inciding with the axis of rotation}
- F16D 25/083 • • • {Actuators therefor (~~F16D 25/085~~ to ~~F16D 25/087~~ take precedence-)}
- F16D 25/087 • • • {the clutch being actuated by the fluid-actuated member via a diaphragm spring or an equivalent array of levers (~~F16D 25/085~~ , ~~F16D 25/086~~ take precedence-)}
- F16D 25/10 • Clutch systems with a plurality of fluid-actuated clutches (~~arrangements or mounting of clutches in vehicles B60K 17/00-~~)
- F16D 27/00** **Magnetically-(or electrically-)actuated clutches; Control or electric circuits therefor (-clutches with magnetisable particles F16D 37/02 ; { with electro-rheological fluids F16D 37/008 })**
- F16D 27/02 • with electromagnets incorporated in the clutch, i.e. with collecting rings (~~F16D 27/004~~ takes precedence-)}
- F16D 27/10 • with an electromagnet not rotating with a clutching member, i.e. without collecting rings (~~F16D 27/004~~ takes precedence-)}
- F16D 27/102 • • with radially movable clutching members (~~F16D 27/105~~ takes precedence-)
- F16D 27/12 • Clutch systems with a plurality of electro-magnetically-actuated clutches (~~F16D 27/004~~ takes precedence-)}
- F16D 28/00** **Electrically-actuated clutches (-arrangements for synchronisation F16D 23/02 ; clutches actuated directly by means of an electromagnet F16D 27/00 ; automatic clutches F16D 43/00 to F16D 45/00 ; external control F16D 48/00-)**
- F16D 31/00 - F16D 39/00** **Couplings or clutches with a fluid or a semi-fluid as a power-transmitting means (-fluid gearing F16H 39/00 to F16H 49/00-)**
- U **F16D 33/00** **Rotary fluid couplings or clutches of the hydro-kinetic type**
- U F16D 33/06 • controlled by changing the amount of liquid in the working circuit
- F16D 33/16 • • by means arranged externally of the coupling or clutch (~~mounting of such means in vehicles B60K 23/00~~ , e.g. ~~B60K 23/02-~~)
- F16D 33/18 • Details (~~applicable also to fluid gearing F16H 41/24-~~)
- F16D 35/00** **Fluid clutches in which the clutching is predominantly obtained by fluid adhesion (-F16D 37/00 takes precedence-){(-arrangements of viscous clutches in four-wheel drives - B60K 17/3465 and B60K 17/351-)}**
- U F16D 35/02 • with rotary working chambers and rotary reservoirs, e.g. in one coupling part
- U F16D 35/021 • • {actuated by valves}
- F16D 35/022 • • • {the valve being actuated by a bimetallic strip (~~F16D 35/026~~ takes precedence-)}
- F16D 35/023 • • • {the valve being actuated by a bimetallic coil (~~F16D 35/026~~ takes precedence-)}

- F16D 35/024
 - • {the valve being actuated electrically, e.g. by an electromagnet (~~-F16D 35/026 takes precedence-~~)}
- F16D 35/025
 - • {the valve being actuated by inertia, e.g. using a flyweight or a centrifugal mass (~~-F16D 35/026 takes precedence-~~)}
- F16D 35/026
 - • {actuated by a plurality of valves; the valves being actuated by a combination of mechanisms covered by more than one of groups [F16D 35/022](#) to [F16D 35/025](#)}
- F16D 35/028
 - {actuated electrically, e.g. by an electromagnet (~~-valves actuated electrically [F16D 35/024](#)-~~)}
- U F16D 37/00**
 - Clutches in which the drive is transmitted through a medium consisting of small particles, e.g. centrifugally speed-responsive**
- F16D 37/008
 - {the particles being carried by a fluid, to vary viscosity when subjected to electric change, i.e. electro-rheological or smart fluids (~~-composition of such fluids [C10M 171/001](#)-~~)}
- F16D 39/00**
 - Combinations of couplings according to two or more of the groups [F16D 31/00](#) to [F16D 37/00](#)**
- F16D 41/00 - F16D 48/00**
 - Freewheels or freewheel clutches; Automatic clutches (~~-F16D 31/00 to [F16D 39/00](#) take precedence-~~)**
- F16D 41/00**
 - Freewheels or freewheel clutches (~~-cycle brakes controlled by back-peddalling [B62L 5/00](#) ; { one-way linear clutches [F16B7/16](#) }~~)**
- F16D 41/04
 - combined with a clutch for locking the driving and driven members (~~-[F16D 41/02](#) , [F16D 41/24](#) take precedence-~~)
- F16D 41/06
 - with intermediate wedging coupling members between an inner and an outer surface (~~-[F16D 41/02](#) , [F16D 41/24](#) take precedence-~~)
- F16D 41/063
 - • the intermediate members wedging by moving along the inner and the outer surface without pivoting or rolling, e.g. sliding wedges (~~-[F16D 41/061](#) takes precedence-~~)
- F16D 41/064
 - • the intermediate members wedging by rolling and having a circular cross-section, e.g. balls (~~-[F16D 41/061](#) takes precedence-~~)
- F16D 41/069
 - • the intermediate members wedging by pivoting or rocking, e.g. sprags (~~-[F16D 41/061](#) takes precedence-~~)
- U F16D 41/08**
 - • with provision for altering the freewheeling action
- F16D 41/086
 - • {the intermediate members being of circular cross-section and wedging by rolling (~~-[F16D 41/10](#) takes precedence-~~)}
- F16D 41/12
 - with hinged pawl co-operating with teeth, cogs, or the like (~~-[F16D 41/02](#) , [F16D 41/24](#) take precedence-~~)
- F16D 41/18
 - with non-hinged detent (~~-[F16D 41/02](#) , [F16D 41/24](#) take precedence-~~)
- F16D 41/20
 - with expandable or contractable clamping ring or band (~~-[F16D 41/02](#) , [F16D 41/24](#) take precedence-~~)
- F16D 41/22
 - with clutching ring or disc axially shifted as a result of lost motion between actuating members (~~-[F16D 41/02](#) , [F16D 41/24](#) take precedence-~~)
- F16D 43/00**
 - Automatic clutches (~~-varying the relationship between two coaxial shafts [F16D 3/10](#) ; freewheels, freewheel clutches [F16D 41/00](#)-~~)**
- U F16D 43/02**
 - actuated entirely mechanically
- F16D 43/04
 - • controlled by angular speed (~~-[F16D 43/24](#) takes precedence; clutches in which the drive is transmitted through a medium consisting of small particles [F16D 37/00](#)-~~)
- U F16D 43/20**
 - • controlled by torque, e.g. overload-release clutches, slip-clutches with means by which torque varies the clutching pressure

- F16D 43/202
 - F16D 43/2022
 - F16D 43/2028
 - F16D 43/21
 - F16D 43/26
 - U F16D 47/00
 - F16D 47/04
 - U F16D 48/00
 - U F16D 48/02
 - F16D 2048/0212
 - F16D 2048/0227
 - F16D 2048/023
 - U F16D 2048/0233
 - F16D 2048/0251
 - U F16D 48/06
 - F16D 48/064
 - F16D 48/066
 - F16D 48/10
 - F16D 49/00 -
F16D 71/00
 - F16D 49/00
 - F16D 49/02
 - U F16D 49/08
 - F16D 49/10
 - F16D 49/16
- • • of the ratchet type (-slip couplings of the ratchet type [F16D 7/04](#)-)
 - • • • {with at least one part moving axially between engagement and disengagement (-[F16D 43/206](#) takes precedence-)}
 - • • • {with at least one part moving radially between engagement and disengagement (-[F16D 43/208](#) takes precedence-)}
 - • • with friction members ({ slip couplings of the friction type [F16D 7/02](#) })
 - • acting at definite angular position or disengaging after {consecutive}definite number of rotations (-actuating by means of stationary abutment [F16D 11/02](#) , [F16D 13/02](#) , [F16D 15/00](#) ; control of change-speed or reversing-gearings conveying rotary motion [F16H 59/00](#) to [F16H 63/00](#)-)
- Systems of clutches, or clutches and couplings, comprising devices of types grouped under at least two of the preceding guide headings**
- of which at least one is a freewheel (-[F16D 47/02](#) , [F16D 47/06](#) take precedence; freewheels combined with a clutch to lock the driving and driven members of the freewheel [F16D 41/04](#) , [F16D 41/26](#)-)
- External control of clutches**
- WARNING
- Groups [F16D 48/00](#) , [F16D 48/06](#) , [F16D 48/08](#) , [F16D 48/10](#) , introduced in September 1998, are not complete. Documents from the groups [F16D 48/062](#) to [F16D 48/066](#) are in the process of being reorganised to [F16D 48/00](#) , [F16D 48/08](#) , [F16D 48/10](#)
- Control by fluid pressure
 - • {Details of pistons for master or slave cylinders especially adapted for fluid control (-for other details of pistons in master or slave cylinders [F16D 2025/081](#) or [F16D 25/082](#)-)}
 - • {Source of pressure producing the clutch engagement or disengagement action within a circuit; Means for initiating command action in power assisted devices (-for details of the source or means per se [F16D 25/088](#) , [F16D 29/005](#)-)}
 - • • {by pedal actuation (-for pedals per se [G01G 1/30](#)-)}
 - • • {by rotary pump actuation}
 - • • • {Electric motor driving a piston, e.g. for actuating the master cylinder (-for details of the actuator per se [F16D 29/00](#)-)}
 - Control by electric or electronic means, e.g. of fluid pressure
 - • {Control of electrically or electromagnetically actuated clutches (-[F16D 48/062](#) , [F16D 48/068](#) take precedence-)}
 - • {Control of fluid pressure, e.g. using an accumulator (-[F16D 48/062](#) , [F16D 48/068](#) take precedence-)}
 - • Preventing unintentional or unsafe engagement
- Brakes (-electrodynamic brake systems for vehicles in general [B60L](#) ; dynamo-electric brakes [H02K](#)-)**
- Brakes with a braking member co-operating with the periphery of a drum, wheel-rim, or the like (-similar clutches [F16D 13/10](#)-)**
- shaped as a helical band or coil with more than one turn, with or without intensification of the braking force by the tension of the band or contracting member (-similar clutches [F16D 13/08](#)-)
 - shaped as an encircling band extending over approximately 360 degrees
 - • mechanically actuated (-self-tightening [F16D 49/20](#)-)
 - Brakes with two brake-blocks (-self-tightening [F16D 49/20](#)-)

- F16D 49/18 · Brakes with three or more brake-blocks (-self-tightening [F16D 49/20-](#))
- F16D 49/20 · Self-tightening brakes (-with helical or coil with more than one turn [F16D 49/02-](#))
- F16D 51/00 Brakes with outwardly-movable braking members co-operating with the inner surface of a drum or the like (-similar clutches [F16D 13/14-](#))**
- F16D 51/02 · shaped as one or more circumferential band (-similar clutches [F16D 13/12-](#))
- F16D 53/00 Brakes with braking members co-operating with both the periphery and the inner surface of a drum, wheel-rim, or the like (-similar clutches [F16D 13/20-](#))**
- F16D 55/00 Brakes with substantially-radial braking surfaces pressed together in axial direction, e.g. disc brakes (-similar clutches [F16D 13/38-](#))**
- U F16D 55/02 · with axially-movable discs or pads pressed against axially-located rotating members
- U F16D 55/22 · · by clamping an axially-located rotating disc between movable braking members, e.g. movable brake discs or brake pads
- U F16D 55/224 · · · with a common actuating member for the braking members
- F16D 55/2245 · · · · {in which the common actuating member acts on two levers carrying the braking members, e.g. tong-type brakes (-similar brakes for rail vehicles [B61H 5/00-](#))}
- U F16D 55/225 · · · · the braking members being brake pads
- U F16D 55/226 · · · · · in which the common actuating member is moved axially, {e.g. floating caliper disc brakes}
- F16D 55/2265 · · · · · · the axial movement being guided by one or more pins {engaging bores in the brake support or the brake housing}
- F16D 55/227 · · · · · · · by two {or more}pins
- F16D 57/00 Liquid-resistance brakes; {Brakes using the internal friction of fluids or fluid-like media, e.g. powders(-for braking drums, barrels or ropes of cranes, lift hoists or winches [B66D 5/026-](#))}**
- F16D 61/00 Brakes with means for making the energy absorbed available for use (-[F16D 57/00](#) takes precedence-)**
- F16D 63/00 Brakes not otherwise provided for; -Brakes combining more than one of the types of groups [F16D 49/00](#) - [F16D 61/00](#)**
- F16D 65/00 Parts or details (-similar members for clutches [F16D 13/58-](#))**
- F16D 65/02 · Braking members; Mounting thereof (-friction linings or attachment thereof [F16D 69/00-](#))
- U F16D 65/04 · · Bands, shoes or pads; Pivots or supporting members therefor
- U F16D 65/092 · · · for axially-engaging brakes, e.g. disc brakes
- U F16D 65/095 · · · · Pivots or supporting members therefor
- F16D 65/097 · · · · · Resilient means interposed between pads and supporting members {or other brake parts}
- F16D 65/14 · Actuating mechanisms for brakes; Means for initiating operation at a predetermined position (-brake control systems, parts thereof [B60T-](#))
- U F16D 65/78 · Features relating to cooling
- F16D 65/84 · · for disc brakes{(-discs characterised by means for cooling [F16D 65/128-](#))}

F16D 67/00	Combinations of couplings and brakes; Combinations of clutches and brakes (-combinations of couplings and clutches F16D 47/02 ; conjoint control of brake systems and driveline clutches in vehicles B60W 10/02 , B60W 10/18 -)
F16D 69/00	Friction linings; Attachment thereof; Selection of coating friction substances or surfaces (-clutching elements F16D 13/60 ; braking members F16D 65/02 -)
F16D 71/00	Mechanisms for bringing members to rest in a predetermined position (-combined with or controlling clutches F16D 43/26 ; means for initiating operation of brakes at a predetermined position F16D 65/14 ; means for securing members after operation F16B 1/02 -)
F16D 71/04	· providing for selection between a plurality of positions (- F16D 71/02 takes precedence-)
U F16D 2121/00	Type of actuator operation force
U F16D 2121/02	· Fluid pressure
F16D 2121/12	· · for releasing a normally applied brake, the type of actuator being irrelevant or not provided for in groups F16D121/04 - F16D121/10
U F16D 2300/00	Special features for couplings or clutches
U F16D 2300/02	· Overheat protection, i.e. means for protection against overheating
F16D 2300/021	· · Cooling features not provided for in group F16D 13/72 or F16D 25/123 , e.g. heat transfer details
F16D 2300/06	· Lubrication details not provided for in group F16D 13/74
F16D 2300/08	· Details or arrangements of sealings not provided for in group F16D 3/84
U F16D 2500/00	External control of clutches by electric or electronic means
U F16D 2500/30	· Signal inputs
U F16D 2500/31	· · from the vehicle
F16D 2500/3101	· · · Detection of a brake actuation by a sensor on the brake (-brake pedal actuation F16D 2500/31426 -)
U F16D 2500/50	· Problem to be solved by the control system
U F16D 2500/51	· · Relating safety
F16D 2500/5116	· · · Manufacture, testing, calibrating, i.e. test or calibration of components during or soon after assembly, e.g. at the end of the production line (- F16D 2500/50248 takes precedence-)

Project: N/A (F16F)

F16F 1/00	Springs (-working with fluid F16F 5/00 , F16F 9/00 -)
F16F 1/02	· made of steel or other material having low internal friction ({{ characterised by their special construction from fibre-reinforced plastics F16F 1/366 ; spring units consisting of several springs F16F 3/02 ; making springs from wire B21F 35/00 }); Wound, torsion, leaf, cup, ring or the like springs, the material of the spring not being relevant
F16F 1/021	· · {characterised by their composition, e.g. comprising materials providing for particular spring properties (-composition and manufacture of clock or watch springs G04B 1/145 -)}
F16F 1/024	· · {Covers or coatings therefor (- F16F 1/24 takes precedence-)}
F16F 1/025	· · {characterised by having a particular shape (- F16F 1/04 , F16F 1/14 , F16F 1/18 , F16F 1/32 , F16F 1/34 take precedence-)}
F16F 1/04	· · Wound springs(-making springs by coiling wire B21F 3/00 -)}

- F16F 1/041
 - . . . {with means for modifying the spring characteristics (~~F16F 1/12~~ , ~~F16F 3/06~~ take precedence; fluid regulation of coil spring characteristics in vehicle suspensions ~~B60G 17/0272~~-)}
- F16F 1/046
 - . . . {with partial nesting of inner and outer coils (~~F16F 3/04~~ takes precedence-)}
- U F16F 1/06
 - . . . with turns lying in cylindrical surfaces
- F16F 1/065
 - {characterised by loading of the coils in a radial direction (~~canted-coil springs F16F 1/045~~-)}
- F16F 1/08
 - . . . with turns lying in mainly conical surfaces, {i.e. characterised by varying diameter (~~F16F 1/10~~ takes precedence-)}
- F16F 1/10
 - . . . Spiral springs with turns lying substantially in plane surfaces ({~~F16F 1/326~~ takes precedence-)}
- F16F 1/12
 - . . . Attachments or mountings ({~~F16F 1/041~~ , ~~F16F 13/02~~ take precedence; of combinations of vibration damper and mechanical spring for vehicle suspension units ~~B60G 15/02~~-)}
- F16F 1/123
 - {characterised by the ends of the spring being specially adapted, e.g. to form an eye for engagement with a radial insert (~~F16F 1/122~~ , ~~F16F 1/125~~ take precedence-)}
- F16F 1/125
 - {where the end coils of the spring engage an axial insert (~~F16F 1/126~~ , ~~F16F 1/128~~ take precedence-)}
- F16F 1/126
 - {comprising an element between the end coil of the spring and the support proper, e.g. an elastomeric annulus (~~F16F 1/13~~ takes precedence-)}
- F16F 1/128
 - {with motion-limiting means, e.g. with a full-length guide element or ball joint connections; with protective outer cover (~~F16F 1/121~~ takes precedence-)}
- F16F 1/13
 - comprising inserts and spacers between the windings for changing the mechanical or physical characteristics of the spring ({~~F16F 1/122~~ takes precedence-)}
- U F16F 1/14
 - . . Torsion springs consisting of bars or tubes
- F16F 1/145
 - . . . {with means for modifying the spring characteristics (~~fluid regulation of torsion spring characteristics in vehicle suspensions B60G 17/0277~~-)}
- F16F 1/16
 - . . . Attachments or mountings ({~~F16F 1/145~~ takes precedence; mounting means for vehicle stabiliser bars ~~B60G 21/0551~~-)}
- F16F 1/18
 - . . Leaf springs ({~~planar springs in general F16F 1/027~~ ; "Belleville"-type springs with generally radial arms ~~F16F 1/324~~-)}
- F16F 1/185
 - . . . {characterised by shape or design of individual leaves (~~F16F 1/22~~ takes precedence-)}
- F16F 1/22
 - . . . with means for modifying the spring characteristic ({~~fluid regulation of leaf spring characteristics in vehicle suspensions B60G 17/0275~~-)}
- F16F 1/26
 - . . . Attachments or mountings ({ ~~F16F 1/182~~ , ~~F16F 1/22~~ } ~~B60G 11/10~~ take precedence-)
- F16F 1/32
 - . . Belleville-type springs (~~friction-clutch diaphragm springs F16D 13/583~~-)
- F16F 1/36
 - . made of rubber or other material having high internal friction, {e.g. thermoplastic elastomers (~~spring units consisting of several springs F16F 3/08~~-)}
- F16F 1/3605
 - . . {characterised by their material (~~F16F 1/362~~ , ~~F16F 1/364~~ , ~~F16F 1/366~~ , ~~F16F 1/37~~ take precedence; composition of macromolecular compounds in general ~~C08L~~-)}
- F16F 1/361
 - . . . {comprising magneto-rheological elastomers (MR), (~~magneto-rheological fluid dampers F16F 9/535~~-)}
- F16F 1/3615
 - . . {with means for modifying the spring characteristic (~~F16F 1/371~~ takes precedence-)}

- F16F 1/37
 - • of foam-like material, {i.e. micro-cellular material}, e.g. sponge rubber {(-padded linings for vehicle interiors [B60R 21/04](#)-)}
- F16F 1/371
 - • characterised by inserts or auxiliary extension {or exterior} elements, e.g. for rigidification (-[F16F 1/387](#) takes precedence; { non-embedded reinforcing elements for flexibly-walled air springs [F16F 9/0436](#) })
- F16F 1/373
 - • characterised by having a particular shape {(-[F16F 9/58](#) takes precedence-)}
- F16F 1/3737
 - • • {Planar, e.g. in sheet form} (-vibration dampers comprising one or more constrained viscoelastic layers [F16F 9/306](#)-)}
- F16F 1/376
 - • • having projections, studs, serrations or the like on at least one surface ({[F16F 1/3835](#) }, [F16F 1/387](#) take precedence-)
- F16F 1/377
 - • • having holes or openings ({[F16F 1/37](#) }, [F16F 1/387](#) take precedence-)
- F16F 1/38
 - • with a sleeve of elastic material between a rigid outer sleeve and a rigid inner sleeve or pin, {i.e. bushing-type} (-hydraulically-damped bushes [F16F 13/14](#) ; suppression of vibrations in rotating systems by making use of elastomeric spring members between rotating elements, driveline torque being transmitted therebetween [F16F 15/126](#) , by making use of a dynamic damping mass attached to a rotating element by means of elastomeric springs [F16F 15/14](#) ; pivots per se [F16C 11/00](#) ; elastic or yielding bearings or bearing supports [F16C 27/00](#) ; parts of sliding-contact bearings, e.g. bushes [F16C 33/04](#)-)}
- U F16F 1/3807
 - • • {characterised by adaptations for particular modes of stressing}
- F16F 1/3814
 - • • • {characterised by adaptations to counter axial forces (-[F16F 1/393](#) takes precedence-)}
- F16F 1/3828
 - • • {End stop features or buffering (-[F16F 1/3807](#) takes precedence-)}
- F16F 1/3835
 - • • {characterised by the sleeve of elastic material, e.g. having indentations or made of materials of different hardness} (-[F16F 1/3807](#) , [F16F 1/387](#) take precedence-)}
- F16F 1/3842
 - • • {Method of assembly, production or treatment; Mounting thereof} (-supports for pipes, cables or protective tubing [F16L 3/00](#)-)}
- F16F 1/3863
 - • • {characterised by the rigid sleeves or pin, e.g. of non-circular cross-section} (-[F16F 1/3807](#) , [F16F 1/387](#) take precedence-)}
- F16F 1/387
 - • • comprising means for modifying the rigidity in particular directions {(-spherical or conical sleeves [F16F 1/393](#)-)}
- F16F 1/40
 - • consisting of a stack of similar elements separated by non-elastic intermediate layers {(-[F16F 9/306](#) takes precedence; laminated constructions to protect buildings against abnormal external influences, e.g. earthquakes, [E04H 9/022](#)-)}
- F16F 1/41
 - • • the spring consisting of generally conically arranged elements {(-if sleeve-like, i.e. a surface of revolution [F16F 1/3935](#)-)}
- U F16F 1/42
 - • characterised by the mode of stressing

NOTE
Classification of documents in groups [F16F 1/42](#) to [F16F 1/54](#) , concerning the mode of stressing of elastomeric springs, is to be considered only when classification in other subgroups of [F16F 1/36](#) would be unsuitable. Attention is drawn to the parallel scheme of indexing codes under [F16F 2236/00](#) .
- U F16F 1/44
 - • • loaded mainly in compression
- F16F 1/445
 - • • • {the spring material being contained in a generally closed space} (-[F16F 1/393](#) takes precedence-)}
- U F16F 1/52
 - • • loaded in combined stresses
- U F16F 1/54
 - • • • loaded in compression and shear

- F16F 1/545 {Neidhart-type rubber springs (-vehicle suspensions having Neidhart-type rubber springs [B60G 11/225-](#))}
- F16F 3/00** **Spring units consisting of several springs, e.g. for obtaining a desired spring characteristic** ({ [F16F 1/32](#) , [F16F 1/34](#) , [F16F 7/14](#) take precedence } ; if including fluid springs [F16F 5/00](#) , [F16F 13/00](#))
- NOTE**
In this group, vehicle leaf spring units, i.e. "packets" of individual leaves, are considered as a single spring
- F16F 3/08 . with springs made of a material having high internal friction, e.g. rubber((-multi-part grommet-type resilient mountings [F16F 1/3735-](#))}
- F16F 3/087 . . Units comprising several springs made of plastics or the like material (-[F16F 1/40](#) , { [F16F 1/545](#) }take precedence)
- F16F 3/093 . . . the springs being of different materials, e.g. having different types of rubber((-[F16F 1/3835](#) takes precedence-))
- U F16F 3/10 . . combined with springs made of steel or other material having low internal friction
- F16F 3/12 . . . the steel spring being in contact with the rubber spring((-[F16F 1/12](#) takes precedence-))
- F16F 5/00** **Liquid springs in which the liquid works as a spring by compression, e.g. combined with throttling action; Combinations of devices including liquid springs**((-dampers with solid or semi-solid material [F16F 9/30-](#))}
- F16F 6/00** **Magnetic springs;** ((-magnetic spring arrangements for the suppression of vibration in systems [F16F 15/03-](#))); **Fluid magnetic springs,**{i.e. magnetic spring combined with a fluid}
- F16F 7/00** **Vibration-dampers; Shock-absorbers** (-using fluid [F16F 5/00](#) , [F16F 9/00](#) ; specific for rotary systems [F16F 15/10](#) ; { belt tensioners [F16H 7/12](#) })
- F16F 7/003 . {One-shot shock absorbers (-using plastic deformation of members, e.g. using sacrificial, fibre-reinforced composite members [F16F 7/12-](#))}
- F16F 7/006 . . {using textile means (-safety belts or body harnesses incorporating energy absorbing means [A62B 35/04-](#))}
- F16F 7/02 . with relatively-rotatable friction surfaces that are pressed together (-[F16F 7/01](#) takes precedence; one of the members being a spring [F16F 13/02](#) ; { friction devices between relatively-movable parts of a hinge [E05D 11/08](#) ; braking devices for wings [E05F 5/00](#) })
- F16F 7/04 . . in the direction of the axis of rotation((-[F16F 7/023](#) takes precedence-))
- F16F 7/06 . . in a direction perpendicular or inclined to the axis of rotation((-[F16F 7/023](#) takes precedence-))
- F16F 7/08 . with friction surfaces rectilinearly movable along each other (-[F16F 7/01](#) takes precedence; { one of the members being a spring [F16F 13/02](#) })
- F16F 7/10 . using inertia effect (-[F16F 13/108](#) , [F16F 13/22](#) , [F16F 15/10](#) , [F16F 15/22](#) take precedence; stabilising vehicle bodies by means of movable masses [B62D 37/04](#) ; protection of buildings against vibrations or shocks by mass dampers [E04B 1/985](#) ; arrangements or devices for damping mechanical oscillations of power lines [H02G 7/14-](#))
- F16F 7/104 . . the inertia member being resiliently mounted((-[F16F 7/1022](#) takes precedence-))
- F16F 7/12 . using plastic deformation of members((-[F16F 9/30](#) takes precedence; yieldable means for mounting bumpers on vehicles [B60R 19/26](#) ; yieldable or collapsible steering columns [B62D 1/192-](#))}

- F16F 7/123
 - • {Deformation involving a bending action, e.g. strap moving through multiple rollers, folding of members ([-F16F 7/125](#) , [F16F 7/128](#) take precedence-)}
- F16F 7/125
 - • {Units with a telescopic-like action as one member moves into, or out of a second member ([-F16F 7/124](#) , [F16F 7/127](#) , [F16F 7/128](#) take precedence-)}
- F16F 9/00**

Springs, vibration-dampers, shock-absorbers, or similarly-constructed movement-dampers using a fluid or the equivalent as damping medium ([-F16F 5/00](#) takes precedence; connection of valves to inflatable elastic bodies [B60C 29/00](#) ; { braking devices, stops or buffers for wing-operating appliances [E05F 3/00](#) , [E05F 5/00](#) })
- F16F 9/006
 - {characterised by the nature of the damping medium, e.g. biodegradable ([-variable viscosity damping adjustment \[F16F 9/53\]\(#\)-](#))}
- F16F 9/02
 - using gas only {or vacuum ([-F16F 9/006](#) takes precedence-)}
- F16F 9/0209
 - • {Telescopic ([-F16F 9/04](#) takes precedence-)}
- F16F 9/0218
 - • • {Mono-tubular units ([-F16F 9/0227](#) , [F16F 9/0236](#) , [F16F 9/0245](#) take precedence-)}
- U F16F 9/0245
 - • • {Means for adjusting the length of, or for locking, the spring or dampers}
- F16F 9/0254
 - • • • {mechanically lockable, e.g. by use of friction collar ([-mechanical locking of extensible devices for holding wings \[E05C 17/30\]\(#\)-](#))}
- F16F 9/0263
 - • • • {characterised by actuation means, e.g. manually-operated lever arrangement ([-F16F 9/0254](#) takes precedence-)}
- F16F 9/04
 - • in a chamber with a flexible wall{(a)producing hollow articles of plastics, e.g. air bellows, [B29D 22/00](#)-}
- F16F 9/0418
 - • • {having a particular shape, e.g. annular, spherical, tube-like ([-F16F 9/05](#) takes precedence-)}
- F16F 9/0445
 - • • {characterised by intermediate rings or other not embedded reinforcing elements ([-wall structure \[F16F 9/0409\]\(#\)-](#))}
- F16F 9/0454
 - • • {characterised by the assembling method or by the mounting arrangement, e.g. mounting of the membrane ([-F16F 9/0409](#) , [F16F 9/0445](#) take precedence-)}
- F16F 9/0472
 - • • {characterised by comprising a damping device ([-with plastic deformation of members \[F16F 7/12\]\(#\) ; delay devices or arrangements \[F15B 21/10\]\(#\)-](#))}
- F16F 9/049
 - • • {multi-chamber units ([-F16F 9/0472](#) , [F16F 9/05](#) take precedence-)}
- F16F 9/06
 - using both gas and liquid{(a) [F16F 9/486](#) take precedence; self-pumping fluid springs [B60G 17/044](#)-}
- F16F 9/064
 - • {Units characterised by the location or shape of the expansion chamber ([-F16F 9/068](#) , [F16F 9/08](#) take precedence-)}
- F16F 9/066
 - • {Units characterised by the partition, baffle or like element ([-F16F 9/068](#) , [F16F 9/08](#) take precedence-)}
- F16F 9/08
 - • {where gas is}in a chamber with a flexible wall{(a)pressurised fluid system accumulators per se [F15B 1/04](#)-}
- F16F 9/081
 - • • {being of the fluid displacement type, i.e. the piston not comprising damping arrangements ([-F16F 9/096](#) takes precedence-)}
- F16F 9/096
 - • • comprising a hydropneumatic accumulator of the membrane type provided on the upper or the lower end of a damper or separately from or laterally on the damper([-F16F 9/088](#) takes precedence-)}
- U F16F 9/10
 - using liquid only; using a fluid of which the nature is immaterial
- F16F 9/103
 - • {Devices with one or more members moving linearly to and fro in chambers, any throttling effect being immaterial, i.e. damping by viscous shear effect only ([-F16F 9/53](#) takes precedence-)}

- F16F 9/12
 - • Devices with one or more rotary vanes turning in the fluid any throttling effect being immaterial, {i.e. damping by viscous shear effect only ({ [F16F 9/53](#) takes precedence } ; pivoting supports for apparatus or articles placed on stands or trestles [F16M 11/06-](#))}
- U F16F 9/14
 - • Devices with one or more members, e.g. pistons, vanes, moving to and fro in chambers and using throttling effect
- F16F 9/145
 - • • {involving only rotary movement of the effective parts (-wing closers or openers with fluid brakes of the rotary type [E05F 3/14-](#))}
- F16F 9/16
 - • • involving only straight-line movement of the effective parts{(-wing closers or openers with liquid piston brakes [E05F 3/04-](#))}
- F16F 9/165
 - • • • {with two or more cylinders in line, i.e. in series connection (-[F16F 9/26](#) takes precedence-)}
- U F16F 9/18
 - • • • with a closed cylinder and a piston separating two or more working spaces therein
- F16F 9/185
 - • • • • {Bitubular units (-where compression of gas leads to a clear spring action [F16F 9/062-](#))}
- F16F 9/19
 - • • • • with a single cylinder {and of single-tube type}
- F16F 9/30
 - with solid or semi-solid material, e.g. pasty masses, as damping medium{-in devices where rotary elements are damped by viscous shear effect only, any throttling effect being immaterial [F16F 9/12](#) ; where members moving with a rotating system are being damped [F16F 15/16-](#)}
- U F16F 9/32
 - Details
- F16F 9/3207
 - • {Constructional features (-[F16F 9/34](#) to [F16F 9/50](#) take precedence; assembly or repair [F16F 9/3271-](#))}
- F16F 9/3214
 - • • {of pistons (-[F16F 9/0227](#) and [F16F 9/36](#) take precedence; throttling passages in or on piston body [F16F 9/3405-](#))}
- F16F 9/3235
 - • • {of cylinders (-[F16F 9/483](#) takes precedence-)}
- F16F 9/3264
 - • {Arrangements for indicating, e.g. fluid level; Arrangements for checking dampers (-[F16F 9/3292](#) takes precedence; testing of vehicle damping [G01M 17/04-](#))}
- F16F 9/3278
 - • {for lubrication (-lubricating per se [F16N-](#))}
- F16F 9/3285
 - • {for filtering (-filters per se [B01D-](#))}
- F16F 9/34
 - • Special valve constructions ({ [F16F 9/44](#) , [F16F 9/50](#) take precedence; filtering details [F16F 9/3285](#) } ; valves in general [F16K-](#)); Shape or construction of throttling passages
- F16F 9/3405
 - • • {Throttling passages in or on piston body, e.g. slots (-[F16F 9/344](#) , [F16F 9/3481](#) take precedence-)}
- F16F 9/341
 - • • {comprising noise-reducing or like features, e.g. screens (-[F16F 9/3415](#) takes precedence-)}
- F16F 9/342
 - • • Throttling passages operating with metering pins{(-[F16F 9/486](#) takes precedence-)}
- F16F 9/348
 - • • Throttling passages in the form of annular discs {or other plate-like elements which may or may not have a spring action}, operating in opposite directions {or singly, e.g. annular discs positioned on top of the valve or piston body (-[F16F 9/341](#) , [F16F 9/3415](#) take precedence-)}
- F16F 9/3481
 - • • • {characterised by shape or construction of throttling passages in piston (-[F16F 9/344](#) takes precedence-)}
- F16F 9/3482
 - • • • {the annular discs being incorporated within the valve or piston body (-[F16F 9/3484](#) , [F16F 9/3485](#) take precedence-)}

- F16F 9/3485
 - . . . {characterised by features of supporting elements intended to guide or limit the movement of the annular discs (~~F16F 9/3488~~ takes precedence)}
- F16F 9/36
 - . . Special sealings, including sealings or guides for piston-rods ({ [F16F 9/325](#) , [F16F 9/3485](#) take precedence; arrangements for filling via piston rod sealing or guiding means [F16F 9/432](#) } ; sealing of moving parts in general [F16J 15/16](#) to [F16J 15/56](#)-)
- F16F 9/362
 - . . . {Combination of sealing and guide arrangements for piston rods (~~F16F 9/361~~ , [F16F 9/365](#) take precedence)}
- F16F 9/43
 - . . Filling {or drainage}arrangements, e.g. for supply of gas{(filling vessels with, or discharging from vessels, compressed, liquefied, or solidified gases [F17C](#)-)}
- F16F 9/435
 - . . . {via opening in cylinder wall (~~F16F 9/432~~ takes precedence)}
- F16F 9/44
 - . . Means on or in the damper for manual or non-automatic adjustment; Such means combined with temperature correction (~~F16F 9/53~~ , { [F16F 13/26](#) } take precedence; temperature correction only [F16F 9/52](#)-)
- F16F 9/446
 - . . . {Adjustment of valve bias or pre-stress (~~F16F 9/443~~ takes precedence)}
- F16F 9/46
 - . . . allowing control from a distance,{i.e. location of means for control input being remote from site of valves, e.g. on damper external wall (~~attachment of valve units to cylinders [F16F 9/325](#)~~-)}
- F16F 9/464
 - {Control of valve bias or pre-stress, e.g. electromagnetically (~~F16F 9/465~~ takes precedence)}
- F16F 9/465
 - {using servo control, the servo pressure being created by the flow of damping fluid, e.g. controlling pressure in a chamber downstream of a pilot passage (~~self-adjustment of damping [F16F 9/50](#)~~-)}
- F16F 9/466
 - {Throttling control, i.e. regulation of flow passage geometry (~~F16F 9/464~~ , [F16F 9/465](#) take precedence)}
- F16F 9/469
 - {Valves incorporated in the piston (~~F16F 9/467~~ takes precedence)}
- F16F 9/48
 - . . Arrangements for providing different damping effects at different parts of the stroke ({ [F16F 9/346](#) , [F16F 9/516](#) } , [F16F 9/53](#) take precedence-)
- F16F 9/49
 - . . . Stops limiting fluid passage, e.g. hydraulic stops {or elastomeric elements inside the cylinder which contribute to changes in fluid damping (~~fluid-actuated displacement devices with means for accelerating or decelerating the stroke [F15B 15/22](#)~~-)}
- F16F 9/50
 - . . Special means providing automatic damping adjustment,{i.e. self-adjustment of damping by particular sliding movements of a valve element, other than flexions or displacement of valve discs} (~~F16F 9/53~~ takes precedence-); {Special means providing self-adjustment of spring characteristics}
- F16F 9/512
 - . . . Means responsive to load action,{i.e. static load}on the damper or {dynamic}fluid pressure {changes}in the damper,{e.g. due to changes in velocity (~~F16F 9/504~~ , [F16F 9/516](#) take precedence; non-automatic damper adjustment from a distance using servo control, the servo pressure being created by the flow of damping fluid [F16F 9/465](#) ; self-pumping fluid springs in vehicle suspensions [B60G 17/044](#)-)}
- F16F 9/5126
 - {Piston, or piston-like valve elements (~~F16F 9/504~~ takes precedence)}
- F16F 9/516
 - . . . resulting in the damping effects during contraction being different from the damping effects during extension,{i.e. responsive to the direction of movement (~~F16F 9/504~~ takes precedence)}
- F16F 9/52
 - . . . in case of change of temperature ({ [F16F 9/003](#) takes precedence; } combined with external adjustment [F16F 9/44](#)-)

- F16F 9/53
- Means for adjusting damping characteristics by varying fluid viscosity, e.g. electromagnetically (F16F 13/30 takes precedence; brakes comprising a medium with electrically or magnetically controlled friction F16D 57/002 ; electrorheological fluids per se C10M 171/001 ; magnetorheological fluids per se H01F 1/447-)
- F16F 9/535
- • {Magnetorheological (MR) fluid dampers (-springs comprising magnetorheological (MR) elastomers F16F 1/361-)}
- F16F 9/54
- Arrangements for attachment (grommet-type rubber mounting springs per se F16F 1/3732 ; construction of cylinder ends F16F 9/3242 ; attachments to vehicles B60G 13/001 , B60G 15/00-)
- F16F 9/56
- Means for adjusting the length of, or for locking, the spring or damper, e.g. at the end of the stroke (F16F 9/50 takes precedence; for telescopic gas springs or dampers F16F 9/0245 ; vehicle suspension locking arrangements B60G 17/005-)
- F16F 9/58
- Stroke limiting stops, e.g. arranged on the piston rod outside the cylinder (F16F 9/49 takes precedence)
- F16F 13/00**
- Units comprising springs of the non-fluid type as well as vibration-dampers, shock-absorbers, or fluid springs (F16F 5/00 , { F16F 6/00 , F16F 9/003 }take precedence)**
- F16F 13/002
- {comprising at least one fluid spring (F16F 13/005 , F16F 13/02 , F16F 13/04 take precedence-)}
- F16F 13/02
- damping by frictional contact between the spring and braking means (frictionally coating wound springs F16F 3/06-)
- U F16F 13/04
- comprising both a plastics spring and a damper, e.g. a friction damper
- F16F 13/06
- the damper being a fluid damper, e.g. the plastics spring not forming a part of the wall of the fluid chamber of the damper (F16F 13/26 takes precedence-)
- F16F 13/08
- the plastics spring forming at least a part of the wall of the fluid chamber of the damper (F16F 13/20 to F16F 13/24 take precedence-)
- F16F 13/10
- the wall being at least in part formed by a flexible membrane or the like (F16F 13/14 to F16F 13/18 take precedence-)
- F16F 13/108
- {characterised by features of plastics springs, e.g. attachment arrangements (F16F 13/18 takes precedence-)}
- F16F 13/14
- Units of the bushing type, (i.e. loaded predominantly radially) (bushes F16F 1/38 ; mounting brackets therefor F16F 1/3849-)
- F16F 13/16
- specially adapted for receiving axial loads (F16F 13/1436 takes precedence-)
- F16F 13/18
- characterised by the location or the shape of the equilibration chamber, e.g. the equilibration chamber, surrounding the plastics spring or being annular (F16F 13/1418 takes precedence-)
- F16F 13/20
- characterised by comprising also a pneumatic spring (F16F 13/22 , { F16F 13/26 }take precedence)
- F16F 13/22
- characterised by comprising also a dynamic damper; dampers using inertia effect per se F16F 7/10
- F16F 13/26
- characterised by adjusting or regulating devices responsive to exterior conditions (F16F 13/101 takes precedence-)
- F16F 13/262
- changing geometry of passages between working and equilibration chambers, e.g. cross-sectional area or length (F16F 13/28 takes precedence-)
- F16F 13/268
- comprising means for acting dynamically on the walls bounding an equilibration chamber (F16F 13/264 take precedence-)

- F16F 13/28
- • specially adapted for units of the bushing type (-F16F 13/30 takes precedence-)
- F16F 15/00**
- Suppression of vibrations in systems** ({ damping of non-rotary systems using inertia effect [F16F 7/10](#) ; prevention or isolation of vibrations in machine tools [B23Q 11/0032](#) ; suppression of driveline vibrations in hybrid vehicle transmissions [B60W 30/20](#) } ; vehicle seat suspension devices [B60N 2/50](#) ; { methods or devices for protecting against, or damping of, acoustic waves, e.g. sound [G10K 11/16](#) }); Means or arrangements for avoiding or reducing out-of-balance forces, e.g. due to motion ({ vibration absorbing or balancing means for aircraft propellers [B64C 11/008](#) , for rotorcraft rotors [B64C 27/001](#) } ; testing static and dynamic balance of machines or structures [G01M 1/00](#)-)
- F16F 15/002
- {characterised by the control method or circuitry (-control of mechanical oscillations per se [G05D 19/00](#)-)}
- F16F 15/005
- {using electro- or magnetostrictive actuation means (-generating of mechanical vibrations operating with electrostriction [B06B 1/06](#) , with magnetostriction [B06B 1/08](#) ; vehicle suspension arrangements characterised by use of piezo-electric elements [B60G 17/01941](#) ; piezo-electric, electrostrictive and magnetostrictive devices per se [H01L 41/00](#)-)}
- F16F 15/02
- Suppression of vibrations of non-rotating, e.g. reciprocating systems; Suppression of vibrations of rotating systems by use of members not moving with the rotating systems ({ [F16F 15/005](#) takes precedence } ; layered products [B32B](#) ; suppression of vibration in ships [B63](#) ; { relieving load on bearings, using magnetic means [F16C 39/06](#) })
- U F16F 15/023
- • using fluid means
- F16F 15/0232
- • • {with at least one gas spring (-F16F 15/027 takes precedence-)}
- F16F 15/0235
- • • {where a rotating member is in contact with fluid (-rotary viscous dampers per se [F16F 9/12](#) ; suppression of vibrations in rotating systems containing a fluid [F16F 15/16](#)-)}
- F16F 15/027
- • • comprising control arrangements{(-F16F 15/0237 takes precedence-)}
- F16F 15/03
- • using {magnetic or}electromagnetic means (-F16F 9/53 , { [F16F 15/005](#) }take precedence)
- F16F 15/035
- • • {by use of eddy or induced-current damping (-dynamo-electric brakes of the eddy-current type [H02K 49/04](#)-)}
- F16F 15/04
- • using elastic means (-single elements or their attachment [F16F 1/00](#) to [F16F 13/00](#)-); {(-F16F 15/023 , [F16F 15/03](#) take precedence-)}
- F16F 15/046
- • • {using combinations of springs of different kinds (-F16F 15/085 takes precedence-)}
- F16F 15/06
- • • with metal springs (-with rubber springs also [F16F 15/08](#)-)
- F16F 15/08
- • • with rubber springs{(-grommet- or bushing-type resilient mountings [F16F 1/3732](#) , [F16F 1/38](#)-); with springs made of rubber and metal (-arrangement of internal-combustion or jet-propulsion units [B60K 5/12](#) ; mounting of propulsion plants on vessels [B63H 21/30](#) ; mounting of vehicle drivers` cabs [B62D 33/0604](#)-)}
- F16F 15/10
- Suppression of vibrations in rotating systems by making use of members moving with the system (-by balancing [F16F 15/22](#) ; { yielding couplings [F16D 3/00](#) } ; with flywheels acting variably or intermittently [F16H](#) ; { construction providing resilience or vibration-damping for gear elements [F16H 55/14](#) })
- F16F 15/12
- • using elastic members or friction-damping members, e.g. between a rotating shaft and a gyratory mass mounted thereon ({ [F16F 15/14](#) } , [F16F 15/16](#) take precedence-)

- F16F 15/1201 . . . {for damping of axial or radial, i.e. non-torsional vibrations ([F16F 15/13107](#) takes precedence)}
- F16F 15/1202 . . . {the damping action being at least partially controlled by centrifugal masses ([F16F 15/13128](#) takes precedence)}
- F16F 15/1203 . . . {characterised by manufacturing, e.g. assembling or testing procedures for the damper units ([F16F 15/13142](#) takes precedence)}
- F16F 15/1204 . . . {with a kinematic mechanism or gear system ([F16F 15/1202](#), [F16F 15/13157](#) take precedence)}
- F16F 15/1207 . . . {characterised by the supporting arrangement of the damper unit ([F16F 15/1238](#), [F16F 15/13164](#) take precedence)}
- F16F 15/121 . . . using springs as elastic members, e.g. metallic springs([F16F 15/133](#) takes precedence)}
- F16F 15/1217 {Motion-limiting means, e.g. means for locking the spring unit in pre-defined positions ([F16F 15/1202](#), [F16F 15/1338](#) take precedence)}
- F16F 15/123 Wound springs([F16F 15/1213](#), [F16F 15/1216](#), [F16F 15/127](#) take precedence)}
- F16F 15/1232 {characterised by the spring mounting ([F16F 15/12306](#), [F16F 15/12313](#) take precedence)}
- F16F 15/124 Elastomeric springs ([F16F 15/123](#), { [F16F 15/127](#) }take precedence)
- F16F 15/129 . . . characterised by friction-damping means ({ [F16F 15/1202](#), [F16F 15/1238](#) }, [F16F 15/131](#) take precedence)
- U F16F 15/131 . . . the rotating system comprising two or more gyratory masses
- F16F 15/13128 {the damping action being at least partially controlled by centrifugal masses (flywheels characterised by means to vary the moment of inertia [F16F 15/31-](#))}
- F16F 15/13142 {characterised by the method of assembly, production or treatment ([F16F 15/13114](#) takes precedence)}
- F16F 15/13157 {with a kinematic mechanism or gear system, e.g. planetary ([F16F 15/13128](#) takes precedence)}
- U F16F 15/13164 {characterised by the supporting arrangement of the damper unit}
- F16F 15/13171 {Bearing arrangements ([F16F 15/13192](#) takes precedence)}
- F16F 15/13185 {Bolting arrangements ([F16F 15/13171](#) takes precedence)}
- U F16F 15/133 using springs as elastic members, e.g. metallic springs
- F16F 15/1338 {Motion-limiting means, e.g. means for locking the spring unit in pre-defined positions ([F16F 15/13128](#) takes precedence)}
- F16F 15/134 Wound springs([F16F 15/1333](#), [F16F 15/1337](#), [F16F 15/137](#) take precedence)}
- F16F 15/1343 {characterised by the spring mounting ([F16F 15/13407](#), [F16F 15/13415](#) take precedence)}
- F16F 15/136 Plastics springs, e.g. made of rubber ([F16F 15/134](#), { [F16F 15/137](#) }take precedence)
- F16F 15/139 characterised by friction-damping means([F16F 15/13128](#) takes precedence)}
- F16F 15/14 . . . using masses freely rotating with the system, {i.e. uninvolved in transmitting driveline torque, e.g. rotative dynamic dampers (compensation of inertia forces [F16F 15/22](#); weights for balancing rotating bodies [F16F 15/32-](#))}
- U F16F 15/1407 . . . {the rotation being limited with respect to the driving means}
- F16F 15/1414 {Masses driven by elastic elements ([F16F 15/145](#), [F16F 15/1464](#) take precedence)}

- F16F 15/1464
 - • • {Masses connected to driveline by a kinematic mechanism or gear system (~~F16F 15/145~~ takes precedence)}
- F16F 15/1485
 - • • {the rotation being unlimited with respect to driving means (~~with a fluid connection between inertia member and rotating driving means F16F 15/167~~)}
- F16F 15/16
 - • using a fluid {or pasty material}(~~F16F 9/53~~ , [F16F 15/13157](#) take precedence; devices connecting input and output members [F16D](#))
- F16F 15/161
 - • • {characterised by the fluid damping devices, e.g. passages, orifices (~~F16F 15/162~~ takes precedence)}
- U F16F 15/167
 - • • having an inertia member, e.g. ring
- F16F 15/173
 - • • provided within a closed housing(~~F16F 15/36~~ takes precedence)}
- F16F 15/18
 - • using electric,{magnetic or electromagnetic}means ({ suppression of vibrations of rotating systems by use of non-rotating magnetic or electromagnetic means [F16F 15/03](#) ;} dynamo-electric devices [H02K](#); { control effected upon generator excitation circuit to reduce harmful effects of overloads or transients [H02P 9/10](#) })
- F16F 15/20
 - Suppression of vibrations of rotating systems by favourable grouping or relative arrangements of the moving members of the system or systems(~~F16F 15/24~~ takes precedence)}
- F16F 15/22
 - Compensation of inertia forces(~~suppression of vibrations of rotating systems by favourable grouping or relative arrangements of the moving members of the system or systems [F16F 15/20](#) , counterweights [F16F 15/28](#) ; correcting-weights for balancing rotating bodies [F16F 15/32](#)~~)}
- F16F 15/223
 - • {Use of systems involving rotary unbalanced masses where the phase-angle of masses mounted on counter-rotating shafts can be varied (~~generation of mechanical vibrations per se with such systems [B06B 1/166](#)~~)}
- F16F 15/24
 - • of crankshaft systems by particular disposition of cranks, pistons, or the like(~~shape of crankshafts or eccentric-shafts having regard to balancing [F16C 3/20](#)~~)}
- F16F 15/26
 - • of crankshaft systems using solid masses, other than the ordinary pistons, moving with the system,{i.e. masses connected through a kinematic mechanism or gear system (~~F16F 15/226~~ takes precedence)}
- F16F 15/264
 - • • {Rotating balancer shafts (~~F16F 15/262~~ takes precedence)}
- F16F 15/265
 - • • • {Arrangement of two or more balancer shafts (~~F16F 15/267~~ takes precedence)}
- F16F 15/28
 - Counterweights,{i.e. additional weights counterbalancing inertia forces induced by the reciprocating movement of masses in the system, e.g. of pistons attached to an engine crankshaft (~~rotating balancer shafts [F16F 15/264](#) ; correcting-weights for balancing rotating bodies [F16F 15/32](#)~~)}; Attaching or mounting same
- F16F 15/30
 - Flywheels (~~F16F 15/16~~ , [F16F 15/28](#) take precedence; suppression of vibrations in rotating systems using elastic members or friction-damping members moving with the system, {i.e. split flywheels or single masses connected to a hub by elastic members or friction-damping members} [F16F 15/12](#) ; rotary-body aspects in general [F16C 13/00](#) , [F16C 15/00](#))
- F16F 15/315
 - • characterised by their supporting arrangement, e.g. mountings, cages, securing inertia member to shaft (~~F16F 15/31~~ takes precedence)
- F16F 15/32
 - Correcting- or balancing-weights or equivalent means for balancing rotating bodies, e.g. vehicle wheels(~~suppression of vibrations in rotating systems by using freely rotating masses [F16F 15/14](#) ; compensation of inertia forces [F16F 15/22](#) ; compensating unbalance for testing purposes [G01M 1/30](#)~~)}
- F16F 15/322
 - • {the rotating body being a shaft (~~F16F 15/34~~ , [F16F 15/36](#) take precedence)}

- F16F 15/324
- {the rotating body being a vehicle wheel ([F16F 15/36](#) takes precedence; tyre parts or constructions not otherwise provided for [B60C 19/00](#)-)}
- F16F 15/36
- operating automatically, {i.e. where, for a given amount of unbalance, there is movement of masses until balance is achieved ([-damping vibrations of washing machines by displacing, supplying or ejecting a material, e.g. liquid, into or from counterbalancing pockets \[D06F 37/245\]\(#\)](#)-)}
- U F16F 2222/00** **Special physical effects, e.g. nature of damping effects**
- F16F 2222/02
- temperature-related ([F16F 2228/002](#) takes precedence-)
- U F16F 2224/00** **Materials; Material properties**
- U F16F 2224/04
- Fluids
- F16F 2224/048
- High viscosity, semi-solid pastiness ([F16F 2224/041](#) takes precedence-)

Project: N/A (F16G)

- U F16G 5/00** **V-belts, i.e. belts of tapered cross-section**
- U F16G 5/16
- consisting of several parts
- F16G 5/163
- {-with means allowing lubrication ([F16G 5/18](#) takes precedence)}
- WARNING
this group is not complete pending a reorganisation, see also [F16G 5/16](#)
- F16G 5/166
- {-with non-metallic rings ([F16G 5/18](#) takes precedence)}
- WARNING
this group is not complete pending a reorganisation, see also [F16G 5/16](#)
- U F16G 11/00** **Means for fastening cables or ropes to one another or to other objects; Caps or sleeves for fixing on cables or ropes (attaching ropes or cables to lift cars or cages [B66B 7/08](#), to winch drums or barrels [B66D 1/34](#); ground anchors [E02D 5/00](#); anchoring devices for prestressed members [E04C 5/00](#); rope clamps in earth drilling [E21B 19/12](#))**
- U F16G 11/02
- with parts deformable to grip the cable or cables; Fastening means which engage a sleeve or the like fixed on the cable
- F16G 11/025
- {-Fastening means which engage a sleeve or the like fixed on the cable, e.g. caps ([F16G 11/143](#) and [F16G 11/146](#) take precedence)}
- WARNING
this group is not complete pending a reorganisation, see also [F16G 11/00](#)
- U F16G 11/04
- with wedging action, e.g. friction clamps ([F16G 11/02](#), { [F16G 11/10](#) } take precedence; { eyes for grommet-thimble type fastenings [F16G 11/146](#)})
- WARNING
Subgroups of [F16G 11/04](#) pending a reorganisation, see also [F16G 11/04](#)
- F16G 11/042
- {-using solidifying liquid material forming a wedge}
- F16G 11/044
- {-friction clamps deforming the cable, wire, rope or cord}
- F16G 11/046
- • {-by bending the cable around a surface}
- F16G 11/048
- • {-by moving a surface into the cable}
- U F16G 11/10
- Quick-acting fastenings; Clamps holding in one direction only
- WARNING
Subgroups of [F16G 11/10](#) pending a reorganisation, see also [F16G 11/10](#)
- F16G 11/101
- {-deforming the cable by moving a part of the fastener}

- F16G 11/103
- F16G 11/105
- F16G 11/106
- F16G 11/108
- U F16G 11/14
 - • {deforming the cable by bending it around or inserting it into the fastener}
 - • {Clamps holding in one direction only}
 - • • {using a toothed surface}
 - • • {using a ball or a cylinder}
 - Devices or coupling-pieces designed for easy formation of adjustable loops, e.g. choker hooks; Hooks or eyes with integral parts designed to facilitate quick attachment to cables or ropes at any point, e.g. by forming loops (crane hooks [B66C 1/34](#); hooks or eyes in general [F16B 45/00](#))
- F16G 11/143
 - • {Hooks}
 - WARNING
This group is not complete pending a reorganisation, see also [F16G 11/14](#)
- F16G 11/146
 - • {Eyes}
 - WARNING
This group is not complete pending a reorganisation, see also [F16G 11/14](#)
- U F16G 13/00 **Chains (making thereof [B21L](#))**
- U F16G 13/02
 - Driving-chains (specially adapted to gearings with variable gear-ratio [F16H 9/00](#))
- F16G 13/06
 - • with links connected by parallel driving-pins with or without rollers {so called open links-(if the parallel coupling pins have only a joining function - so called closed links - [F16G 13/02](#))}

Project: N/A (F16H)

F16H

GEARING{(-steering of motor vehicles by differentially driving ground-engaging elements on opposite vehicle sides [B62D 11/02](#))}

NOTE

1. Combinations including mechanical gearings are classified in groups [F16H 37/00](#) or [F16H 47/00](#) , unless they are provided for in groups [F16H 1/00](#) to [F16H 35/00](#) .
2. In this subclass, sets of rigidly-connected members are regarded as single members.
3. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "toothed gearing" includes worm gearing and other gearing involving at least one wheel or sector provided with teeth or the equivalent, EXCEPT gearing with chains or toothed belts, which is treated as friction gearing;
 - "conveying motion" includes transmitting energy, and means that the applied and resultant motions are of the same kind, though they may differ in, e.g. speed, direction extent:
 - "rotary" implies that the motion may continue indefinitely;
 - "oscillating" means moving about an axis to an extent which is limited by the construction of the gearing, and which may exceed one revolution, the movement being alternately forwards and backwards during continued operation of the gearing;
 - "reciprocating" means moving substantially in a straight line, the movement being alternately forwards and backwards during continued operation of the gearing;
 - "reversing" or "reversal" means that an applied movement in one direction may produce a resultant movement in either of two opposed directions at will;

- "central gears" includes any gears whose axis is the main axis of the gearing. Attention is drawn to the following places:

[A01D 69/06](#) Gearings in harvesting machines
[A63H 31/00](#) Gearing for toys
[B21B 35/12](#) Toothed-wheel gearing for metal-rolling mills
[B60K](#) Arrangement of transmissions in vehicles
[B61C 9/00](#) Transmissions for railway locomotives
[B62D 3/00](#) Vehicle steering gears
[B62M](#) Transmissions for cycles
[B63H 23/00](#) Transmissions for marine propulsions
[B63H 25/00](#) Marine steering gears
{ [B64C 27/12](#) , [B64C 27/58](#)
Transmissions for helicopters
[B64D 35/00](#) Transmissions for aircraft }
[F01](#) to [F04](#) Machines, engines, pumps
[F15B 15/00](#) Gearings associated with fluid-actuated devices
[G01D 5/04](#) Gearing used in indicating or recording apparatus in connection with measuring devices
[H03J 1/00](#) Driving arrangements for tuning resonant circuits
[H04L 13/04](#) Driving mechanisms for apparatus for transmission of coded digital information.

F16H 1/00

Toothed gearings for conveying rotary motion (-specific for conveying rotary motion with variable gear ratio or for reversing rotary motion [F16H 3/00](#)-)

- U F16H 1/02 · without gears having orbital motion
- U F16H 1/04 · · involving only two intermeshing members
- U F16H 1/12 · · · with non-parallel axes
- F16H 1/18 · · · · the members having helical, herringbone, or like teeth (-[F16H 1/14](#) takes precedence-)
- U F16H 1/20 · · involving more than two intermeshing members
- F16H 1/203 · · · {with non-parallel axes (-[F16H 1/22](#) takes precedence-)}
- F16H 1/24 · · involving gears essentially having intermeshing elements other than involute or cycloidal teeth (-[F16H 1/16](#) takes precedence-)
- U F16H 1/28 · with gears having orbital motion
- F16H 1/34 · · involving gears essentially having intermeshing elements other than involute or cycloidal teeth (-in worm gearing [F16H 1/30](#)-)
- F16H 1/48 · · Special means compensating for misalignment of axes {e.g. for equalising distribution of load on the face width of the teeth (-in combination with distribution of load on the planet-wheels [F16H 1/2809](#)-)}

F16H 3/00

Toothed gearings for conveying rotary motion with variable gear ratio or for reversing rotary motion (-speed-changing or reversing mechanisms [F16H 59/00](#) to [F16H 63/00](#)-)

- F16H 3/002 · {using gears having teeth movable out of mesh (-[F16H 3/42](#) takes precedence-)}
- U F16H 3/02 · without gears having orbital motion

- U F16H 3/08
 - • exclusively or essentially with continuously meshing gears, that can be disengaged from their shafts
- F16H 3/083
 - • • with radially acting and axially controlled clutching members, e.g. sliding keys{(clutches with clutching members movable otherwise than only axially [F16D 11/12](#) ; clutches with wedgeable clutching members [F16D 15/00](#) ; systems of mechanically actuated clutches [F16D 21/04](#)-)}
- F16H 3/087
 - • • characterised by the disposition of the gears{([F16H 3/083](#) , [F16H 3/085](#) take precedence-)

NOTE
When counting the countershafts, the reverse countershaft is not taken into consideration if it is used for reversal only.
- F16H 3/12
 - • • with means for synchronisation not incorporated in the clutches{(synchronised clutches [F16D 23/02](#)-)}
- U F16H 3/20
 - • exclusively or essentially using gears that can be moved out of gear
- U F16H 3/38
 - • • with synchro-meshing
- F16H 3/385
 - • • • {with braking means (constructional features of the final output mechanisms for reversing [F16H 63/302](#)-)}
- F16H 3/44
 - using gears having orbital motion{(the gear-ratio being changed by inversion of torque direction [F16H 3/005](#)-)}
- F16H 3/46
 - • Gearings having only two central gears, connected by orbital gears{([F16H 3/68](#) to [F16H 3/78](#) take precedence-)
- F16H 3/62
 - • Gearings having three or more central gears ([F16H 3/68](#) to [F16H 3/78](#) take precedence-)
- U F16H 3/66
 - • • composed of a number of gear trains without drive passing from one train to another
- F16H 3/666
 - • • • {with compound planetary gear units, e.g. two intermeshing orbital gears ([F16H 3/663](#) takes precedence-)}
- U F16H 3/72
 - • with a secondary drive, e.g. regulating motor, in order to vary speed continuously
- F16H 3/727
 - • • {with at least two dynamo electric machines for creating an electric power path inside the gearing, e.g. using generator and motor for a variable power torque path (special adapted for a hybrid electric vehicle [B60K 6/20](#)-)}
- F16H 3/78
 - • Special adaptation of synchronisation mechanisms to these gearings
- F16H 7/00**

Gearings for conveying rotary motion by endless flexible members (specific for conveying rotary motion with variable gear ratio or for reversing rotary motion [F16H 9/00](#) ; { Belts, V-belts, ropes, cables, and chains [F16G](#) , chain-wheels [F16H 55/30](#) ; pulleys [F16H 55/36](#) })
- U F16H 7/02
 - with belts; with V-belts
- F16H 7/023
 - • {with belts having a toothed contact surface or regularly spaced bosses or hollows for slipless or nearly slipless meshing with complementary profiled contact surface of a pulley{(toothed belts [F16G 1/28](#) , [F16G 5/20](#)-)}
- F16H 7/08
 - Means for varying tension of belts, ropes, or chains (pulleys of adjustable construction [F16H 55/52](#) ; { gearings with endless belts [F16H 7/02](#) ; tensioning for chains or belts specially adapted for cycles [B62M 9/16](#) ; belt or chain tensioning arrangements for endless conveyers [B65G 23/44](#))}
- F16H 7/10
 - • by adjusting the axis of a pulley{ [F16H 7/0827](#) takes precedence-}
- U F16H 7/12
 - • • of an idle pulley
- F16H 7/1209
 - • • • {with vibration damping means (vibration damping per se [F16F](#)-)}
- F16H 7/18
 - Means for guiding or supporting belts, ropes, or chains (construction of pulleys [F16H 55/36](#)-)

- F16H 9/00** **Gearings for conveying rotary motion with variable gear ratio, or for reversing rotary motion, by endless flexible members (-control of change-speed or reversing-gearings conveying rotary motion [F16H 59/00](#) to [F16H 63/00](#)-)**
- U F16H 9/02 · without members having orbital motion
- F16H 9/04 · · using belts, V-belts, or ropes (-with toothed belts [F16H 9/24](#) ; pulleys of adjustable construction [F16H 55/52](#)-)
- F16H 9/08 · · · engaging a conical drum (-[F16H 9/12](#) takes precedence-)
- F16H 9/24 · · using chains or toothed belts, belts in the form of links; Chains or belts specially adapted to such gearing (-toothed belts [F16G 1/28](#) ; V-belts in the form of links [F16G 5/18](#) ; toothed V-belts [F16G 5/20](#)-)
- F16H 13/00** **Gearings for conveying rotary motion by friction between rotary members (-specific for conveying rotary motion with variable gear ratio or for reversing rotary motion [F16H 15/00](#) ; { friction discs [F16H 55/32](#) })**
- F16H 15/00** **Gearings for conveying rotary motion with variable gear ratio, or for reversing rotary motion, by friction between rotary members ({ gearings for reversal only [F16H 3/14](#) , [F16H 3/60](#) } ; control of change-speed or reversing-gearings conveying rotary motion [F16H 59/00](#) to [F16H 63/00](#)-)**
- F16H 19/00** **Gearings comprising essentially only toothed gears or friction members and not capable of conveying indefinitely-continuing rotary motion (-with intermittently-driving members [F16H 27/00](#) - [F16H 31/00](#) ; rope or like tackle for lifting or haulage [B66D 3/00](#)-)**
- U F16H 19/02 · for interconverting rotary {or oscillating} motion and reciprocating motion
- F16H 19/06 · · comprising {flexible members, e.g. an}endless flexible member
- WARNING
- Groups [F16H 19/0604](#) - [F16H 19/0672](#) are not complete pending reclassification; see also this group
- F16H 21/00 -** **Gearing for conveying or converting motion by means of levers, links, or**
- F16H 25/00** **cams (-combination of gearings of different types [F16H 37/00](#))**
- F16H 21/04 · Guiding mechanisms, e.g. for straight-line guidance (-for drawing-machines [B43L](#)-)
- U F16H 21/10 · all movement being in or parallel to a single plane
- U F16H 21/16 · · for interconverting rotary motion and reciprocating motion
- U F16H 21/18 · · · Crank gearings; Eccentric gearings
- F16H 21/20 · · · · with adjustment of throw (-adjustable cranks or eccentrics [F16C 3/28](#) ; adjustable connecting-rods [F16C 7/06](#)-)
- U F16H 21/46 · with movements in three dimensions
- F16H 21/50 · · for interconverting rotary motion and reciprocating motion (-[F16H 23/00](#) takes precedence-)
- F16H 23/00** **Wobble-plate gearings; Oblique-crank gearings{(-conveying rotary motion with toothed nutating gears [F16H 1/321](#)-)}**
- F16H 23/02 · with adjustment of throw by changing the position of the wobble-member (-[F16H 29/04](#) , [F16H 33/10](#) take precedence-)
- U **F16H 25/00** **Gearings comprising primarily only cams, cam-followers and screw-and-nut mechanisms**
- F16H 25/08 · for interconverting rotary motion and reciprocating motion (-[F16H 23/00](#) takes precedence-)

- F16H 25/10
 - • with adjustable throw (-adjustable cams [F16H 53/04](#)-)
- F16H 25/12
 - • with reciprocation along the axis of rotation, e.g. gearings with helical grooves and automatic reversal,{or cams} (-screw mechanism without automatic reversal [F16H 25/20](#)-)
- F16H 25/14
 - • with reciprocation perpendicular to the axis of rotation (-[F16H 21/36](#) takes precedence-)
- U F16H 25/18
 - for conveying or interconverting oscillating or reciprocating motions
- F16H 25/20
 - • Screw mechanisms (-with automatic reversal [F16H 25/12](#)-)
- F16H 25/2003
 - • • {with arrangements for taking up backlash (-[F16H 25/2209](#) takes precedence-)}
- F16H 25/2025
 - • • {with means to disengage the nut or screw from their counterpart; Means for connecting screw and nut for stopping reciprocating movement (-[F16H 25/2015](#) takes precedence-)}
- F16H 2025/2059
 - • • {Superposing movement by two coaxial screws, e.g. with opposite thread direction (-telescopic screws with three screw members [F16H 25/2056](#)-)}
- U F16H 25/22
 - • • with balls, rollers, or similar members between the co-operating parts; Elements essential to the use of such members
- U F16H 25/2247
 - • • • {with rollers}
- F16H 25/2266
 - • • • • {arranged substantially in parallel to the screw shaft axis (-planetary rollers [F16H 25/2252](#)-)}
- F16H 25/24
 - • • Elements essential to such mechanisms, e.g. screws, nuts (-[F16H 25/22](#) takes precedence-)
- F16H 2025/249
 - • • • {Special materials or coatings for screws or nuts (-lubrication [F16H 57/0497](#)-)}
- F16H 27/00**

Step-by-step mechanisms without freewheel members, e.g. Geneva driven (-rotary gearings with cyclically-varying velocity ratio [F16H 35/02](#) ; impulse couplings [F16D 5/00](#) ; clockwork escapements [G04B 15/00](#)-)
- F16H 27/02
 - with at least one reciprocating or oscillating transmission member{(-[F16H 27/04](#) takes precedence-)}
- U F16H 27/04
 - for converting continuous rotation into a step-by-step rotary movement
- F16H 27/10
 - • obtained by means of disengageable transmission members, combined or not combined with mechanisms according to group [F16H 27/06](#) or [F16H 27/08](#)
- F16H 29/00**

Gearings for conveying rotary motion with intermittently-driving members, e.g. with freewheel action (-freewheels [F16D 41/00](#) ; { Gearings for converting oscillating or reciprocating movement with freewheeling members or other intermittently-driving members into a rotary movement [F16H 31/00](#) })
- F16H 29/02
 - between one of the shafts and an oscillating of reciprocating intermediate member, not rotating with either of the shafts (-[F16H 29/20](#) , [F16H 29/22](#) take precedence-)
- F16H 29/12
 - between rotary driving and driven members (-[F16H 29/20](#) , [F16H 29/22](#) take precedence-)
- F16H 31/00**

Other gearings with freewheeling members or other intermittently driving members (-[F16H 21/00](#) , [F16H 23/00](#) , [F16H 25/00](#) take precedence; gearings involving the use of automatic changing-mechanisms, e.g. cyclically-actuated reversal gearings, see the appropriate groups-)
- U F16H 31/001
 - {Mechanisms with freewheeling members}
- F16H 31/002
 - • {Hand-driven ratchets (-wrenches of the ratchet type [B25B 13/46](#)-)}
- U F16H 31/003
 - {Step-by-step mechanisms for rotary motion}

- F16H 31/005
- • {with pawls driven by a reciprocating or oscillating transmission member (~~F16H 31/002~~ , ~~F16H 31/004~~ take precedence)}
- U F16H 33/00** **Gearings based on repeated accumulation and delivery of energy**
- U F16H 33/02
- Rotary transmissions with mechanical accumulators, e.g. weights, springs, intermittently-connected fly-wheels
- U F16H 33/04
- • Gearings for conveying rotary motion with variable velocity ratio, in which self-regulation is sought
- F16H 33/06
- • • based essentially on spring action (~~ratchet slip couplings F16D 7/04-~~)
- F16H 33/20
- for interconversion, based essentially on inertia, of rotary motion and reciprocating or oscillating motion (~~for converting into a linear propulsion force, i.e. inertia motors F03G 3/00-~~)
- U F16H 35/00** **Gearings or mechanisms with other special functional features**
- F16H 2035/003
- {Gearings comprising pulleys or toothed members of non-circular shape, e.g. elliptical gears (~~harmonic drives with elliptical wave generators F16H 49/001-~~)}
- F16H 2035/005
- {Gearings or mechanisms preventing back-driving (~~braking or locking of screw actuators F16H 25/2454-~~)}
- F16H 2035/006
- {Gearings or mechanisms for stopping or limiting movement, e.g. stopping a movement after few turns (~~for linear screw actuators F16H 25/2015-~~)}
- F16H 35/008
- {for variation of rotational phase relationship, e.g. angular relationship between input and output shaft (~~couplings F16D 3/10-~~)}
- F16H 35/02
- for conveying rotary motion with cyclically varying velocity ratio (speed-changing mechanisms operating cyclically, see the appropriate groups)
- F16H 35/06
- Gearings designed to allow relative movement between supports thereof without ill effects (~~F16H 1/26~~ , ~~F16H 1/48~~ take precedence; { mounting or supporting gearboxes ~~F16H 57/025~~ })
- F16H 35/10
- Arrangements or devices for absorbing overload or preventing damage by overload ({ for screw mechanisms ~~F16H 25/2021~~ }; couplings for transmitting rotation ~~F16D~~)
- F16H 35/12
- Transmitting mechanisms with delayed effect (~~vibration- or shock-dampers in general F16F-~~)
- F16H 35/16
- Mechanisms for movements or movement relations conforming to mathematical formulae (~~devices in which computing operations are performed mechanically G06G 3/00-~~)
- F16H 35/18
- Turning devices for rotatable members, e.g. shafts (~~starting devices for internal-combustion engines F02N-~~)
- F16H 37/00** **Combinations of mechanical gearings, not hereinbefore provided for (applications of "underdrives" or "overdrives" in motor vehicles, combinations with differential gearings in motor vehicles B60K)**
- U F16H 37/02
- comprising essentially only toothed or friction gearings
- F16H 37/04
- • Combinations of toothed gearings only (~~F16H 37/06~~ takes precedence)
- U F16H 37/06
- • with a plurality of driving or driven shafts; with arrangements for dividing torque between two or more intermediate shafts
- F16H 37/065
- • • {with a plurality of driving or driven shafts (~~F16H 37/08~~ takes precedence)}
- U F16H 37/08
- • • with differential gearing
- U F16H 37/0806
- • • • {with a plurality of driving or driven shafts}
- F16H 37/0813
- • • • • {with only one input shaft (~~differentials for four wheel drive vehicles B60K 17/346-~~)}

- F16H 37/0833 . . . {with arrangements for dividing torque between two or more intermediate shafts, i.e. with two or more internal power paths (~~F16H 3/72~~ takes precedence)}
- F16H 37/10 . . . at both ends of intermediate shafts(~~F16H 37/0806~~ takes precedence)}
- F16H 37/12 . Gearings comprising primarily toothed or friction gearing, links or levers, and cams, or members of at least two of these types (~~F16H 21/14~~ , ~~F16H 21/28~~ , ~~F16H 21/30~~ take precedence; toothed or friction gearing or cam gearing with only an additional lever or link, see the appropriate group for the main gearing-)
- F16H 37/14 . . the movements of two or more independently-moving members being combined into a single movement (~~screw mechanisms with both nut and screw being driven F16H 25/2018-~~)
- F16H 39/00 - F16H 49/00** **Fluid gearing** (~~fluid actuators F15B ; couplings or clutches with a fluid or semi-fluid as power-transmitting means F16D 31/00 to F16D 39/00 ; fluid-resistance brakes F16D 57/00-~~)
- F16H 39/00** **Rotary fluid gearing using pumps and motors of the volumetric type, i.e. passing a predetermined volume of fluid per revolution** ({application to motor vehicles [B60K](#)} ; application to lifting or pushing equipment [B66F](#); control of exclusively fluid gearing [F16H 61/38-\)](#)
- F16H 39/01 . Pneumatic gearing; Gearing working with sub-atmospheric pressure (~~pneumatic hammers B25D 9/00-~~)
- F16H 41/00** **Rotary fluid gearing of the hydrokinetic type** (~~control of exclusively fluid gearing F16H 61/38-~~)
- F16H 41/32 . Selection of working fluids (chemical aspects, see the relevant classes)
- F16H 43/00** **Other fluid gearing, e.g. with oscillating input or output** {(generating mechanical vibrations of infrasonic or sonic frequency [B06B](#); percussive tools [B25D 9/00](#); mine roof supports for step by step movement [E21D 23/00](#); reciprocating-piston machines without rotary main shaft [F01B 11/08](#) ; fluid pressure actuators [F15B](#)-)}
- F16H 45/00** **Combinations of fluid gearings for conveying rotary motion with couplings or clutches** (~~F16H 41/22~~ , { [F16H 47/085](#) } take precedence; conjoint control of driveline clutches and change-speed gearing in vehicles [B60W 10/02](#) , [B60W 10/10](#) { and [B60W 30/18](#) })
- NOTE
Clutches for varying working conditions in fluid torque-converters are regarded as part of the torque converter
- F16H 45/02 . with mechanical clutches for bridging a fluid gearing of the hydrokinetic type (~~control of torque converter lock-up clutches F16H 61/14-~~)
- U F16H 47/00** **Combinations of mechanical gearing with fluid clutches or fluid gearing (conjoint control of driveline clutches and change-speed gearing in vehicles [B60W 10/02](#) and [B60W 10/10](#))**
- U F16H 47/06** . the fluid gearing being of the hydrokinetic type
- F16H 47/07 . . using two or more power-transmitting fluid circuits ({ [F16H 47/065](#) , } [F16H 47/10](#) take precedence-)
- F16H 47/08 . . the mechanical gearing being of the type with members having orbital motion({~~F16H 47/065~~ takes precedence-})

- F16H 48/00** **Differential gearings** ~~(-cooling or lubricating of differential gearing [F16H 57/04](#)-)~~
- NOTE
When classifying in this main group, in the absence of an indication to the contrary, classification is made in all appropriate places.
- F16H 48/38 • Constructional details ~~(-the outer casing comprising the differential and supporting input and output shafts [F16H 57/037](#)-)~~
- U F16H 49/00** **Other gearings**
- F16H 49/001 • {Wave gearings, e.g. harmonic drive transmissions ~~(-harmonic drives specially adapted for positioning programme-controlled manipulators [B25J 9/1025](#)-)}~~
- F16H 49/005 • {Magnetic gearings with physical contact between gears ~~(-rotating torque transmitting elements of the permanent-magnet type [H02K 49/102](#)-)}~~
- F16H 51/00 - F16H 57/00** **Details of gearing or mechanisms** ~~(-of screw-and-nut gearing [F16H 25/00](#) ; of fluid gearing [F16H 39/00](#) to [F16H 43/00](#) ; shafts, Bowden mechanisms, cranks, eccentrics, bearings, pivotal, pivotal connections, crossheads, connecting-rods [F16C](#) ; chains, belts [F16G](#) ; piston-rods [F16J 7/00](#)-)~~
- F16H 51/00 **Levers of gearing mechanisms** ~~({ connecting rods or links pivoted at both ends [F16C 7/00](#) ; gear levers [F16H 59/00](#) } ; manipulating levers [G05G](#)-)~~
- U F16H 53/00** **Cams; Non-rotary cams; Cam followers, e.g. rollers**
- U F16H 53/02 • Single-track cams for single-revolution cycles; Camshafts with such cams
- F16H 53/025 • • {characterised by their construction, e.g. assembling or manufacturing features ~~(-grinding of camshafts [B24B 19/12](#)-)}~~
- F16H 53/06 • Cam-followers ~~(-[F16H 53/08](#) takes precedence-)~~
- F16H 55/00** **Elements with teeth or friction surfaces for conveying motion; Worms; Pulleys; Sheaves** ~~(-pulley-blocks [B66D 3/04](#)-)~~
- U F16H 55/02 • Toothed members; Worms
- F16H 55/06 • • Use of materials; Use of treatments of toothed members or worms to affect their intrinsic material properties ~~({ coatings for lubrication [F16H 57/041](#) ; producing gear wheels from plastics or substances in a plastic state [B29D 15/00](#) ; heat treatment [C21D 9/32](#) ; electrolytic surface treatment [C25D](#); heating by electromagnetic field [H05B 6/00](#))}~~
- U F16H 55/08 • • Profiling
- F16H 55/0846 • • • {Intersecting-shaft arrangement of the toothed members ~~(-[F16H 55/0813](#) , [F16H 55/0826](#) , [F16H 55/0833](#) , [F16H 55/084](#) take precedence-)}~~
- F16H 55/0853 • • • {Skewed-shaft arrangement of the toothed members ~~(-[F16H 55/082](#) , [F16H 55/0826](#) , [F16H 55/0833](#) , [F16H 55/084](#) take precedence-)}~~
- F16H 55/10 • • Constructively simple tooth shapes, e.g. shaped as pins, as balls ~~({ gearwork for clocks and watches [G04B 13/00](#))}~~
- F16H 55/14 • • Construction providing resilience or vibration-damping ~~(-[F16H 55/06](#) takes precedence; resilient coupling of wheel or wheel-rim with shaft [F16D 3/50](#) , [F16D 3/80](#)-)~~
- F16H 55/17 • • Toothed wheels ~~({ with simple tooth shapes [F16H 55/10](#) } ; worm wheels [F16H 55/22](#) ; chain wheels [F16H 55/30](#)-)~~
- F16H 55/18 • • • Special devices for taking up backlash ~~({ in tuner actuating devices [H03J](#) , [H03J 1/06](#) ; in gear-train of clocks or watches [G04B 35/00](#))}~~
- F16H 55/22 • • for transmissions with crossing shafts, especially worms, worm-gears ~~(-bevel gears, crown wheels, helical gears [F16H 55/17](#)-)~~
- F16H 55/30 • • Chain-wheels ~~(-specially adapted for cycles [B62M](#)-)~~

- F16H 55/32
 - F16H 55/36
 - F16H 55/38
 - F16H 55/40
 - F16H 55/48
- Friction members (-friction surfaces [F16D 69/00](#)-)
 - • Pulleys (-with features essential for adjustments [F16H 55/52](#)-)
 - • • Means or measures for increasing adhesion (-in general [F16D 69/00](#)-)
 - • • with spokes (-[F16H 55/48](#) takes precedence-)
 - • • manufactured exclusively or in part of non-metallic material, e.g. plastics (-[F16H 55/38](#) , [F16H 55/42](#) , [F16H 55/46](#) take precedence; { manufacture of wooden wheels [B27H 7/00](#) })
- F16H 57/00** **General details of gearing (-of screw-and-nut gearing [F16H 25/00](#) ; of fluid gearing [F16H 39/00](#) - [F16H 43/00](#)-)**
- F16H 57/0006
 - F16H 57/0018
 - F16H 57/0031
 - F16H 2057/005
 - F16H 2057/0068
 - F16H 2057/0075
 - F16H 2057/0081
 - F16H 2057/0087
 - U F16H 57/01
 - F16H 2057/018
 - U F16H 57/02
 - F16H 2057/02034
 - F16H 2057/02091
- {Vibration-damping or noise reducing means specially adapted for gearings (-devices for varying tension of belts, ropes or chains with damping means [F16H 7/0829](#) ; toothed members with construction providing vibration damping [F16H 55/14](#) ; reducing vibrations or noise of the gearbox casing [F16H 57/028](#) ; suppression of vibrations or noise of gear selectors [F16H 59/0208](#) ; control of hydrostatic fluid gearing preventing or reducing vibrations or noise [F16H 61/4183](#)-)}
 - {Shaft assemblies for gearings (-camshafts with single track cams [F16H 53/02](#)-)}
- WARNING**
Groups [F16H 57/0018](#) and subgroups are not complete pending a reorganisation; see also [F16H 57/021](#) , [F16H 57/022](#)
- • {with gearing elements rotatable supported on the shaft (-[F16H 57/021](#) takes precedence-)}
 - {Mounting preassembled units, i.e. using pre-mounted structures to speed up final mounting process (-mounting of gears or shafts in a gearbox [F16H 57/022](#)-)}
 - {Repairing of transmissions by using repair kits (-for gear wheels [F16H 2055/175](#)-)}
 - {Modifying standard transmissions from manufacturer, e.g. by adding an extension for additional ratios (-for control [F16H 2061/0062](#)-)}
 - {Fixing of, or adapting to transmission failure (-detecting transmission failures [F16H 2057/018](#)-)}
 - {Computer aided design [CAD] specially adapted for gearing features (-computer aided design per se [G06F 17/50](#)-)Analysis of gear systems}
 - Monitoring wear or stress of transmission elements, e.g. for triggering maintenance
 - • {Detection of mechanical transmission failures (-fixing or adapting to failure [F16H 2057/0081](#) ; of transmission control [F16H 61/12](#)-)}
 - Gearboxes; Mounting gearing therein
- NOTE**
When classifying in this group, in the absence of an indication to the contrary, classification is made in all appropriate subgroups.
- WARNING**
Subgroups of [F16H 57/02](#) are not complete pending reclassification; see provisionally also respective higher groups
- • {Gearboxes combined or connected with electric machines (-structural association with electric machines [H02K 7/116](#)-)}
 - • {Measures for reducing weight of gearbox (-by using particular materials [F16H 57/032](#)-)}

- U F16H 57/021
 - • Shaft support structures, e.g. partition walls, bearing eyes, casing walls or covers with bearings
- F16H 57/022
 - • • Adjustment of transmission shafts or bearings (-for compensating misalignment of axes of toothed gearings without orbital motion [F16H 1/26](#) ; for compensating misalignment of axes of planetary gears [F16H 1/48](#)-)
- U F16H 57/023
 - • Mounting or installation of gears or shafts in the gearbox casing, e.g. methods or means for assembly
- F16H 2057/0235
 - • • {specially adapted to allow easy accessibility and repair (-using repair kits [F16H 2057/0068](#)-)}
- F16H 57/025
 - • Support of transmission casing, e.g. torque arms, or attachment to other devices (-mounting of transmissions in vehicles [B60K 17/00](#)-)
- F16H 57/037
 - • Gearboxes for accommodating differential gearings (-rotating cases for differential gearings [F16H 48/40](#)-)
- F16H 57/038
 - • Gearboxes for accommodating bevel gears (-[F16H 57/037](#) takes precedence-)
- F16H 57/04
 - Features relating to lubrication or cooling {or heating}{(in hydrokinetic gearing [F16H 41/30](#) ; } control of lubrication or cooling in hydrostatic gearing [F16H 61/4165](#)-)

WARNING
Subgroups of [F16H 57/04](#) are not complete pending reclassification; see provisionally also respective higher groups
- F16H 57/0408
 - • {Exchange or filling of transmission lubricant (-filling or draining lubricant of or from machines or engines [F01M 11/04](#) ; servicing, maintaining, repairing, or refitting of vehicles [B60S 5/00](#)-)}
- U F16H 57/042
 - • {Guidance of lubricant}
- U F16H 57/0421
 - • • {on or within the casing, e.g. shields or baffles for collecting lubricant, tubes, pipes, grooves, channels or the like}
- F16H 57/0424
 - • • • {Lubricant guiding means in the wall of or integrated with the casing, e.g. grooves, channels, holes (-means for guiding lubricant into an axial channel of a shaft [F16H 57/0426](#)-)}
- F16H 57/0432
 - • • {Lubricant guiding means on or inside shift rods or shift forks (-shift rods or shift forks to be lubricated, cooled or heated [F16H 57/0468](#)-)}
- F16H 57/0434
 - • {relating to lubrication supply, e.g. pumps (arrangement of pumps [F16H 57/0441](#)); Pressure control (grooves with pumping effect for supplying lubricant [F16H 57/0428](#); generation and variation of line pressure for transmission control [F16H 61/0021](#))}
- U F16H 57/045
 - • {Lubricant storage reservoirs, e.g. reservoirs in addition to a gear sump for collecting lubricant in the upper part of a gear case}
- F16H 57/0454
 - • • {Sealings between different partitions of a gearing or to a reservoir (-means for sealing gearboxes [F16H 57/029](#)-)}
- F16H 57/0456
 - • {Lubrication by injection; Injection nozzles or tubes therefor (-oil mist or spray lubrication [F16H 57/0458](#)-)}
- F16H 57/0457
 - • {Splash lubrication (-characterised by the problem reducing losses, e.g. splash losses [F16H 57/0409](#)-)}
- F16H 57/0458
 - • {Oil-mist or spray lubrication ; Means to reduce foam formation (-lubrication by injection [F16H 57/0456](#) ; venting [F16H 57/027](#)-)}
- U F16H 57/0467
 - • {Elements of gearings to be lubricated, cooled or heated}
- F16H 57/0475
 - • • {Engine and gearing, i.e. joint lubrication or cooling or heating thereof (-electric machines and gearing [F16H 57/0476](#)-)}
- U F16H 57/048
 - • {Type of gearings to be lubricated, cooled or heated}

- U F16H 57/0482
 - • • {Gearings with gears having orbital motion}
- F16H 57/0486
 - • • • {with fixed gear ratio (-differentials [F16H 57/0483](#)-)}
- F16H 57/0493
 - • • {Gearings with spur or bevel gears (-differentials with spur or bevel gears [F16H 57/0483](#)-)}
- F16H 57/05
 - • of chains (-for conveyers [B65G 45/02](#)-)
- U F16H 57/08
 - of gearing with members having orbital motion
- F16H 2057/087
 - • {Arrangement and support of friction devices in planetary gearings, e.g. support of clutch drums, stacked arrangements of friction devices (-see also arrangements for shifting planetary gears [F16H 3/62](#) , [F16H 63/3026](#)-)}
- F16H 59/00**

Control inputs to {control units of}change-speed-, or reversing-gearings for conveying rotary motion
- U F16H 59/02
 - Selector apparatus

NOTE
Selection apparatus of general applicability or of interest apart from its use in control of gearings conveying rotary motion is also classified in subclass [G05G](#)
- F16H 59/0217
 - • {with electric switches or sensors not for gear or range selection, e.g. for controlling auxiliary devices (-for gear selection [F16H 59/044](#) ; for range selection [F16H 59/105](#)-)}
- F16H 2059/0221
 - • {for selecting modes, i.e. input device (-for selecting between different modes with range selector [F16H 2059/082](#) ; for conjoint control [B60W 30/182](#)-)}
- F16H 2059/023
 - • {Selectors for gearings using voice control (-for vehicle control [B60R 16/0373](#)-)}
- F16H 2059/0239
 - • {Up- and down-shift selection by repeated movement (-mechanical step by step selection devices [F16H 63/14](#)-)}
- F16H 2059/0243
 - • • {with push buttons, e.g. shift buttons arranged on steering wheel (-range selection with push buttons [F16H 59/12](#)-)}
- F16H 2059/026
 - • {Details or special features of the selector casing or lever support (-for mechanical gear shifting [F16H 59/042](#)-)}
- U F16H 59/04
 - • Ratio selector apparatus
- F16H 59/042
 - • • {comprising a final actuating mechanism (-multiple final output mechanism in a gearbox [F16H 63/08](#)-)}
- F16H 59/044
 - • • {consisting of electrical switches or sensors (-range selectors with electric switches or sensors [F16H 59/105](#)-)}**C1011**
- F16H 2059/047
 - • • {with essentially straight linear movement for gear selection, e.g. straight selection movement using detent mechanism for improving feeling (-up-down shift by repeated movements [F16H 2059/0239](#)-)}
- F16H 2059/048
 - • • {with means for un-locking select or shift movement to allow access to reverse gear position (-particular details of the lever handle [F16H 2059/0282](#)-)}
- U F16H 59/68
 - Inputs being a function of gearing status
- F16H 2059/683
 - • {Sensing pressure in control systems or in fluid controlled devices, e.g. by pressure sensors (-for hydrostatic transmissions [F16H 2059/6861](#)-)}
- F16H 59/74
 - Inputs being a function of engine parameters (-[F16H 59/14](#) takes precedence-)
- F16H 2059/743
 - • {using engine performance or power for control of gearing (-transmission input torque [F16H 2059/147](#)-)}
- F16H 61/00**

Control functions within {control units of}change-speed- or reversing-gearings for conveying rotary motion; {Control of exclusively fluid gearing, friction gearing, gearings with endless flexible members or other particular types of gearing}

- U F16H 61/0021 • {Generation or control of line pressure}
- F16H 2061/0037 • • {characterised by controlled fluid supply to lubrication circuits of the gearing (-see also lubrication control [F16H 57/0446-](#))}
- F16H 2061/004 • {Venting trapped air from hydraulic systems (-venting of hydrostatic transmissions [F16H 61/4174](#) ; deaeration or removal of unsolved gas [F15B 21/044-](#))}
- U F16H 2061/0068 • {Method or means for testing of transmission controls or parts thereof}
- F16H 2061/0071 • • {Robots or simulators for testing control functions in automatic transmission (-testing of transmissions [G01M 13/02-](#))}
- F16H 61/02 • characterised by the signals used{(-for shift actuators [F16H 61/28](#) , for continuously variable gearings [F16H 61/66-](#))}
- NOTES**
Control units where gearshift is controlled by an electric circuit, are classified in [F16H 61/0202](#)
Control units where gearshift is controlled by hydraulic signals and a subfunction, e.g. kickdown, is controlled by an electric circuit, are classified in [F16H 61/0262](#) with indexing of the electric features
- F16H 61/0202 • • {the signals being electric (-[F16H 61/04](#) takes precedence-)}
- U F16H 61/0204 • • • {for gearshift control, e.g. control functions for performing shifting or generation of shift signal}
- F16H 61/0206 • • • • {Layout of electro-hydraulic control circuits, e.g. arrangement of valves (-for control of actuators selecting and moving final output members, e.g. shift forks [F16H 61/2807-](#))}
- F16H 61/0248 • • • {Control units where shifting is directly initiated by the driver, e.g. semi-automatic transmissions (-generation of movements for final actuating mechanisms [F16H 61/28-](#))}
- WARNING**
This group is not complete pending reclassification; see also groups [F16H 61/0204](#) , [F16H 61/0206](#)
- F16H 61/0262 • • {the signals being hydraulic (-[F16H 61/04](#) takes precedence-)}
- U F16H 61/0265 • • • {for gearshift control, e.g. control functions for performing shifting or generation of shift signals}
- F16H 61/0267 • • • • {Layout of hydraulic control circuits, e.g. arrangement of valves (-for control of actuators selecting and moving final output members, e.g. shift forks [F16H 61/30-](#))}
- F16H 61/0274 • • • {Control units where shifting is directly initiated by the driver, e.g. semi-automatic transmissions (-generation of movements for final actuating mechanisms [F16H 61/28-](#))}
- WARNING**
This group is not complete pending reclassification; see also groups [F16H 61/0265](#) , [F16H 61/0267](#)
- U F16H 61/04 • Smoothing ratio shift
- F16H 61/0437 • • {by using electrical signals (-[F16H 61/0403](#) and [F16H 61/061](#) take precedence-)}
- F16H 2061/0455 • • {during shifts involving three or more friction members, e.g. release of 3-4 clutch, 2-4 brake and apply of forward clutch C1 (-swap shift [F16H 2061/0451-](#))}
- F16H 2061/0474 • • {by smoothing engagement of positive clutches; Methods or means for shock free engagement of dog clutches (-for tooth but situations [F16H 2061/047-](#))}

- F16H 2061/0477
 - • {by suppression of excessive engine flare or turbine racing during shift transition (-engine flare caused by lock-up release [F16H 61/143-](#))}
 - U F16H 61/06
 - • by controlling rate of change of fluid pressure
 - U F16H 61/065
 - • • {using fluid control means}
 - F16H 61/068
 - • • • {using an orifice control valve (-[F16H 61/067](#) takes precedence-)}
 - F16H 61/12
 - Detecting malfunction or potential malfunction, e.g. fail safe (-in control of hydrostatic gearing [F16H 61/4192-](#)); {Circumventing or fixing failures}
 - F16H 2061/1204
 - • {for malfunction caused by simultaneous engagement of different ratios resulting in transmission lock state or tie-up condition (-lock state for braking [F16H 61/0059-](#))}
 - F16H 2061/1252
 - • {Fail safe valves (-fail priority valves [F16H 2061/1236-](#))}
 - F16H 61/16
 - Inhibiting {or initiating}shift during unfavourable conditions,{e.g. preventing forward reverse shift at high vehicle speed, preventing engine over speed (-unintentional control input [F16H 61/18-](#))}
 - F16H 61/22
 - Locking {of the control input devices}(-[F16H 63/34](#) takes precedence; { vehicle fittings for preventing unauthorised use, e.g. ignition keys interlocked with gear box or gear lever [B60R 25/06](#) })
 - F16H 2061/226
 - • {Manual distress release of the locking means for shift levers, e.g. to allow towing of vehicle in case of breakdown (-for parking locks [F16H 63/3491-](#))}
 - U F16H 61/26
 - Generation or transmission of movements for final actuating mechanisms
- NOTES
- The generation or transmission of movements comprising only the selector apparatus, is classified in group [F16H 59/00](#) .
- The generation or transmission of movements, when part of the final output mechanisms, is classified in group [F16H 63/00](#) .
- U F16H 61/28
 - • with at least one movement of the final actuating mechanism being caused by a non-mechanical force, e.g. power-assisted
 - F16H 61/2807
 - • • {using electric control signals, e.g. electro-hydraulic control (-[F16H 61/30](#) , [F16H 61/32](#) take precedence; methods for generating shift signals [F16H 61/0213-](#))}
 - F16H 61/30
 - • • Hydraulic {or pneumatic}motors {or related fluid control means}therefor
 - F16H 61/32
 - • • Electric motors {actuators or related electrical control means}therefor
 - F16H 61/34
 - • comprising two mechanisms, one for the preselection movement, and one for the shifting movement (-[F16H 61/36](#) takes precedence-)
 - U F16H 61/38
 - Control of exclusively fluid gearing
 - F16H 61/40
 - • hydrostatic (-involving modification of the gearing [F16H 39/02](#) , [F16H 39/04-](#))
 - F16H 61/4061
 - • • Control related to directional control valves, e.g. change-over valves, for crossing the feeding conduits (-forward reverse switching by using swash plate [F16H 61/438-](#))
 - F16H 61/4069
 - • • Valves related to the control of neutral, e.g. shut off valves (-zero tilt rotation holding means [F16H 61/439-](#))
 - F16H 61/42
 - • • involving adjustment of a pump or motor with adjustable output or capacity{(-[F16H 61/46](#) takes precedence-)}
 - F16H 61/438
 - • • • Control of forward-reverse switching, e.g. control of the swash plate causing discharge in two directions (-using a directional control valve [F16H 61/4061-](#))
 - F16H 61/439
 - • • • Control of the neutral position, e.g. by zero tilt rotation holding means (-using a neutral valve or a shutoff valve [F16H 61/4069-](#))
 - U F16H 61/44
 - • • with more than one pump or motor in operation

- F16H 61/456
 - • • Control of the balance of torque or speed between pumps or motors (-hydrostatic differentials [F16H 48/18](#)-)
- U F16H 61/48
 - • hydrodynamic
- U F16H 61/50
 - • • controlled by changing the flow, force, or reaction of the liquid in the working circuit, while maintaining a completely filled working circuit
- U F16H 61/58
 - • • • by change of the mechanical connection of, or between, the runners
- F16H 61/62
 - • • • • involving use of a speed-changing gearing or of a clutch in the connection between runners (-[F16H 45/02](#) , [F16H 61/60](#) take precedence-)
- F16H 61/66
 - specially adapted for continuously variable gearings (-[F16H 61/38](#) takes precedence-)
- U F16H 2061/6604
 - • {Special control features generally applicable to continuously variable gearings}
- F16H 2061/6607
 - • • {Controls concerning lubrication or cooling (-lubrication features of friction gearings [F16H 57/0487](#)-)}
- F16H 63/00**
 - Control outputs {from the control unit}to change-speed- or reversing-gearings for conveying rotary motion {or to other devices than the final output mechanism}**
- F16H 2063/005
 - {Preassembled gear shift units for mounting on gear case (-for hydraulic shift units [F16H 2061/308](#)-)}
- U F16H 63/02
 - Final output mechanisms therefor; Actuating means for the final output mechanisms
- F16H 63/04
 - • a single final output mechanism being moved by a single final actuating mechanism{(-~~Constructional features of the final output mechanisms~~ [F16H 63/30](#) *Constructional features of the final output mechanisms* [F16H 63/30](#))}
- F16H 63/08
 - • Multiple final output mechanisms being moved by a single common final actuating mechanism{(-~~Constructional features of the final output mechanisms~~ [F16H 63/30](#) *Constructional features of the final output mechanisms* [F16H 63/30](#))}
- F16H 63/24
 - • each of the final output mechanisms being moved by only one of the various final actuating mechanisms{(-~~Constructional features of the final output mechanisms~~ [F16H 63/30](#) *Constructional features of the final output mechanisms* [F16H 63/30](#))}
- F16H 63/28
 - • two or more final actuating mechanisms moving the same final output mechanism{(-~~Constructional features of the final output mechanisms~~ [F16H 63/30](#) *Constructional features of the final output mechanisms* [F16H 63/30](#))}
- U F16H 63/30
 - • Constructional features of the final output mechanisms
- U F16H 63/3023
 - • • {the final output mechanisms comprising elements moved by fluid pressure (band brake actuating mechanisms [F16H 63/3003](#))}
- F16H 63/3026
 - • • • {comprising friction clutches or brakes (-band brake actuating mechanisms [F16H 63/3003](#)-)}
- U F16H 63/304
 - • • {the final output mechanisms comprising elements moved by electrical or magnetic force (band brake actuating mechanisms [F16H 63/3003](#))}
- F16H 2063/3046
 - • • • {using electromagnetic clutch for coupling gear wheel to shaft (-friction clutches [F16H 63/3043](#)-)}
- F16H 63/3069
 - • • {Interrelationship between two or more final output mechanisms (-interlocking devices [F16H 63/36](#)-)}

- F16H 2063/3093
 - • • {Final output elements, i.e. the final elements to establish gear ratio, e.g. dog clutches or other means establishing coupling to shaft (-fluid actuated clutches [F16H 63/3026](#) ; electromagnetic clutches [F16H 2063/3046](#)-)}
- F16H 63/38
 - • • Detents{-spring-loaded ball units for holding levers in a limited number of positions [G05G 5/065](#)-}
- U F16H 63/40
 - comprising signals other than signals for actuating the final output mechanisms
- F16H 63/48
 - • Signals to a parking brake {or parking lock; Control of parking locks or brakes being part of the transmission}
- U F16H 2302/00**
Determining the way or trajectory to new ratio, e.g. by determining speed, torque or time parameters for shift transition
- F16H 2302/04
 - Determining a modus for shifting (-selection of shift speed modus [F16H 2059/0226](#)-)
- F16H 2302/06
 - Determining timing parameters of shifting, e.g. start of shifting (-for smoothing gear shift [F16H 61/08](#)-)
- U F16H 2306/00**
Shifting
- F16H 2306/14
 - Skipping gear shift (-for smoothing gear shift [F16H 2061/0444](#)-)
- F16H 2306/20
 - Timing of gear shifts (-for smoothing gear shift [F16H 61/08](#)-)
- F16H 2306/21
 - • for auxiliary gear shifts (-for smoothing auxiliary gear shifts [F16H 2061/085](#)-)
- F16H 2306/22
 - Swap shifting (-for smoothing gear shift [F16H 2061/0451](#)-)
- F16H 2306/30
 - characterised by the way or trajectory to a new ratio, e.g. by performing shift according to a particular algorithm or function (-determining the way or trajectory to a new ratio [F16H 2302/00](#)-)
- F16H 2306/36
 - Filling the dead volume of actuators (-controlling filling of clutches or brake servos [F16H 61/62](#)-)
- U F16H 2312/00**
Driving activities
- F16H 2312/09
 - Switching between forward and reverse (-rocking [F16H 2312/08](#)-)

Project: N/A (F16J)

- U F16J 9/00**
Piston-rings, {e.g. non-metallic piston-rings}, seats therefor; Ring sealings of similar construction in general (other sealings between pistons and cylinders [F16J 3/06](#), [F16J 15/16](#); {manufacture of piston-rings [B23P 15/06](#), [B23P 15/08](#)}; tools for mounting or removing piston-rings or the like [B25B](#); piston sealing arrangements on brake master cylinders [B60T 11/236](#); {sealing provided on pump pistons [F04B 53/143](#)})
- U F16J 9/06
 - using separate springs {or elastic elements} expanding the rings; Springs therefor; {Expansion by wedging}
- U F16J 9/064
 - • {Rings with a flat annular side rail}
- U F16J 9/066
 - • • {Spring expander from sheet metal}
- F16J 9/067
 - • • • {-corrugated in the radial direction}
- F16J 9/068
 - • • • {-corrugated in the axial direction}
- U F16J 15/00**
Sealings (sealing arrangements for vehicle windows, windscreens, non-fixed roofs, doors, or similar devices [B60J 10/00](#); sealing or packing elements for container closures [B65D 53/00](#); sealing arrangements in rotary-piston machines or engines [F01C 19/00](#); sealings in non-positive-displacement machines or engines [F01D 11/00](#); arrangements of sealings in combustion engines [F02F 11/00](#); sealing arrangements in rotary-piston pumps [F04C 27/00](#); sealing lead-in or lead-through insulators [H01B 17/30](#))
- U F16J 15/02
 - between relatively-stationary surfaces ([F16J 15/46](#), [F16J 15/48](#) take precedence)

- U F16J 15/06 · · with solid packing compressed between sealing surfaces
 F16J 15/061 · · · {-with positioning means ([F16J 15/0831](#) takes precedence)}

Project: N/A (F16K)

F16K

VALVES; TAPS; COCKS; ACTUATING-FLOATS; DEVICES FOR VENTING OR AERATING{-devices for emptying and evacuating the excess liquid in valves or conduits [F16L 55/07](#)-}NOTE

Attention is drawn to the following places:

- [A47J 27/09](#) Safety devices for pressure cookers
[A47J 31/46](#) Dispensing spouts, drain valves or like beverage-making apparatus
[A61B 5/0235](#) Valves specially adapted for measuring pressure in heart or blood vessels
[A61F 2/24](#) Heart valves
[A61M 16/20](#) Valves specially adapted for medical respiratory devices
[A61M 39/00](#) Tube connectors, tube couplings, valves or branch units specially adapted for medical use in general
[A62B 9/02](#) Valves for respiratory apparatus
[A62B 18/10](#) Valves for breathing masks or helmets
[A62C](#) Fire extinguishers
 { [B01D 35/04](#) Plug, tap, or cock filters }
[B05B](#) Nozzles, spray heads or other discharge apparatus for spraying or atomising
[B60C 29/00](#) Arrangements of tyre-inflating valves relative to tyres or wheel rims; Connection of valves to wheel rims, tyres or other inflatable elastic bodies
[B60G 17/048](#) Valves specially adapted for adjusting vehicle fluid-spring characteristics
[B60T](#) Valves specially adapted for vehicle brake control systems
[B62D 5/08](#) Vehicle power-assisted steering characterised by the type of valve used
[B63B 7/00](#) ,
[B63C 9/00](#) Arrangement of inflating valves for floatable life-saving equipment
[B65D 47/04](#) Container closures with discharging valves
[B65D 90/32](#) Safety valves for large containers
[B65D 90/54](#) Gates or closures on large containers
[B67C 3/28](#) Flow control devices for bottling liquids
[B67D](#) Dispensing, delivering or transferring liquids
 { [C21B 9/12](#) Hot-blast valves for blast furnaces }
[E02B 8/00](#) Details, e.g. valves, of barrages or weirs
[E02B 13/02](#) Closures for irrigation conduits
 { [E03C 1/04](#) Water-basin installations specially adapted for wash-basins or baths }
 { [E03C 1/05](#) Arrangements on wash-basins for the remote control of taps }
 }

[E03D](#) Flushing valves for water-closets or
urinals
{ [E03F 7/04](#) Valves for preventing return flow
in sewer systems }

[E05F 3/12](#) Valve arrangements in door closers

[E21B 21/10](#) Valve arrangements in drilling-fluid
circulation systems

[E21B 34/00](#) Valve arrangements for boreholes or
wells
{ [E21D 15/51](#) Arrangement of relief valves in
hydraulic mine props }

[F01B 25/10](#) Working-fluid valves for controlling
machines or engines in general or of
positive-displacement type

[F01D 17/10](#) Final actuators for controlling non-
positive displacement machines or engines

[F01L](#) Cyclically operated valves for machines or
engines

[F02D 9/08](#) Throttle valves for controlling combustion
engines

[F02K 9/58](#) Propellant feed valves for rocket-
engines

[F02M](#) Carburettors, fuel injection

[F02M 59/46](#) Valves for fuel injection pumps

[F04](#) Pumps

[F16F 9/34](#) Valves for shock absorbers

[F16L 29/00](#) ,

[F16L 37/28](#) Pipe joints or quick-acting couplings with
fluid cut-off means

[F16L 55/00](#) Arrangement of valves in pipes

[F16L 55/055](#) Valves specially adapted to prevent or
minimise the effect of water hammer

[F16L 55/46](#) Launching devices for pigs or moles

[F16N 23/00](#) Check valves for lubrication systems
{F16T Draining-off liquids from steam traps}

[F17C 13/04](#) Arrangement of valves in pressure
vessels

[F22B 37/44](#) Arrangement of safety valves on steam
boilers

[F22D 5/34](#) Application of valves to automatic water-
feed in boiler

[F23L 13/00](#) Valves for air supply control to
burners
{ [F23Q 2/16](#) Valves for lighters with gaseous
fuel and adjustable flame }

[F24C 3/12](#) ,

[F24C 5/16](#) Arrangement of valves on stoves or
ranges

[F24F](#) Air conditioning; Ventilation

[F25B 41/04](#) Disposition of fluid circulation valves in
refrigeration machines

[G05D](#) Controlling non-electric variables

[G10B 3/06](#) Valves for organs

[G10D 9/04](#) Valves for other wind-actuated musical
instruments
{ [G21C 9/06](#) Safety valves structurally
associated with nuclear reactors }

{ [H01M 2/12](#) Vent plugs in batteries or
cells }

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[F16K 31/11](#) covered by [F16K 31/06](#) , [F16K 31/08](#)
, [F16K 31/10](#)
[F16K 31/64](#) " " [G05D](#)
[F16K 31/66](#) " " [F16K 31/06](#) ; [H01F](#)
[F16K 31/68](#) " " [G05D](#)
[F16K 31/70](#) " " [F16K 31/002](#)
[F16K 31/72](#) " " [F16K 31/00](#)

**F16K 1/00 -
F16K 13/00**

Constructional types (-check valves [F16K 15/00](#)-)

NOTE

In groups [F16K 1/00](#) to [F16K 13/00](#) , an initial seal breaking or final sealing movement which is different from the opening or closing movement of the valve is not considered in determining the movement to be classified.

F16K 1/00

Lift valves {or globe valves}, i.e. cut-off apparatus with closure members having at least a component of their opening and closing motion perpendicular to the closing faces ({ in combination with sliding valves [F16K 3/246](#) , [F16K 3/267](#) } ; diaphragm valves [F16K 7/00](#)-)

F16K 1/02

- with screw-spindle (-[F16K 1/12](#) to [F16K 1/28](#) take precedence; actuating mechanisms with screw-spindles [F16K 31/50](#)-)

F16K 1/14

- with ball-shaped valve member (-check valves [F16K 15/04](#)-)

U F16K 1/16

- with pivoted closure-members

U F16K 1/18

- • with pivoted discs or flaps

U F16K 1/20

- • • with axis of rotation arranged externally of valve member

WARNING

Subgroups of [F16K 1/20](#) are not complete pending a reorganisation, see also [F16K 1/20](#)

F16K 1/2007

- • • {specially adapted operating means therefor (-operating means per se [F16K 31/00](#)-)}

U F16K 1/22

- • • with axis of rotation crossing the valve member, e.g. butterfly valves

F16K 1/221

- • • {specially adapted operating means therefor (-operating means per se [F16K 31/00](#)-)}

U F16K 1/24

- with valve members that, on opening of the valve, are initially lifted from the seat and next are turned around an axis parallel to the seat

F16K 1/26

- • Shape or arrangement of the sealing {Not used}

F16K 1/28

- • • Movable sealing bodies {Not used}

F16K 1/32

- Details (-details of more general applicability [F16K 25/00](#) to [F16K 51/00](#)-)

F16K 1/34

- • Cutting-off parts, e.g. valve members, seats (-[F16K 1/06](#) , [F16K 1/12](#) , [F16K 1/14](#) , [F16K 1/26](#) take precedence-)

F16K 1/36

- • • Valve members (-for double-seat valves [F16K 1/44](#)-){ for butterfly valves [F16K 1/222](#) , [F16K 1/223](#)-}

F16K 1/42

- • • Valve seats (-for double-seat valves [F16K 1/44](#)-)

WARNING

Subgroups of [F16K 1/42](#) are not complete pending a reorganisation, see also [F16K 1/42](#)]

	F16K 3/00	Gate valves or sliding valves, i.e. cut-off apparatus with closing members having a sliding movement along the seat for opening and closing (-F16K 5/00 takes precedence; in barrages or weirs E02B 8/04-)
U	F16K 3/02	· with flat sealing faces; Packings therefor
U	F16K 3/04	· · with pivoted closure members
	F16K 3/06	· · · in the form of closure plates arranged between supply and discharge passages (-F16K 3/10 takes precedence-)
	F16K 3/16	· · with special arrangements for separating the sealing faces or for pressing them together (-F16K 3/10 , F16K 3/14 take precedence-)
	F16K 3/22	· with sealing faces shaped as surfaces of solids of revolution (-F16K 13/02 takes precedence; with resilient valve members F16K 3/28-)
U	F16K 3/24	· · with cylindrical valve members
	F16K 3/243	· · · {Packings (-F16K 3/246 takes precedence-)}
U	F16K 3/26	· · · with fluid passages in the valve member
	F16K 3/267	· · · · {Combination of a sliding valve and a lift valve (-F16K 3/262 , F16K 3/265 take precedence-)}
	F16K 5/00	{Plug valves;}Taps or cocks comprising only cut-off apparatus having at least one of the sealing faces shaped as a more or less complete surface of a solid of revolution, the opening and closing movement being predominantly rotary (-taps of the lift-valve type F16K 1/00-)
	F16K 7/00	Diaphragm {valves or}cut-off apparatus, e.g. with a member deformed, but not moved bodily, to close the passage (-container gates or closures operating by deformation of flexible walls B65D 90/56 ; means for plugging pipes or hoses F16L 55/10-){Pinch valves}
U	F16K 7/02	· with tubular diaphragm
U	F16K 7/04	· · constrictable by external radial force
	F16K 7/06	· · · by means of a screw-spindle, cam, or other mechanical means{(-F16K 7/045 takes precedence-)}
U	F16K 11/00	Multiple-way valves, e.g. mixing valves; Pipe fittings incorporating such valves
U	F16K 11/02	· with all movable sealing faces moving as one unit
U	F16K 11/06	· · comprising only sliding valves,{i.e. sliding closure elements}
U	F16K 11/065	· · · with linearly sliding closure members
U	F16K 11/07	· · · · with cylindrical slides
	F16K 11/0716	· · · · · {with fluid passages through the valve member (-F16K 11/0704 , F16K 11/0708 , F16K 11/0712 take precedence-)}
U	F16K 11/078	· · · with pivoted and linearly movable closure members
U	F16K 11/0782	· · · · {Single-lever operated mixing valves with closure members having flat sealing faces}
	F16K 11/0787	· · · · · {with both the supply and the discharge passages being on the same side of the closure members (-F16K 11/0785 takes precedence-)}
U	F16K 11/10	· with two or more closure members not moving as an unit
	F16K 11/14	· · operated by one actuating member, e.g. a handle (-with one plug turning in another F16K 11/12-)
	F16K 11/20	· · operated by separate actuating members (-with one plug turning in another F16K 11/12-)
	F16K 13/00	Other constructional types of cut-off apparatus (- means for plugging pipes or hoses F16L 55/10-); Arrangements for cutting-off

- F16K 13/08 · Arrangements for cutting-off {not used}
- F16K 15/00 Check valves** (-valves specially adapted for inflatable balls [A63B 41/00](#)-)
- U F16K 15/02 · with guided rigid valve members
- F16K 15/021 · · {the valve member being a movable body around which the medium flows when the valve is open (-[F16K 15/025](#) to [F16K 15/12](#) take precedence-)}
WARNING
not yet complete
- F16K 15/025 · · {the valve being loaded by a helicoidal spring (-[F16K 15/03](#) to [F16K 15/12](#) take precedence-)}
- U F16K 15/03 · · with a hinged closure member
- F16K 15/031 · · · {the hinge being flexible (-[F16K 15/035](#) takes precedence-)}
- F16K 15/033 · · · {spring-loaded (-[F16K 15/035](#) takes precedence-)}
- U F16K 15/04 · · shaped as balls
- F16K 15/044 · · · {spring-loaded (-[F16K 15/042](#) takes precedence-)}
- U F16K 15/18 · with actuating mechanism; Combined check valves and actuated valves
- F16K 15/181 · · {for check valves with a hinged closure member (-[F16K 15/188](#) takes precedence-)}
- F16K 15/183 · · {for ball check valves (-[F16K 15/186](#) , [F16K 15/188](#) take precedence-)}
- F16K 15/185 · · {for check valves with flexible valve members (-[F16K 15/188](#) takes precedence-)}
- F16K 15/20 · specially designed for inflatable bodies, e.g. tyres (-connecting valves to inflatable bodies [B60C 29/00](#)-)
- U F16K 17/00 Safety valves; Equalising valves,{e.g. pressure relief valves}**
- F16K 17/02 · opening on surplus pressure on one side; closing on insufficient pressure on one side (-check valves [F16K 15/00](#)-)
- U F16K 17/14 · · with fracturing member
- U F16K 17/16 · · · with fracturing diaphragm;{Rupture discs}
- F16K 17/1606 · · · · {of the reverse-buckling-type (-[F16K 17/1633](#) takes precedence-)}
- F16K 17/162 · · · · {of the non reverse-buckling-type (-[F16K 17/1633](#) takes precedence-)}
- U F16K 17/18 · opening on surplus pressure on either side
- F16K 17/19 · · Equalising valves predominantly for tanks{ when combined with safety valve by change of position [F16K 17/36](#)-}
- F16K 17/20 · Excess-flow valves (-actuated in consequence of shock or similar extraneous influence [F16K 17/36](#)-)
- U F16K 17/22 · · actuated by the difference of pressure between two places in the flow line
- U F16K 17/24 · · · acting directly on the cutting-off member
- U F16K 17/28 · · · · operating in one direction only
- F16K 17/285 · · · · · {the cutting-off member being a ball (-[F16K 17/30](#) takes precedence-)}
- U F16K 17/36 · actuated in consequence of extraneous circumstances, e.g. shock, change of position
- F16K 17/363 · · {the closure members being rotatable or pivoting (-[F16K 17/386](#) takes precedence-)}
- F16K 17/366 · · {the closure member being a movable ball (-[F16K 17/38](#) takes precedence-)}
WARNING
not yet complete, see also [F16K 17/36](#)

- U F16K 17/38 · · of excessive temperature
- F16K 17/383 · · · {the valve comprising fusible, softening or meltable elements, e.g. used as link, blocking element, seal, closure plug ([F16K 17/386](#) takes precedence-)}
- F16K 17/40 · with a fracturing member, e.g. fracturing diaphragm, glass, fusible joint ([-valves opening on surplus pressure F16K 17/14-](#))
- F16K 19/00 Arrangements of valves and flow lines specially adapted for mixing fluids ([-multiple-way valves F16K 11/00-](#))**
- F16K 21/00 Fluid-delivery valves,{e.g. self-closing valves} ([-for liquid handling B67D ; for flushing devices for water-closets or the like E03D-](#))**
- F16K 21/04 · Self-closing valves, i.e. closing automatically after operation{ pneumatic tools [B25B 9/00-](#)}
- F16K 21/16 · · closing after a predetermined quantity of fluid has been delivered ([-F16K 21/10](#) takes precedence-)
- F16K 21/18 · · closed when a rising liquid reaches a predetermined level ([-float-actuated valves F16K 31/18-](#))
- F16K 24/00 Devices, e.g. valves, for venting or aerating enclosures ([-equalising valves F16K 17/00 ; arrangement or mounting in pipes or pipe systems F16L 55/07 ; venting or aerating as an additional function of steam traps or like apparatus F16T ; ventilation of rooms, vehicles, see the appropriate subclass, e.g. F24F-](#))**
- F16K 24/04 · for venting only ([-F16K 24/02](#) takes precedence-)
- F16K 24/06 · for aerating only ([-F16K 24/02](#) takes precedence-)
- F16K 25/00 Details relating to contact between valve members and seat ([-sealing constructions, see the appropriate groups according to the type of valve; movement of valve members other than for opening and closing F16K 29/00-](#))**
- F16K 27/00 Construction of housing ([-methods for welding housings B23K-](#)); Use of materials therefor**
- F16K 27/02 · of lift valves (for reducing the flow resistance of screw-spindle lift-valves [F16K 1/06](#))
- U **F16K 31/00 {Actuating devices;}Operating means; Releasing devices{(regulating means G05D)}**
- F16K 31/001 · {actuated by volume variations caused by an element soluble in a fluid or swelling in contact with a fluid ([-life-boats B63C 9/24-](#))}
- F16K 31/002 · {actuated by temperature variation ([-thermo-electric F16K 31/025-](#))}
- F16K 31/003 · {operated without a stable intermediate position, e.g. with snap action ([-F16K 31/56](#) takes precedence-)}
- F16K 31/02 · electric([-F16K 31/004](#) takes precedence-); magnetic
- U F16K 31/04 · · using a motor
- F16K 31/041 · · · {for rotating valves ([-F16K 31/055](#) takes precedence-)}
- WARNING
Subgroups [F16K 31/042](#) to [F16K 31/045](#) are not complete pending a reorganisation, see also [F16K 31/041](#)
- F16K 31/046 · · · {with electric means, e.g. electric switches, to control the motor or to control a clutch between the valve and the motor ([-F16K 31/041](#) takes precedence-)}

- F16K 31/047
 - • • {characterised by mechanical means between the motor and the valve, e.g. lost motion means reducing backlash, clutches, brakes or return means (-F16K 31/043 takes precedence-)}
- F16K 31/048
 - • • • {with torque limiters (-F16K 31/041 takes precedence-)}
- F16K 31/06
 - • using a magnet {e.g. diaphragm valves, cutting off by means of a liquid}
- U F16K 31/0644
 - • • {One-way valve}
- F16K 31/0648
 - • • • {the armature and the valve member forming one element (-F16K 31/0651 takes precedence-)}
- U F16K 31/0655
 - • • • {Lift valves}
- F16K 31/0665
 - • • • • {with valve member being at least partially ball-shaped (-F16K 31/0662 takes precedence-)}
- U F16K 31/08
 - • • using a permanent magnet
- F16K 31/084
 - • • • {the magnet being used only as a holding element to maintain the valve in a specific position, e.g. check valves (-F16K 31/082 , F16K 31/086 take precedence-)}
- F16K 31/12
 - actuated by fluid ({ fluid-actuated lift valves F16K 1/126 } ; fluid-actuated check valves F16K 15/00 ; fluid-actuated safety valves F16K 17/00-)
- F16K 31/122
 - • {the fluid acting on a piston (-F16K 31/143 , F16K 31/163 , F16K 31/363 , F16K 31/383 take precedence-)}
- F16K 31/126
 - • {the fluid acting on a diaphragm, bellows, or the like (-F16K 31/145 , F16K 31/165 , F16K 31/365 , F16K 31/385 take precedence-)}
- F16K 31/16
 - • with a mechanism, other than pulling-or pushing-rod, between fluid motor and closure member (-with float F16K 31/18-)
- F16K 31/18
 - • actuated by a float (-floats F16K 33/00 ; float-actuated valves in steam-traps F16T 1/20 , in boilers F22D 5/08-)
- U F16K 31/36
 - • in which fluid from the circuit is constantly supplied to the fluid motor
- F16K 31/363
 - • • the fluid acting on a piston (-F16K 31/38 takes precedence-)
- F16K 31/38
 - • • in which the fluid works directly on both sides of the fluid motor, one side being connected by means of a restricted passage and the motor being actuated by operating a discharge from that side (-F16K 31/40 takes precedence-)
- F16K 31/42
 - • by means of electrically-actuated members in the supply or discharge conduits of the fluid motor (-F16K 31/40 takes precedence-)
- U F16K 31/44
 - Mechanical actuating means
- F16K 31/48
 - • actuated by mechanical timing-device, e.g. with dash-pot (-self-closing valves F16K 21/16-)
- F16K 31/50
 - • with screw-spindle {or internally threaded actuating means}
- U F16K 31/53
 - • with toothed gearing
- F16K 31/535
 - • • {for rotating valves (-F16K 31/54 takes precedence-)}
- F16K 31/60
 - • Handles{ form, features or function of taps or faucet handles for domestic plumbing installations E03C 1/04-}
- F16K 31/602
 - • • {Pivoting levers, e.g. single-sided (-F16K 31/605 takes precedence-)}
- F16K 33/00**
 - Floats for actuation of valves or other apparatus{-float actuated valves F16K 31/18-}**
- U **F16K 35/00**
 - Means to prevent accidental or unauthorised actuation**
- F16K 35/06
 - using a removable actuating or locking member, e.g. a key (-F16K 35/10 , F16K 35/12 take precedence-)

- U F16K 37/00** **Special means in or on valves or other cut-off apparatus for indicating or recording operation thereof, or for enabling an alarm to be given**
- F16K 37/0008 · {Mechanical means ([F16K 37/0075](#) takes precedence-)}
 - F16K 37/0025 · {Electrical or magnetic means ([F16K 37/0075](#) takes precedence-)}
 - F16K 37/0041 · · {for measuring valve parameters ([F16K 37/0033](#) takes precedence-)}
 - F16K 37/005 · · {for measuring fluid parameters ([F16K 37/0033](#) takes precedence-)}
 - F16K 37/0058 · [Optical means, e.g. light transmission, observation ports ([F16K 37/0075](#) takes precedence-)]
 - F16K 37/0066 · {Hydraulic or pneumatic means ([F16K 37/0075](#) takes precedence-)}
- U F16K 41/00** **Spindle sealings**
- U F16K 41/02 · with stuffing-box;{Sealing rings}
 - F16K 41/023 · · {for spindles which only rotate, i.e. non-rising spindles ([F16K 41/043](#) , [F16K 41/063](#) and [F16K 41/083](#) take precedence-)}
 - U F16K 41/10 · with diaphragm, e.g. shaped as bellows or tube
 - F16K 41/106 · · {for use with rotating spindles or valves ([F16K 41/125](#) takes precedence-)}
- F16K 47/00** **Means in valves for absorbing fluid energy {e.g. cushioning of opening or closure movement, eliminating of vibrations of the valve member}{for pipes [F16L 55/00](#)-}**
- F16K 47/02 · for preventing water-hammer or noise {e.g. for sanitary applications, toilet flush reservoirs ([F16K 47/04](#) and [F16K 47/08](#) take precedence-)}
 - F16K 47/04 · for decreasing pressure {or noise level}, the throttle being incorporated in the closure member
 - F16K 47/08 · for decreasing pressure {or noise level}and having a throttling member separate from the closure member,{e.g. screens, slots, labyrinths}
- F16K 49/00** **Means in or on valves for heating or cooling (-for pipes [F16L 53/00](#) ; thermal insulation in connection with pipes or pipe systems [F16L 59/16](#)-)**
- U F16K 99/00** **Subject matter not provided for in other groups of this subclass**
- F16K 99/0001 · {Micro-valves (-micro-devices [B81B 1/00](#) ; manufacture or treatment of devices or systems in or on a substrate [B81C 1/00](#) ; micro-fluidic structures [B01L 3/5027](#) ; micro-pumps [F04B 19/006](#)-)}

Project: N/A (F16L)

- U F16L 3/00** **Supports for pipes, cables or protective tubing, e.g. hangers, holders, clamps, cleats, clips, brackets (anchors for holding pipes on or under the ground [F16L 1/06](#); {sound-damping supports [F16L 55/035](#); supports for insulated pipes [F16L 59/135](#))}**
- U F16L 3/01 · for supporting or guiding the pipes, cables or protective tubing, between relatively movable points, e.g. movable channels (hauling- or hoisting-chains with arrangements for holding electric cables, hoses or the like [F16G 13/16](#))
 - F16L 3/015 · · {-using articulated- or supple-guiding elements (arrangements for cranes of means for transmitting pneumatic, hydraulic or electric power to movable parts or devices [B66C 13/12](#))}
 - U F16L 3/08 · substantially surrounding the pipe, cable or protective tubing
 - U F16L 3/10 · · divided, i.e. with two {or more} members engaging the pipe, cable or protective tubing
 - F16L 3/1083 · · · {-with two members, the two members being hooked in on one side and fastened together on the other side}

- F16L 3/1091
- • • {-with two members, the two members being fixed to each other with fastening members on each side}
- U F16L 9/00 Rigid pipes {(steam boiler tubes [F22B 37/10](#))}**
- U F16L 9/02
- of metal ([F16L 9/16](#) to [F16L 9/22](#) take precedence; finned pipes [F28F](#))
- U F16L 9/04
- • Reinforced pipes
- F16L 9/042
- • • {-the reinforcement comprising one or more layers of a helically wound cord, wire or strip ([F16L 9/047](#) takes precedence)}
- U F16L 9/18
- Double-walled pipes; Multi-channel pipes or pipe assemblies (joints therefor [F16L 39/00](#))
- F16L 9/20
- • Pipe assemblies
- U F16L 11/00 Hoses, i.e. flexible pipes (hose-like supports for pipes, cables or protective tubing, between relatively movable points [F16L 3/01](#); suction-cleaner hoses [A47L 9/24](#))**
- U F16L 11/04
- made of rubber or flexible plastics
- F16L 11/045
- • {-with four or more layers without reinforcement}
- U F16L 11/12
- • with arrangements for particular purposes, e.g. specially profiled, with protecting layer, heated, electrically conducting ([F16L 11/11](#) takes precedence)
- F16L 11/121
- • • {-specially profiled cross sections}
- U F16L 13/00 Non-disconnectible pipe-joints, e.g. soldered, adhesive or caulked joints (joints for rigid pipes of plastics [F16L 47/00](#); {non-disconnectible pipe-joints to walls or other pipes, the joined pipe axis being perpendicular to the plane of the wall or to the axis of the other pipe [F16L 41/082](#))}**
- U F16L 13/14
- made by plastically deforming the material of the pipe, e.g. by flanging, rolling {(working of metal tubes without essentially removing material [B21D](#))}
- F16L 13/141
- • {-by crimping or rolling from the outside}
- F16L 13/142
- • • {-with a sealing element inserted into the female part before crimping or rolling}
- F16L 13/143
- • • {-with a sealing element placed around the male part before crimping or rolling}
- F16L 13/146
- • {-by an axially moveable sleeve}
- F16L 13/147
- • {-by radially expanding the inner part ([F16L 13/168](#) and [E21B 43/103](#) take precedence)}
- F16L 13/148
- • {-specially designed to ensure an intended leakage until correct deformation}
- U F16L 13/16
- • the pipe joint consisting of overlapping extremities having mutually co-operating collars
- F16L 13/161
- • • {-the pipe or collar being deformed by crimping or rolling}
- F16L 13/163
- • • • {-one collar being bent over the other}
- F16L 13/165
- • • {-the pipe or collar being deformed by an axially movable sleeve}
- F16L 13/166
- • • {-Deformed by radially expanding an inner part ([F16L 13/168](#) takes precedence)}
- F16L 13/168
- • • {-for screw threaded pipes ([E21B 43/103](#) takes precedence)}
- U F16L 15/00 Screw-threaded joints ({hose connections with parts screwed directly on or into the hose [F16L 33/24](#); joining pipes to wall [F16L 41/00](#)); casing joints used in deep-drilling [E21B 17/08](#); joints sealed primarily by means other than engagement of screw-threads, see the relevant groups characterised by the sealing arrangements); Forms of screw-threads for such joints**
- F16L 15/001
- {-with conical threads}

- F16L 15/002 • • {-with more then one threaded section}
- F16L 15/003 • • {-with sealing rings}
- F16L 15/004 • • {-with axial sealings having at least one plastically deformable sealing surface
(with sealing rings [F16L 15/003](#))}
- F16L 15/006 • {-with straight threads}
- F16L 15/007 • • {-with more than one threaded section}
- F16L 15/008 • • {-with sealing rings}
- F16L 15/009 • • {-with axial sealings having at least one plastically deformable sealing surface
(with sealing rings [F16L 15/008](#))}

- U F16L 25/00** **Constructive types of pipe joints not provided for in groups [F16L 13/00](#)
to [F16L 23/00](#) (adjustable joints [F16L 27/00](#); couplings of the quick-acting
type [F16L 37/00](#); specially adapted to be made of plastics or to be used
with pipes made of plastics [F16L 47/00](#)){Details of pipe joints not otherwise
provided for, e.g. electrically conducting or insulating means}**
- U F16L 25/0036 • {Joints for corrugated pipes}
- F16L 25/0045 • • {-of the quick-acting type}
- F16L 25/0054 • • {-with specially shaped sealing rings}
- F16L 25/0063 • • {-with two corrugated pipes being directly connected to each other}

- U F16L 29/00** **Joints with fluid cut-off means (quick-acting joints with cut-off means
[F16L 37/28](#); {valves, taps or cocks in general [F16K](#)})**
- F16L 29/007 • {Joints with cut-off devices controlled separately (-takes precedence; operating
means for cut-off devices in general [F16K 31/00](#))}

- U F16L 33/00** **Arrangements for connecting hoses to rigid members (hand tools for
inserting fittings into hoses [B25B 27/10](#)); Rigid hose connectors, i.e.
single members engaging both hoses {(hoses or hose couplings specially
adapted for suction cleaners [A47L 9/24](#))}**
- U F16L 33/20 • Undivided rings, sleeves or like members contracted on the hose or expanded
in the hose by means of tools; Arrangements using such members
- U F16L 33/207 • • only a sleeve being contracted on the hose
- U F16L 33/2071 • • • {the sleeve being a separate connecting member}
- F16L 33/2073 • • • • {-directly connected to the rigid member}
- F16L 33/2075 • • • • • {-by quick acting}
- F16L 33/2076 • • • • • {-by plastic deformation}
- F16L 33/2078 • • • • • {-connected to the rigid member via an intermediate element}

- U F16L 41/00** **Branching pipes; Joining pipes to walls ([F16L 39/00](#) takes precedence;
joints suitable for connecting together pipe-ends see the relevant groups
{specially adapted to be made of plastics or to be used with pipes made of
plastics [F16L 47/26](#); characterised by couplings of the quick-acting type
[F16L 37/008](#);} connections not designed for conveying fluid [F16B 9/00](#))**
- F16L 41/08 • Joining pipes to walls or pipes, the joined pipe axis being perpendicular to the
plane of the wall or to the axis of another pipe ([F16L 41/02](#) takes precedence)

- F16L 43/00** **Bends; -Siphons (with cleaning apertures [F16L 45/00](#); { expansion-
compensation arrangements making use of bends [F16L 51/04](#)}; siphons for
water-closets [E03D 11/18](#); siphons in general [F04F 10/00](#)-)**
- F16L 43/008 • {-made from plastic material}

- U F16L 53/00** **Heating or cooling pipes or pipe systems (preventing freezing of pipes,
thawing frozen pipes [E03B 7/12](#), [E03B 7/14](#); pipe-line systems, pipe-lines
[F17D](#))**

- F16L 53/001 · {-Heating of pipes or pipe systems}
- F16L 53/002 · · {-by means of a hot fluid, e.g. gas, steam or liquid}
- F16L 53/004 · · {-by electric, magnetic or electromagnetic fields, e.g. using induction, dielectric or microwave heating}
- F16L 53/005 · · {-by ohmic-resistance heating}
- F16L 53/007 · · · {-the heating current flowing directly through the pipe to be heated}
- F16L 53/008 · · · {-using electric heating elements in the form of wires, cables, strips, ribbons or the like}

- U F16L 58/00** **Protection of pipes or pipe fittings against corrosion or incrustation (supporting of pipes inside other pipes or sleeves [F16L 7/00](#); compound tubes [F16L 9/14](#); cleaning pipes or tubes [B08B 9/02](#))**
- U F16L 58/02 · by means of internal or external coatings (coatings for thermal insulation [F16L 59/00](#); methods or machines for applying coatings see the relevant classes, e.g. [B28B 21/00](#))
- U F16L 58/04 · · Coatings characterised by the materials used ([F16L 58/16](#) takes precedence; compositions, see the relevant classes, e.g. [C04B](#))
- U F16L 58/10 · · · by rubber or plastics
- U F16L 58/1009 · · · · {the coating being placed inside the pipe}
- F16L 58/1036 · · · · · {-the coating being a preformed pipe ([F16L 58/1027](#) takes precedence)}

- F16L 59/00** **Thermal insulation in general (heat, sound insulation in buildings [E04B](#); heat insulation of steam engines [F01B 31/08](#); { thermal or acoustic isolation for combustion engines [F02B 77/11](#)}; heat insulation in rotary piston machines [F01C 21/06](#); heat insulation of pumps [F04C 29/04](#); thermal insulation of pressure vessels [F17C 1/12](#); vessels not under pressure, with provision for insulation [F17C 3/02](#))**
- U F16L 59/02 · Shape or form of insulating materials, with or without coverings integral with the insulating materials (chemical aspects see the relevant classes)
- U F16L 59/021 · · {comprising a single piece or sleeve, e.g. split sleeve, two half sleeves}
- F16L 59/022 · · · {-with a single slit}
- F16L 59/023 · · · · {-with a hinge opposite the slit}
- F16L 59/024 · · · {-composed of two half sleeves}
- F16L 59/025 · · · {-with more than two segments}

Project: N/A (F16M)

- U F16M 1/00** **Frames or casings of engines, machines or apparatus; Frames serving as machinery beds**
- U F16M 1/02 · for reciprocating engines or similar machines
- U F16M 1/021 · · for housing crankshafts
- F16M 1/022 · · · of tunnel type, i.e. wherein the crankshaft can only be introduced axially (for engines or machines with star-shaped cylinder arrangement [F16M 1/023](#)-)

- F16M 3/00** **Portable or wheeled frames or beds, e.g. for emergency power-supply aggregates, compressor sets (-construction of vehicles in general [B60](#) to [B62](#)-)**

- F16M 7/00** **Details of attaching or adjusting engine beds, frames, or supporting-legs on foundation or base; Attaching non-moving engine parts, e.g. cylinder blocks (-elastic or equivalent mounting for absorbing vibrations [F16F](#) , especially [F16F 15/04](#)-)**

- F16M 9/00** Special layout of foundations with respect to machinery to be supported (~~foundations for machinery [E02D 27/44](#)~~)
- F16M 11/00** Stands or trestles as supports for apparatus or articles placed thereon {Stands for scientific apparatus such as gravitational force meters} (~~without heads [F16K 13/00](#) ; easels or stands for blackboard or the like [A47B 97/04](#) ; show-stands [A47F 7/00](#) ; for workmen [E04G 1/32](#) ; { sockets or holders for poles or posts [E04H 12/22](#) } ; supporting, suspending for lighting devices [F21V 21/00](#) ; special modifications for particular apparatus or articles, see the appropriate subclasses~~)
- U F16M 11/02 • Heads
- U F16M 11/04 • • Means for attachment of apparatus; Means allowing adjustment of the apparatus relatively to the stand
- U F16M 11/06 • • • allowing pivoting
- F16M 11/08 • • • • around a vertical axis, {e.g. panoramic heads (~~F16M 11/12 takes precedence~~)}
- F16M 11/10 • • • • around a horizontal axis [(~~F16M 11/12 takes precedence~~)]
- U F16M 11/12 • • • • in more than one direction
- F16M 11/125 • • • • • {for tilting and rolling (~~F16M 11/14 takes precedence~~)}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- F16M 11/126 • • • • • {for tilting and panning (~~F16M 11/14 takes precedence~~)}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- F16M 11/128 • • • • • {for panning and rolling (~~F16M 11/14 takes precedence~~)}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- F16M 11/14 • • • • • with ball-joint (~~ball-jointed hinges [F16C 11/06](#)~~){ adjustable mountings employing universal joints for lighting devices [F21V 21/26](#) to [F21V 21/30](#)}
- U F16M 11/20 • Undercarriages with or without wheels
- U F16M 11/2007 • • {comprising means allowing pivoting adjustment}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/06](#) , [F16M 11/08](#) , [F16M 11/10](#) , [F16M 11/12](#) , [F16M 11/14](#) depending on the type of movement allowed
- F16M 11/2014 • • • {around a vertical axis (~~F16M 11/2035 takes precedence~~)}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/08](#)
- F16M 11/2021 • • • {around a horizontal axis (~~F16M 11/2035 takes precedence~~)}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/10](#)

- U F16M 11/2035 . . . {in more than one direction}
WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- F16M 11/2057 {for tilting and rolling (~~F16M 11/2078~~ takes precedence-)}
WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- F16M 11/2064 {for tilting and panning (~~F16M 11/2078~~ takes precedence-)}
WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- F16M 11/2071 {for panning and rolling (~~F16M 11/2078~~ takes precedence-)}
WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)]
- F16M 11/2078 {with ball-joint (~~ball-jointed hinges F16C 11/06-~~)}
WARNING
This group is not complete pending reclassification; see also group [F16M 11/14](#)]
- F16M 11/22 . . with approximately constant height, e.g. with constant length of column or of legs (~~F16M 11/42~~ takes precedence-)
- F16M 11/24 . . changeable in height or length of legs, also for transport only, {e.g. by means of tubes screwed into each other} (~~F16M 11/42~~ takes precedence-)
- F16M 11/242 . . . {by spreading of the legs (~~F16M 11/32~~ takes precedence-)}
WARNING
This group is not complete pending reclassification; see also group [F16M 11/24](#) or [F16M 11/32](#)]
- F16M 11/247 {Members preventing slipping of the feet (~~for supports with three or more telescoping legs F16M 11/36-~~)}
WARNING
this group is not complete pending a reorganisation, see also [F16M 11/24](#) and [F16M 11/36](#)
- F16M 11/26 . . . by telescoping, with or without folding (~~details concerning the constructional features of telescoping parts only F16B 7/10-~~)
- F16M 11/40 . . . by means of coilable or bendable legs {or spiral shaped legs}
- F16M 11/42 . . with arrangement for propelling the support {stands on wheels}
- F16M 13/00** **Other supports for positioning apparatus or articles (~~heads thereof F16M 11/02~~ ; { undercarriages thereof F16M 11/20 } ; adapted to be stuck in the ground A45F 3/44 ; { sockets or holders for poles or posts E04H 12/22 }); Means for steadying hand-held apparatus or articles ({-supports for measuring instruments G01D 11/30 ; supports for casings of remote control switching devices H01H 9/025-})**

F16M 13/04

- for supporting on, or holding steady relative to, a person, e.g. by chains, {e.g. rifle butt or pistol grip supports, supports attached to the chest or head} (-apparatus or arrangements for taking photographs or for projecting or viewing them [G03B](#)-)}

Project: N/A (F16N)**U F16N 7/00**

Arrangements for supplying oil or unspecified lubricant from a stationary reservoir or the equivalent in or on the machine or member to be lubricated (axle-box lubrication for railway rolling-stock [B61F 17/00](#))

U F16N 7/36

- with feed by pumping action of the member to be lubricated or of a shaft of the machine; Centrifugal lubrication

F16N 7/363

- • {-Centrifugal lubrication}

U F16N 19/00

Lubricant containers for use in lubricators or lubrication systems

F16N 19/003

- {-Indicating oil level (measuring liquid level in general [G01F](#))}

Project: N/A (F16P)**U F16P 3/00**

Safety devices acting in conjunction with the control or operation of a machine; Control arrangements requiring the simultaneous use of two or more parts of the body ([F16P 5/00](#) takes precedence)

U F16P 3/12

- with means, e.g. feelers, which in case of the presence of a body part of a person in or near the danger zone influence the control or operation of the machine ([F16P 3/08](#) takes precedence)

U F16P 3/14

- • the means being photocells or other devices sensitive without mechanical contact

WARNING

Subgroups of [F16P 3/14](#) are not complete pending a reorganisation, see also [F16P 3/14](#)

F16P 3/141

- • • {-using sound propagation, e.g. sonar}

F16P 3/142

- • • {-using image capturing devices}

F16P 3/144

- • • {-using light grids}

F16P 3/145

- • • {-using magnetic technology}

F16P 3/147

- • • {-using electro-magnetic technology, e.g. tags or radar}

F16P 3/148

- • • {-using capacitive technology}

Project: N/A (F17C)**U F17C 5/00**

Methods or apparatus for filling containers with liquefied, solidified, or compressed gases under pressures (adding propellants to aerosol containers [B65B 31/00](#))

NOTE

This group includes not only the filling of vessels for storage of compressed or liquefied gases, but also the filling of pressurised apparatus insofar as it is not covered by a single other subclass, e.g. [A62C](#), [B05B](#).

U F17C 5/002

- {Automated filling apparatus}

F17C 5/007

- • {-for individual gas tanks or containers, e.g. in vehicles (filling with liquid fuel not under pressure, [B60S 5/02](#), [B67D 7/00](#))}

U F17C 2221/00

Handled fluid, in particular type of fluid

U F17C 2221/01

- Pure fluids

F17C 2221/016

- • Noble gases ([Ar](#), [Kr](#), [Xe](#))(~~[Ar](#)~~, ~~[Kr](#)~~, ~~[Xe](#)~~)

Project: N/A (F21H)

- U F21H 1/00** Incandescent mantles; Selection of imbibition liquids therefor
 F21H 1/04 · Suspension devices therefor (for attaching the mantle on the housing of a lamp [F21V 19/06](#))

Project: N/A (F21K)

- F21K 2/00** Light sources using luminescence (-using excitation by another light source [F21V 9/16](#) ; lamps, other than those in which all the electrodes are within the vessel, in which a screen or coating is excited to luminesce by radioactive material located inside the vessel [H01J 65/08](#) ; using electroluminescence [H05B 33/00](#)-)
- F21K 2/005 · {excited by infra-red radiation using up-conversion (-frequency changing of light [G02F 2/02](#)-)}
- F21K 5/00** Light sources using a charge of combustible material, e.g. illuminating flash devices (-explosive or thermic compositions [C06B](#); fireworks [F42B 4/00](#) ; photographic flash units [G03B 15/03](#)-)
- U F21K 5/02** · ignited in a non-disrupting container, e.g. photo-flash bulb
- F21K 5/023 · · {Ignition devices in photo flash bulbs (-ignition devices being part of a shutter mechanism included in a camera [G03B 9/70](#) ; ignition devices not being part of a shutter mechanism included in a camera [G03B 15/04](#) ; ignition circuits for combustion lamps [H05B 43/02](#)-)}
- F21K 5/026 · · · {using mechanical firing e.g. percussion of a fulminating charge (-if included in a camera [G03B 15/0489](#)-)}
- F21K 9/00** {Electric lamps using semiconductor devices as light generating elements, e.g. using light emitting diodes [LED]} or lasers (-light emitting diodes per se [H01L 33/00](#) , [H01L 51/50](#) ; semiconductor lasers per se [H01S 5/00](#) ; electric lamps using a combination of different types of light generation [H05B 35/00](#)-)}
- WARNING
 This group is not complete pending a reclassification; see also [F21K 99/00](#) , [H01L 33/00](#) , [H01S 5/00](#) , [H05B 35/00](#)
- F21K 9/30 · {-LED lamps or modules comprising attachment means not covered by groups [F21K 9/10](#) to [F21K 9/175](#)-}

Project: N/A (F21L)

- F21L 7/00** Torches or pocket-lamps with built-in batteries ([F21L 4/00](#) takes precedence)
- F21L 11/00** Portable lighting devices with built-in batteries or accumulators, not covered by group [F21L 4/00](#) or [F21L 7/00](#), e.g. miners` hand-lamps
- F21L 15/00** Details of kinds solely applicable to the devices covered by groups [F21L 2/00](#) to [F21L 14/00](#)
- F21L 15/02 · concerned with light emission or distribution
- F21L 15/04 · · Arrangements of coloured filters or screens
- F21L 15/06 · concerned with the fitting
- F21L 15/08 · · Supporting and suspending elements
- F21L 15/10 · · · without arrangements for adjustment
- F21L 15/14 · · · · Clips; -Clamps; -Head fittings (for medical purposes [A61B 1/06](#))
- U F21L 19/00** Lanterns, e.g. hurricane lamps or candle lamps (candle holders [F21V 35/00](#))

- F21L 19/003 · {-Fastening or lifting of the lamp glass (fastening of component parts of lighting devices [F21V 17/00](#))}
- F21L 19/006 · {-Special adaptation for protection against draughts (in lighting devices employing combustion other than lanterns [F21V 37/02](#))}
- F21L 25/00** **Details of kinds solely applicable to the devices covered by groups [F21L 17/00](#) to [F21L 23/00](#)**

Project: N/A (F21S)**F21S** **NON-PORTABLE LIGHTING DEVICES OR SYSTEMS THEREOF (burners [F23D](#))****NOTE**

1. This subclass covers devices or systems intended for fixed installation, e.g. vehicle lighting, or for use at a permanent location, e.g. free-standing floor- or table-lamps.
2. This subclass does not cover devices or systems specially adapted for transportation, which are covered by subclass [F21L](#).
3. Non-electric lighting devices or systems are classified in groups [F21S 11/00](#) to [F21S 15/00](#) only if a special adaptation related to the use of a non-electric light source is of interest.

F21S 2/00 **Systems of lighting devices, not provided for in main groups [F21S 4/00](#) to [F21S 10/00](#) or [F21S 19/00](#) , e.g. of modular construction**

F21S 6/00 **Lighting devices intended to be free-standing (-[F21S 9/00](#) , [F21S 10/00](#) , { [F21S 13/12](#) }take precedence){ lighting devices specially adapted to be transported from place to place, e.g. lighting devices carried on wheeled supports [F21L](#); details of supports for lighting devices [F21V 21/00](#) }**

F21S 6/001 · {being candle-shaped (-with varying lighting effect of simulating flames [F21S 10/04](#) ; string of light sources [F21S 4/00](#)-)}

F21S 8/00 **Lighting devices intended for fixed installation (-[F21S 9/00](#) , [F21S 10/00](#) take precedence; using a string or strip of light sources [F21S 4/00](#)-)**

F21S 8/003 · {Searchlights, i.e. outdoor lighting device producing powerful beam of parallel rays, e.g. for military or attraction purposes (-searchlights mounted on a vehicle [B60Q 1/24](#)-)}

F21S 8/02 · of recess-mounted type, e.g. downlighters (-[F21S 8/10](#) takes precedence; { details of recessed bases [F21V 21/04](#) })

F21S 8/03 · {of surface-mounted type (-[F21S 8/02](#) , [F21S 8/04](#) take precedence; details of wall or floor bases [F21V 21/02](#)-)}

WARNING

Group [F21S 8/03](#) does not correspond to former or future IPC groups.
Correspondence CPC : IPC for this group is as following: - [F21S 8/03](#) : [F21S 8/00](#)

F21S 8/038 · · {intended to be mounted on a light track (-suspended from a light track [F21S 8/066](#) ; details of supporting elements displaceable along a guiding element [F21V 21/34](#)-)}

F21S 8/04 · intended only for mounting on a ceiling or the like overhead structures (-[F21S 8/02](#) takes precedence; { details of ceiling bases [F21V 21/03](#) })

U F21S 8/06 · · by suspension

F21S 8/066 · · · {from a light track (-details of supporting elements displaceable along a guiding element [F21V 21/34](#)-)}

- F21S 8/08 · with a standard{(-F21S 6/00 takes precedence-)}
- U F21S 10/00 Lighting devices or systems producing a varying lighting effect**
- F21S 10/002 · {using liquids, e.g. water (-F21W 2121/02 takes precedence-)}
- F21S 10/005 · {using light guides (-light guides specially adapted for lighting devices [G02B 6/0001-](#))}
- F21S 10/02 · changing colors{(-F21S 10/002 to [F21S 10/007](#) , [F21S 10/04](#) take precedence-)}
- F21S 10/026 · · {by movement of parts, e.g. by movement of reflectors or light sources (-F21S 10/007 takes precedence-)}
- F21S 10/06 · flashing, e.g. with rotating reflector or light source{(-signalling lighting devices mounted on vehicles [B60Q 1/26-](#))}
- F21S 11/00 Non-electric lighting devices or systems using daylight{(-roofs with sky-light opening [E04D 13/03](#) ; sun blinds for windows with means for redirecting light onto ceiling of a room [E06B 9/00](#) ; hybrid lighting devices combining artificial and natural light [F21S 19/00](#) ; solar heat collectors [F24J 2/00](#) ; solar cells or solar cell modules [H01L 31/00-](#))}**
- F21S 13/00 Non-electric lighting devices or systems employing a point-like light source (-candle holders [F21V 35/00-](#)); Non-electric lighting devices or systems employing a light source of unspecified shape**
- F21S 15/00 Non-electric lighting devices or systems employing light sources not covered by main groups [F21S 11/00](#) , [F21S 13/00](#) or [F21S 19/00](#)**
- F21S 2017/00 Details solely applicable to the devices covered by groups [F21S 13/00](#) and [F21S 15/00](#)**
- F21S 48/00 {Lighting devices or systems specially adapted for vehicles (-arrangements or adaptations for ships or waterborne vessels [B63B 45/00-](#))}**
- WARNING
- Groups [F21S 48/00](#) to [F21S 48/34](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [F21S 48/00](#) - [F21S 48/34](#) : [F21S 8/10](#)
- U F21S 48/10 · {Headlamps}
- U F21S 48/11 · · {characterised by the light source}
- F21S 48/1104 · · · {Attachment of light sources; Lamp holders; Terminals or connectors therefor (-F21S 48/1742 takes precedence-)}
- F21S 48/1109 · · · · {Details of lamp holders, terminals or connectors (mounting of a ballast for a high intensity discharge lamp on the housing wall of a headlamp [B60Q](#))}
- U F21S 48/12 · · {characterised by refractors, transparent cover plates or filters}
- F21S 48/1208 · · · {Attachment of refractors, transparent cover plates or filters (-F21S 48/1721 takes precedence-)}
- U F21S 48/1225 · · · {Type of refractor, transparent cover plates or filters}
- F21S 48/1241 · · · · {Light guides (-light guides per se [G02B 6/0001-](#))}
- U F21S 48/13 · · {characterised by reflectors}
- F21S 48/1305 · · · {Attachment of reflectors (-F21S 48/1757 takes precedence-)}
- U F21S 48/14 · · {characterised by screens, non-reflecting members, light-shielding members or fixed shades}
- F21S 48/142 · · · {Attachment thereof (-F21S 48/1768 takes precedence-)}
- U F21S 48/17 · · {characterised by a variable light distribution}
- U F21S 48/1736 · · · {by acting on light sources}

- F21S 48/1747 · · · · {by switching light sources (-F21S 48/1168 takes precedence-)}
- U F21S 48/20 · {Signal lamps, e.g. brake lamps or turn signal lamps}
- U F21S 48/22 · · {characterised by refractors, filters or transparent cover plates}
- U F21S 48/2212 · · · {Type of refractors, filters or transparent cover plates}
- F21S 48/2225 · · · · {Light guides (-light guides per se G02B 6/0001-)}

Project: RP0116 (F21V)**F21V****DETAILS OF LIGHTING DEVICES, OF GENERAL APPLICATION**NOTE

1. Groups F21V 1/00-F21V 14/00 cover aspects related to light emission or distribution. Groups F21V 15/00-F21V 31/00 cover aspects not related to light emission or distribution.

~~1. Groups F21V 1/00-F21V 14/00 cover details of those parts involved in light emission or distribution. Groups F21V 15/00-F21V 31/00 cover details of those parts not so involved.~~

2. Details of non-electric lighting devices or systems are classified in groups [F21V 35/00-F21V 37/00](#) only if a special adaptation related to the use of a non-electric light source is of interest.

~~In this subclass have been included only those lighting device details which were considered to be of a kind applicable to the lighting devices of more than one of the subclasses F21L, F21M, F21P, F21Q, F21S. Inventions concerned with details of the kinds provided for are to be classified in this subclass, even though they are only stated to be applied to a device of a single subclass.~~

3. In this subclass, it is desirable to add the indexing codes of subclasses [F21W](#) and [F21Y](#)

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[F21V 8/00](#) covered by ~~G02B 6/0001~~[G02B 6/00](#)

Project: N/A (F21V)

F21V 1/00
~~- **F21V 7/00**~~
F21V 14/00

~~**Details of those parts involved in {Aspects related to light emission or distribution} (optical elements and systems in general G02B)**~~

- U F21V 1/14 · Covers for frames; Frameless shades
- F21V 1/143 · · {-The cover being attached to a supporting lampshade frame}
- F21V 1/146 · · {-Frameless shades}
- F21V 3/00** **Globes; -Bowls; -Cover glasses (with refracting properties [F21V 5/00](#); with reflecting properties [F21V 7/00](#); characterised by cooling arrangements [F21V 29/506](#))**
- D F21V 3/005 · {-being designed to facilitate cooling}
- U F21V 3/02 · characterised by the shape
- F21V 3/023 · · {-Chinese lanterns; Balloons}
- F21V 3/026 · · · {-being inflatable}
- U F21V 3/04 · characterised by the material; characterised by surface treatments or coatings
- F21V 3/0409 · · {-characterised by the material}
- F21V 3/0418 · · · {-the material being glass}
- F21V 3/0427 · · · · {-the material diffusing light, e.g. translucent glass}
- F21V 3/0436 · · · {-the material being plastics}

	F21V 3/0445	• • • {the material diffusing light, e.g. translucent plastics}
	F21V 3/0454	• • • {comprising air or water bubbles, e.g. foamed materials}
	F21V 3/0463	• • • {comprising fluorescent or light-storing materials}
	F21V 3/0472	• • {Coatings}
	F21V 3/0481	• • • {provided with fluorescent or light-storing materials}
	F21V 3/049	• • {Patterns or structured surfaces for diffusing light, e.g. frosted surfaces}
	F21V 5/00	Refractors for light sources {(for vehicle rear lights F21S 48/2212; for vehicle head lamps F21S 48/1225 characterised by cooling arrangements F21V 29/504)}
D	F21V 5/001	• {being designed to facilitate cooling}
	F21V 5/002	• {using micro-optical elements for redirecting or diffusing light}
	F21V 5/003	• • {using holograms}
	F21V 5/004	• • {using micro-lenses}
	F21V 5/005	• • {using micro-prisms}
	F21V 5/007	• {Array of lenses or refractors for a cluster of light sources, e.g. for arrangement of multiple light sources in one plane (combination of two or more refractors F21V 5/008)}
	F21V 5/008	• {Combination of two or more successive refractors along an optical axis}
U	F21V 5/04	• of lens shape
	F21V 5/041	• • {Ball lenses}
	F21V 5/043	• • {the lens having cylindrical faces, e.g. rod lenses, toric lenses}
	F21V 5/045	• • {the lens having discontinuous faces, e.g. Fresnel lenses}
	F21V 5/046	• • {the lens having a rotationally symmetrical shape about an axis for transmitting light in a direction mainly perpendicular to this axis, e.g. ring or annular lens with light source disposed inside the ring}
	F21V 5/048	• • {the lens being a simple lens adapted to cooperate with a point-like source for emitting mainly in one direction and having an axis coincident with the main light transmission direction, e.g. convergent or divergent lenses, plano-concave or plano-convex lenses}
	F21V 7/00	Reflectors for light sources {(for vehicle rear lights F21S 48/23; for vehicle head lamps F21S 48/1317 characterised by cooling arrangements F21V 29/505)}
	F21V 7/0025	• {Combination of two or more reflectors for a single light source (array of reflectors for a cluster of light sources F21V 7/0083)}
	F21V 7/0033	• • {with successive reflections from one reflector to the next or following}
	F21V 7/0041	• • • {for avoiding direct view of the light source or to prevent dazzling}
	F21V 7/005	• {with an elongated shape to cooperate with linear light sources}
	F21V 7/0066	• {specially adapted to co operate with point like light sources; specially adapted to co operate with light sources the shape of which is unspecified (F21V 7/16 to F21V 7/22 take precedence)}
	F21V 7/0083	• {Array of reflectors for a cluster of light sources, e.g. arrangement of multiple light sources in one plane (combination of two or more reflectors F21V 7/0025)}
	F21V 7/0091	• {using total internal reflection}
U	F21V 7/10	• Construction (F21V 7/22 takes precedence)
D	F21V 7/20	• • constructed to facilitate cooling, e.g. with fins (cooling by other means, e.g. fluid, F21V 29/00)
D	F21V 2008/00	Use of light guides, e.g. fibre optic devices, in lighting devices or systems

- D F21V 2008/001 · of light guides of the optical fibres type
- D F21V 2008/002 · · the light being emitted at the end of the guide
- D F21V 2008/003 · · the light being emitted along at least a portion of the outer surface of the guide
- D F21V 2008/005 · · characterised by the admission of light into the guide
- D F21V 2008/006 · of light guides of a generally planar shape
- D F21V 2008/007 · of light guides doped with fluorescent agents
- D F21V 2008/008 · of hollow light guides
- F21V 9/00** **Light filters (coloured shades [F21V 1/00](#); characterised by cooling arrangements [F21V 29/502](#)); Selection of luminescent materials for light screens (luminescent materials per se [C09K 11/00](#); electroluminescent light sources [H05B 33/00](#))**
- U F21V 9/08 · for producing coloured light, e.g. monochromatic; for reducing intensity of light ([F21V 9/16](#) takes precedence)
- D F21V 2009/086 · · {for vehicle rear lights }
- F21V 11/00** **Screens not covered by groups [F21V 1/00](#), [F21V 3/00](#), [F21V 7/00](#) or [F21V 9/00](#) (characterised by cooling arrangements [F21V 29/502](#))**
- U F21V 11/06 · using crossed laminae or strips, { e.g. grid-shaped louvers}; using lattices or honeycombs
- F21V 11/065 · · {adjustable}
- U F21V 11/16 · using sheets without apertures, { i.e. masks for shielding light,}e.g. fixed ([F21V 11/02](#), [F21V 11/06](#) take precedence; { for vehicle head lamps [F21S 48/145](#)})
- U F21V 11/18 · · movable, e.g. flaps, slides
- F21V 11/183 · · · {pivotable}
- F21V 11/186 · · · {slidable}
- U F21V 14/00** **Changing the characteristics or distribution of the light emitted by adjustment of parts {or by interposition of elements with electrically controlled variable light transmissivity}{reflectors with provision for adjusting the curvature [F21V 7/16](#); light filters with provision for variation of colour or intensity [F21V 9/10](#); screens using iris-type diaphragms [F21V 11/10](#); adjustable mountings for lighting devices [F21V 21/14](#)}**
- F21V 14/006 · {by means of optical elements, e.g. films, filters or screens, being rolled up around a roller}
- F21V 15/00** **Details of those parts {Aspects not involved in related to light emission or distribution, e.g. fittings}**
- ~~F21V 99/00~~
~~F21V 2200/00~~
- F21V 15/00** **Protecting lighting devices from damage [(gas-tight or water tight arrangements [F21V 31/00](#) protection from thermal damage [F21V 29/00](#); gas-tight or water-tight arrangements [F21V 31/00](#))]**
- F21V 15/005 · {Measures against vandalism, stealing or tampering ([F21V 15/02](#), [F21V 15/04](#) take precedence)}
- U F21V 15/01 · Housings, e.g. material or assembling of housing parts ([F21V 15/02](#) takes precedence { housings forming signs or letters [G09F 13/04](#)})
- WARNING
Not complete, see [F21V 15/00](#)
- D F21V 15/011 · · {being designed to facilitate cooling}

- F21V 15/012
 - • {Housings with variable shape or dimensions, e.g. by means of elastically deformable materials or by movement of parts forming telescopic extensions of the housing body}
- D F21V 15/06
 - Thermal insulation ~~{(for vehicle head lamps F21S 48/32)}~~
- U F21V 17/00**

Fastening of component parts of lighting devices, e.g. shades, globes, refractors, reflectors, filters, screens, grids or protective cages (of light sources or light holders [F21V 19/00](#); gas-tight or water-tight arrangements [F21V 31/00](#); { for vehicle rear lights [F21S 48/20](#); for vehicle head lights [F21S 48/10](#)})
- F21V 17/002
 - {with provision for interchangeability, i.e. component parts being especially adapted to be replaced by another part with the same or a different function ([F21V 17/10](#) takes precedence)}
- F21V 17/005
 - {with keying means, i.e. for enabling the assembling of component parts in distinctive positions, e.g. for preventing wrong mounting}
- U F21V 17/10
 - characterised by specific fastening means or way of fastening ([F21V 17/02](#) to [F21V 17/08](#) take precedence)
- F21V 17/108
 - • {using hook and loop-type fasteners}
- U F21V 19/00**

Fastening of light sources or lamp holders (fastening electric light source solely by the coupling device [H01R 33/00](#); { special means for attaching candle to candle holder [F21V 35/003](#)})
- F21V 19/001
 - {the light sources being semiconductor devices, e.g. LEDs}
- F21V 19/0015
 - • {Fastening arrangements intended to retain light sources}
- F21V 19/002
 - • • {the fastening means engaging the encapsulation or the packaging of the semiconductor device}
- F21V 19/0025
 - • • {the fastening means engaging the conductors of the light source, i.e. providing simultaneous fastening of the light sources and their electric connections}
- F21V 19/003
 - • {Fastening of light source holders, e.g. of circuit boards or substrates holding light sources}
- F21V 19/0035
 - • • {the fastening means being capable of simultaneously attaching of an other part, e.g. a housing portion or an optical component}
- F21V 19/004
 - • • {by deformation of parts or snap action mountings, e.g. using clips}
- F21V 19/0045
 - • • {by tongue and groove connections, e.g. dovetail interlocking means fixed by sliding}
- F21V 19/005
 - • • {by permanent fixing means, e.g. gluing, riveting or embedding in a potting compound}
- F21V 19/0055
 - • • {by screwing}
- U F21V 19/04
 - with provision for changing light source, e.g. turret {(auxiliary devices for cleaning, placing, or removing incandescent lamps [H01K 3/32](#), fluorescent lamps [H01J 9/006](#))}
- F21V 19/042
 - • {the light source being a semiconductor, e.g. an LED}
- F21V 19/045
 - • {the light source being a semiconductor mounted on a holder, e.g. a circuit board}
- F21V 19/047
 - • {by using spare light sources comprised in or attached to the lighting device and being intended to replace a defect light source by manual mounting}
- U F21V 21/00**

Supporting, suspending, or attaching arrangements for lighting devices ([F21V 17/00](#), [F21V 19/00](#) take precedence; arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general [B60Q](#), stands for supporting apparatus or articles in general [F16M 11/00](#)); Hand grips

- U F21V 21/02
 - Wall, ceiling, or floor bases; Fixing pendants or arms to the bases ([F21V 21/08](#) takes precedence; bases for movable standing lamps [F21V 21/06](#))
- U F21V 21/04
 - • Recessed bases
- F21V 21/041
 - • • {-Mounting arrangements specially adapted for false ceiling panels or partition walls made of plates ([F21V 21/047](#) takes precedence)}
- F21V 21/042
 - • • • {-using clamping means, e.g. for clamping with panel or wall }
- F21V 21/043
 - • • • • {-actuated by screwing}
- F21V 21/044
 - • • • • {-with elastically deformable elements, e.g. spring tongues}
- F21V 21/045
 - • • • • • {-being tensioned by translation of parts, e.g. by pushing or pulling}
- F21V 21/046
 - • • • • • {-being tensioned by rotation of parts}
- F21V 21/047
 - • • {-Mounting arrangements with fastening means engaging the inner surface of a hole in a ceiling or wall, e.g. for solid walls or for blind holes}
- F21V 21/048
 - • • {-Mounting arrangements for fastening lighting devices to false ceiling frameworks}
- F21V 21/049
 - • • {-Mounting arrangements for attaching lighting devices to the ceiling, the lighting devices being recessed in a false or stretched ceiling}
- U F21V 21/08
 - Devices for easy attachment to any desired place, e.g. clip, clamp, magnet
- F21V 21/0808
 - • {-Adhesive means}
- F21V 21/0816
 - • {-Strap fasteners, e.g. fasteners with a buckle}
- F21V 21/0824
 - • {-Ground spikes}
- F21V 21/0832
 - • {-Hook and loop-type fasteners}
- F21V 23/00**
 - Arrangements *Arrangement* of electric circuit elements in or on lighting devices {(electric circuits per se H05B 39/00 characterised by cooling arrangements F21V 29/508)}**
- F21V 23/001
 - {-the elements being electrical wires or cables}
- F21V 23/002
 - • {-Arrangements of cables or conductors inside a lighting device, e.g. means for guiding along parts of the housing or in a pivoting arm}
- F21V 23/003
 - {-the elements being electronics drivers or controllers for operating the light source, e.g. for a LED array}
- F21V 23/004
 - • {-arranged on a substrate, e.g. a printed circuit board}
- F21V 23/005
 - • • {-the substrate is supporting also the light source}
- F21V 23/006
 - • • {-the substrate being distinct from the light source holder}
- F21V 23/007
 - • {-enclosed in a casing}
- F21V 23/008
 - • • {-the casing being outside the housing of the lighting device}
- F21V 23/009
 - • • {-the casing being inside the housing of the lighting device}
- U F21V 23/02
 - the elements being transformers, impedances { or power supply units, e.g. a transformer with a rectifier}
- F21V 23/023
 - • {-Power supplies in a casing ([F21V 23/003](#) takes precedence)}
- U F21V 23/04
 - the elements being switches (safety devices [F21V 25/00](#))
- F21V 23/0414
 - • {-specially adapted to be used with portable lighting devices}
- F21V 23/0421
 - • • {-the switch being part of, or disposed on the tail cap portion thereof}
- F21V 23/0428
 - • • {-the switch being part of, or disposed on the lamp head portion thereof}
- U F21V 23/0442
 - • {-activated by means of a sensor, e.g. motion or photodetectors}
- F21V 23/045
 - • • {-the sensor receiving a signal from a remote controller}
- F21V 23/0457
 - • • {-the sensor sensing the operating status of the lighting device, e.g. to detect failure of a light source or to provide feedback to the device}

- F21V 23/0464
 - • • {the sensor sensing the level of ambient illumination, e.g. dawn or dusk sensors}
- F21V 23/0471
 - • • {the sensor detecting the proximity, the presence or the movement of an object or a person}
- F21V 23/0478
 - • • • {by means of an image recording device, e.g. a camera}
- F21V 23/0485
 - • • {the sensor sensing the physical interaction between a user and certain areas located on the lighting device, e.g. a touch sensor}
- F21V 23/0492
 - • • {the sensor detecting a change in orientation, a movement or an acceleration of the lighting device, e.g. a tilt switch}
- U F21V 25/00**

Safety devices structurally associated with lighting devices (gas-tight or water-tight arrangements [F21V 31/00](#); in general [F16P](#); protective circuit arrangements per se [H02H 7/00](#))
- U F21V 25/12
 - Flame-proof or explosion-proof arrangements
- F21V 25/125
 - • {using intumescent material, i.e. using materials which swells up as a result of heat exposure }
- F21V 27/00**

Cable-stowing arrangements structurally associated with lighting devices, e.g. reels (storing lengths of cable in general [B65H](#)){ the lighting devices being vehicle headlamps [F21S 48/1109](#); the lighting devices being vehicle lights [F21S 48/212](#)}

Project: RP0116 (F21V)

- F21V 29/00** *Protecting lighting devices from thermal damage; Cooling or heating arrangements specially adapted for lighting devices or systems (reflectors specially adapted for cooling [F21V 7/20](#); cooling of air-treatment systems with air-flow over lighting fixtures [F24F 3/056](#); lighting fixtures combined with outlets for air-treatment systems [F24F 13/078](#); cooling of projectors [G03B 21/16](#) { ~~cooling of lighting devices or systems specially adapted for vehicles [F21S 48/32](#)~~})*

WARNING

Groups [F21V 29/20](#) to [F21V 29/40](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows:
[F21V 29/20](#)-[F21V 29/40](#) : [F21V 29/00](#)

Groups [F21V 29/002](#) - [F21V 29/006](#), [F21V 29/02](#), [F21V 29/20](#), [F21V 29/22 12](#), [F21V 29/30](#), [F21V 29/40](#), and [F21V 29/402](#) are no longer used for the classification of documents as of January 15, 2015. The backfile of these groups is being reclassified into groups [F21V 29/002](#) - [F21V 29/89](#).

Until reclassification is complete, groups [F21V 29/002](#) - [F21V 29/006](#) and [F21V 29/02](#), [F21V 29/20](#), [F21V 29/22 12](#), [F21V 29/30](#), [F21V 29/40](#), and [F21V 29/402](#) should be considered in order to perform a complete search.

Project: N/A (F21V)

- F21V 29/002
 - {Cooling arrangements ([F21V 29/02](#) takes precedence)}

WARNING

Group [F21V 29/002](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/00](#) - [F21V 29/89](#).

Until reclassification is complete, group [F21V 29/002](#) should also be considered in order to perform a complete search.

- F21V 29/004
- {Natural cooling, i.e. by natural convection, conduction or radiation}
- WARNING**
Group F21V 29/004 is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/00](#) - [F21V 29/89](#).
- Until reclassification is complete, group [F21V 29/004](#) should also be considered in order to perform a complete search.*
- F21V 29/006
- {Cooling devices or systems using condensation or evaporation of a fluid, e.g. heat pipes or two phase cooling systems}
- WARNING**
Group F21V 29/006 is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/51](#) and [F21V 29/52](#).
- Until reclassification is complete, groups [F21V 29/006](#), [F21V 29/51](#) and [F21V 29/52](#) should also be considered in order to perform a complete search.*
- D F21V 29/008
- {Heating arrangements (heating arrangements structurally associated with electric lamps [H01J 61/52](#))}
- WARNING**
 not complete, see [F21S 48/335](#), [F21V 29/00](#)
- F21V 29/02
- Cooling by forcing air { or gas} over or around the light source (cooling arrangements structurally associated with electric { discharge or incandescent} lamps [H01J 61/52](#), [H01K 1/58](#))
- WARNING**
Group [F21V 29/02](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/503](#), and [F21V 29/60](#) - [F21V 29/89](#).
- Until reclassification is complete, group [F21V 29/02](#) should also be considered in order to perform a complete search.*
- D F21V 29/022
- {wherein the circuit for air or gas circulation is a closed cavity}
- D F21V 29/025
- {using fans for intake}
- D F21V 29/027
- {using fans for discharging}
- N F21V 29/10
- Arrangement of heat-generating components to reduce thermal damage, e.g. by distancing heat-generating components from other components to be protected
- WARNING**
 Group [F21V 29/10](#) is incomplete pending reclassification of documents from groups [F21V 29/002](#), [F21V 29/004](#) and [F21V 29/02](#).
- Until reclassification is complete, groups [F21V 29/002](#), [F21V 29/004](#) and [F21V 29/02](#) should also be considered in order to perform a complete search.*
- N F21V 29/15
- Thermal insulation
- F21V 29/20
- {Cooling devices, cooling systems or arrangements thereof}
- WARNING**
Group [F21V 29/20](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/00](#) - [F21V 29/89](#).

Until reclassification is complete, group F21V 29/20 should also be considered in order to perform a complete search.

- D F21V 29/22 • {being heatsinks with heat dissipating means}
- D F21V 29/2206 • • {the heat dissipating means being fins or blades}
- F21V 29/2212 • • → {the fins or blades being planar}

WARNING

Group F21V 29/2212 is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups F21V 29/76 - F21V 29/78.

Until reclassification is complete, group F21V 29/2212 should also be considered in order to perform a complete search.

- D F21V 29/2218 • • • • {the planes being inclined with respect to the joining surfaces of the heatsinks}
- D F21V 29/2225 • • • • {the planes converging with planes of other planar fins or blades}
- D F21V 29/2231 • • • • • {the axis of convergence having the same direction as the emitted light axis}
- D F21V 29/2237 • • • • • {the axis of convergence being perpendicular to the emitted light axis}
- D F21V 29/2243 • • • • • {in parallel arrangement with another plane containing the fins or blades, e.g. pectinated fins}
- D F21V 29/225 • • • • • {the planes being parallel to the emitted light axis}
- D F21V 29/2256 • • • • • {the planes being perpendicular to the emitted light axis}
- D F21V 29/2262 • • • • {having an arrangement of a plurality of fins or blades characterised by different areas of heat exchange, e.g. variable thicknesses of the fins or blades, different heights, different spacing between consecutive fins or blades, or variable pitches}
- D F21V 29/2268 • • • • {the fins or blades being wrapped around an axis, e.g. as spiral fins, helical fins or fins wrapped around the emitted light axis}
- D F21V 29/2275 • • • {the heat dissipating means being wire-like or pin-like cooling means}
- D F21V 29/2281 • • • • {being inclined with respect to the joining surfaces of the heatsink}
- D F21V 29/2287 • • • • {having an arrangement of a plurality of wire-like or pin-like cooling means characterised by different areas of heat exchange, e.g. variable thicknesses of the fins, different heights, different spacing between consecutive fins, or variable pitch}
- D F21V 29/2293 • • • {the heat sink having an arrangement of apertures, ducts or channels; the ducts or channels being in the body of the heatsink}
- D F21V 29/24 • • {characterised by the selection of materials or liquid for the cooling device}
- D F21V 29/242 • • • {Ceramics or glass}
- D F21V 29/244 • • • {Organics with or without thermo-conductive additives or coatings, e.g. filled polymer composites or with additives using nano particles}
- D F21V 29/246 • • • {Metals}
- D F21V 29/248 • • • {Cooling liquids}
- D F21V 29/26 • • {Cooling with an arrangement of a plurality of heatsink units}
- D F21V 29/262 • • • {in direct thermal and mechanical contact to each other to form a single system}
- D F21V 29/265 • • • {using split and remote units thermally interconnected, e.g. by thermally conductive bars or heat pipes}

- D F21V 29/267
- • {the units being adjustable with respect to each other, e.g. hinged heatsink units}
- F21V 29/30
- {Forced cooling using liquids, e.g. water}
- WARNING**
- Group [F21V 29/30](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/56](#) - [F21V 29/59](#).*
- Until reclassification is complete, groups [F21V 29/30](#) should also be considered in order to perform a complete search.*
- F21V 29/40
- {Forced cooling by electrically-powered actuators (fans ~~[F21V 29/025](#)~~ [F21V 29/025](#))}
- WARNING**
- Groups [F21V 29/40](#) and [F21V 29/402](#) are no longer used for the classification of documents as of January 15, 2015. The backfile of these groups is being reclassified into groups [F21V 29/51](#) - [F21V 29/677](#).*
- Until reclassification is complete, groups [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.*
- F21V 29/402
- • {Multi-phase cooling systems actuated by pumps}
- D F21V 29/405
- • {Cooling systems using a fluid actuated by vibrating means or using a ionic wind}
- D F21V 29/407
- • {Cooling systems using the Peltier effect}
- N F21V 29/50
- Cooling arrangements (air-treatment systems dissipating or using the heat of lighting fixtures [F24F 3/056](#))
- WARNING**
- Groups [F21V 29/50](#) - [F21V 29/503](#) are incomplete pending reclassification of documents from groups [F21V 29/002](#), [F21V 29/004](#), and [F21V 29/02](#).*
- Until reclassification is complete, groups [F21V 29/002](#), [F21V 29/004](#), and [F21V 29/02](#) should also be considered in order to perform a complete search.*
- N F21V 29/502
- • characterised by the adaption for cooling of specific components
- N F21V 29/503
- • • of light sources (cooling arrangements structurally associated with gas-discharge or vapour-discharge lamps [H01J 61/52](#); cooling arrangements structurally associated with electric incandescent lamps [H01K 1/58](#); cooling arrangements structurally associated with light-emitting diodes [H01L 33/64](#))
- N F21V 29/504
- • • of refractors
- N F21V 29/505
- • • of reflectors
- N F21V 29/506
- • • of globes, bowls or cover glasses
- N F21V 29/507
- • • of means for protecting lighting devices from damage, e.g. housings
- N F21V 29/508
- • • of electrical circuits
- N F21V 29/51
- • using condensation or evaporation of a fluid, e.g. heat pipes
- WARNING**
- Groups [F21V 29/51](#) - [F21V 29/52](#) are incomplete pending reclassification of documents from groups [F21V 29/006](#), [F21V 29/40](#), and [F21V 29/402](#).*
- Until reclassification is complete, groups [F21V 29/006](#), [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.*

- N F21V 29/52
- • • electrically powered, e.g. refrigeration systems
- N F21V 29/54
- • using thermoelectric means, e.g. Peltier elements
- WARNING
- Group [F21V 29/54](#) is incomplete pending reclassification of documents from groups [F21V 29/40](#) and [F21V 29/402](#).
- Until reclassification is complete, groups [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.
- N F21V 29/56
- • using liquid coolants ([F21V 29/51](#) takes precedence)
- WARNING
- Groups [F21V 29/56](#) - [F21V 29/59](#) are incomplete pending reclassification of documents from groups [F21V 29/30](#), [F21V 29/40](#) and [F21V 29/402](#)
- Until reclassification is complete, groups [F21V 29/30](#), [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.
- N F21V 29/57
- • • characterised by control arrangements
- N F21V 29/58
- • • characterised by the coolants
- N F21V 29/59
- • • {with forced flow of the coolant}
- N F21V 29/60
- • characterised by the use of a forced flow of gas, e.g. air
- WARNING
- Groups [F21V 29/60](#) - [F21V 29/677](#) are incomplete pending reclassification of documents from groups [F21V 29/02](#), [F21V 29/40](#) and [F21V 29/402](#)
- Until reclassification is complete, groups [F21V 29/02](#), [F21V 29/40](#) and [F21V 29/402](#) should also be considered in order to perform a complete search.
- N F21V 29/61
- • • characterised by control arrangements
- N F21V 29/63
- • • using electrically-powered vibrating means; using ionic wind
- N F21V 29/65
- • • the gas flowing in a closed circuit
- N F21V 29/67
- • • characterised by the arrangement of fans
- N F21V 29/673
- • • • {the fans being used for intake}
- N F21V 29/677
- • • • {the fans being used for discharging}
- N F21V 29/70
- • characterised by passive heat-dissipating elements, e.g. heat-sinks
- WARNING
- Groups [F21V 29/70](#) - [F21V 29/83](#) are incomplete pending reclassification of documents from group [F21V 29/02](#).
- Until reclassification is complete, group [F21V 29/02](#) should be considered in order to perform a complete search.
- N F21V 29/71
- • • using a combination of separate elements interconnected by heat-conducting means, e.g. with heat pipes or thermally conductive bars between separate heat-sink elements
- N F21V 29/713
- • • • {in direct thermal and mechanical contact of each other to form a single system}
- N F21V 29/717
- • • • {using split or remote units thermally interconnected, e.g. by thermally conductive bars or heat pipes}
- N F21V 29/73
- • • the elements being adjustable with respect to each other, e.g. hinged

- N F21V 29/74 . . . with fins or blades
- N F21V 29/745 {the fins or blades being planar and inclined with respect to the joining surface from which the fins or blades extend}
- N F21V 29/75 with fins or blades having different shapes, thicknesses or spacing
- N F21V 29/76 with essentially identical parallel planar fins or blades, e.g. with comb-like cross-section
- WARNING
Groups [F21V 29/76](#) - [F21V 29/767](#) are incomplete pending reclassification of documents from group [F21V 29/2212](#).
- Until reclassification is complete, group [F21V 29/2212](#) should also be considered in order to perform a complete search.
- N F21V 29/763 {the planes containing the fins or blades having the direction of the light emitting axis}
- N F21V 29/767 {the planes containing the fins or blades having directions perpendicular to the light emitting axis}
- N F21V 29/77 with essentially identical diverging planar fins or blades, e.g. with fan-like or star-like cross-section
- WARNING
Groups [F21V 29/77](#) - [F21V 29/777](#) are incomplete pending reclassification of documents from group [F21V 29/2212](#).
- Until reclassification is complete, group [F21V 29/2212](#) should also be considered in order to perform a complete search.
- N F21V 29/773 {the planes containing the fins or blades having the direction of the light emitting axis}
- N F21V 29/777 {the planes containing the fins or blades having directions perpendicular to the light emitting axis}
- N F21V 29/78 with helically or spirally arranged fins or blades
- WARNING
Group [F21V 29/78](#) is incomplete pending reclassification of documents from group [F21V 29/2212](#).
- Until reclassification is complete, group [F21V 29/2212](#) should also be considered in order to perform a complete search.
- N F21V 29/80 . . . with pins or wires
- N F21V 29/81 with pins or wires having different shapes, lengths or spacing
- N F21V 29/83 . . . the elements having apertures, ducts or channels, e.g. heat radiation holes
- N F21V 29/85 . . . characterised by the material (liquid coolants [F21V 29/56](#))
- WARNING
Groups [F21V 29/85](#) - [F21V 29/89](#) are incomplete pending reclassification of documents from group [F21V 29/02](#).
- Until reclassification is complete, group [F21V 29/02](#) should also be considered in order to perform a complete search.
- N F21V 29/86 . . {Ceramics or glass}
- N F21V 29/87 . . Organic material, e.g. filled polymer composites; Thermo-conductive additives or coatings therefor
- N F21V 29/89 . . Metals

- N* F21V 29/90 · Heating arrangements
- U** F21V 31/00 **Gas-tight or water-tight arrangements**
 F21V 31/005 · {-Sealing arrangements therefor}
 F21V 31/04 · Provision of filling media (safety devices [F21V 25/00](#); cooling arrangements ~~F21V 29/00~~[F21V 29/50](#))
- U** F21V 33/00 **Structural combinations of lighting devices with other articles, not otherwise provided for**
 F21V 33/0088 · {-Ventilating systems (lighting fixtures combined with outlets for air treatment systems [F24F 13/078](#))}
 F21V 33/0096 · {-Fans, e.g. ceiling fans (~~forced cooling for lighting devices F21V 29/02~~[forced cooling of lighting devices characterised by the arrangement of fans F21V 29/67](#))}
- N** F21V 2200/00 **Use of light guides, e.g. fibre optic devices, in lighting devices or systems**
N F21V 2200/10 · of light guides of the optical fibres type
N F21V 2200/13 · · the light being emitted at the end of the guide
N F21V 2200/15 · · the light being emitted along at least a portion of the outer surface of the guide
N F21V 2200/17 · · characterised by the admission of light into the guide
N F21V 2200/20 · of light guides of a generally planar shape
N F21V 2200/30 · of light guides doped with fluorescent agents
N F21V 2200/40 · of hollow light guides

Project: N/A (F21Y)

- U** F21Y 2105/00 **Planar light sources**
U F21Y 2105/001 · 2D-array of LEDs
 F21Y 2105/003 · {-characterised by the geometrical disposition of the LEDs, e.g. spacing thereof to create different densities, arrangement of LEDs of different colours in a specific pattern}
 F21Y 2105/005 · {-the substrate or the support being planar but the LEDs not being in the same plane or not having the same orientation, e.g. plate shaped support with steps on which LEDs are mounted}
- U** F21Y 2111/00 **Light sources of form not covered by preceding groups**
 F21Y 2111/001 · {-Non-planar or three-dimensional arrangements of LEDs}
 F21Y 2111/002 · {-the LEDs being disposed on a concave support or substrate, e.g. on the inner side of a bowl shaped support}
 F21Y 2111/004 · {-the LEDs being disposed on a convex support or substrate, e.g. on the outer surface of a portion of a sphere}
 F21Y 2111/005 · {-the LEDs being disposed on the outer surface of a cylinder, e.g. rod shaped support having a circular or a polygonal cross section}
 F21Y 2111/007 · {-the LEDs being on the sides of a polyhedron, e.g. a cube or a pyramid}
 F21Y 2111/008 · {-Assemblies consisting of stacked substrates supporting the LEDs}

Project: N/A (F22B)

- U** F22B 1/00 **Methods of steam generation characterised by form of heating method (solar heating [F24J](#); jackets or other cooling means in which steam is generated and which serve for cooling other apparatus, see the subclasses for such apparatus)**

- F22B 1/006
 - {-using solar heat (solar heat collectors per se [F24J 2/00](#); devices for producing mechanical power from solar energy [F03G 6/00](#))}
- U F22B 1/02
 - by exploitation of the heat content of hot heat carriers
- U F22B 1/06
 - • the heat carrier being molten; Use of molten metal, e.g. zinc, as heat transfer medium
- F22B 1/063
 - • • {-for metal cooled nuclear reactors (heat-exchangers having a liquid metal as heat exchange medium [F28D7/00C](#))}
- U **F22B 13/00**

Steam boilers of fire-box type, i.e. the combustion of fuel being performed in a chamber or fire-box with subsequent flue(s) or fire tube(s), both chamber or fire-box and flues or fire tubes being built-in in the boiler body
- F22B 13/005
 - {-with flues, other than fire tubes}
- U **F22B 21/00**

Water-tube boilers of vertical or steeply-inclined type, i.e. the water-tube sets being arranged vertically or substantially vertically
- F22B 21/002
 - {-involving a single upper drum ([F22B 21/36](#) takes precedence)}
- U F22B 21/02
 - built-up from substantially straight water tubes
- U F22B 21/04
 - • involving a single upper drum and a single lower drum, e.g. the drums being arranged transversely
- U F22B 21/08
 - • • the water tubes being arranged sectionally in groups or in banks, e.g. bent over at their ends
- F22B 21/088
 - • • • {-involving an upper drum and a lower drum and two lateral drums}
- U F22B 21/12
 - • involving two or more upper drums and two or more lower drums, e.g. with crosswise-arranged water-tube sets in abutting connections with drums
- F22B 21/126
 - • • {-involving more than two lower or upper drums}
- U F22B 21/34
 - built-up from water tubes grouped in panel form surrounding the combustion chamber, i.e. radiation boilers
- F22B 21/341
 - • {-Vertical radiation boilers with combustion in the lower part}
- F22B 21/346
 - • {-Horizontal radiation boilers}
- U **F22B 29/00**

Steam boilers of forced-flow type
- U F22B 29/02
 - of forced-circulation type {([F22B 29/06](#) takes precedence)}
- F22B 29/023
 - • {-without drums, i.e. without hot water storage in the boiler}
- U **F22B 37/00**

Component parts or details of steam boilers (venting devices [F16K 24/00](#); steam traps or like apparatus [F16T](#))
- U F22B 37/002
 - {specially adapted for nuclear steam generators, e.g. maintenance, repairing or inspecting equipment not otherwise provided for}
- U F22B 37/003
 - • {Maintenance, repairing or inspecting equipment positioned in or via the headers}
- F22B 37/005
 - • • {-Positioning apparatus specially adapted therefor ([F22B 37/64](#) takes precedence)}
- F22B 37/008
 - {-Adaptations for flue gas purification in steam generators, (flue gas purification in general [F23J](#); gas purification in general [B01D](#))}
- U F22B 37/02
 - applicable to more than one kind or type of steam boiler
- U F22B 37/10
 - • Water tubes; Accessories therefor (working of metal tubes [B21D](#); pipes in general [F16L](#); repairing leaks in water tubes [F16L 55/16](#); [F28F 11/00](#); baffles, screens, or deflectors formed of water tubes [F23M 9/10](#); cleaning internal or external surfaces of water tubes [F28G](#))
- F22B 37/104
 - • • {-Connection of tubes one with the other or with collectors, drums or distributors (in general [F16L](#))}

- U F22B 37/26
- • Steam-separating arrangements (vapour-liquid separators, e.g. for drying steam, [B01D](#); [B04](#))
- F22B 37/265
- • • {-Apparatus for washing and purifying steam}

Project: N/A (F22D)

F22D

PREHEATING, OR ACCUMULATING PREHEATED, FEED-WATER ; -FEED-WATER SUPPLY ; -CONTROLLING WATER LEVEL ; -AUXILIARY DEVICES FOR PROMOTING WATER CIRCULATION WITHIN BOILERS (-chemical treatment of water, e.g. purification, [C02F](#) ; enclosed heat-exchange apparatus in general [F28D](#) ; controlling in general [G05-](#))

Project: N/A (F22G)

U F22G 7/00

Steam superheaters characterised by location, arrangement, or disposition

U F22G 7/14

- in water-tube boilers, e.g. between banks of water tubes

F22G 7/145

- • {-of inclined type, i.e. the water-tube sets being inclined with respect to the horizontal plane}

Project: N/A (F23B)

F23B 1/00

Combustion apparatus using only lump fuel

F23B 1/02

- for indirect heating of a medium in a vessel, e.g. for boiling water (steam generation [F22](#))

F23B 1/04

- • External furnaces, i.e. with furnace in front of the vessel

F23B 1/06

- • • for heating water-tube boilers, e.g. Tenbrink flue furnaces

F23B 1/08

- • Internal furnaces, i.e. with furnaces inside the vessel

F23B 1/10

- • • for heating locomotive boilers

F23B 1/12

- • with a plurality of combustion chambers

F23B 1/16

- the combustion apparatus being modified according to the form of grate or other fuel support (for incinerators [F23G 5/002](#))

F23B 1/18

- • using inclined grate

F23B 1/20

- • using step-type grate

F23B 1/22

- • using travelling grate

F23B 1/24

- • using rotating grate

F23B 1/26

- • using imperforate fuel supports

F23B 1/28

- • using ridge-type grate, e.g. for combustion of peat, sawdust, or pulverulent fuel (combustion of peat, sawdust [F23G 7/10](#))

F23B 1/30

- characterised by the form of combustion chamber

F23B 1/32

- • rotating

F23B 1/34

- • annular

F23B 1/36

- • shaft-type

F23B 1/38

- • for combustion of peat, sawdust, or pulverulent fuel on a grate or other fuel support (combustion of peat, sawdust [F23G 7/10](#))

F23B 3/00

Combustion apparatus which is portable or removable with respect to the boiler or other apparatus which is heated

F23B 5/00

Combustion apparatus with arrangements for burning uncombusted material from primary combustion (combustion apparatus characterised by the combination of two or more combustion chambers [F23C 6/00](#); the primary combustion being pulverulent fuel [F23C 9/003](#))

F23B 5/02

- in main combustion chamber

- F23B 5/04 · in separate combustion chamber; -on separate grate
- F23B 7/00 Combustion techniques; -Other solid-fuel combustion apparatus**
- F23B 10/00 Combustion apparatus characterised by the combination of two or more combustion chambers**

Project: N/A (F23C)

- F23C COMBUSTION APPARATUS USING FLUENT FUEL (combustion apparatus for solid fuel only [F23B](#); burners [F23D](#); constructional details of combustion chambers not otherwise provided for [F23M](#); combustion chambers for generating combustion products of high pressure or high velocity [F23R](#))**
- F23C 1/00 Combustion apparatus specially adapted for combustion of two or more kinds of fuel simultaneously or alternately, at least one kind of fuel being fluent (-combustion apparatus characterised by the combination of two or more combustion chambers [F23C 6/00](#) ; pilot flame igniters [F23Q 9/00](#)-)**
- U F23C 3/00 Combustion apparatus characterised by the shape of the combustion chamber**
- F23C 3/004 · {the chamber being arranged for submerged combustion (-[F23C 3/002](#) takes precedence-)}
- F23C 3/006 · {the chamber being arranged for cyclonic combustion (-for waste [F23G 5/32](#)-)}
- F23C 5/00 Disposition of burners with respect to the combustion chamber or to one another; Mounting of burners in combustion apparatus (-[F23C 1/00](#) , [F23C 15/00](#) take precedence-)**
- U F23C 5/08 · Disposition of burners**
- F23C 5/14 · · to obtain a single flame of concentrated or substantially planar form, e.g. pencil or sheet flame (-[F23C 5/32](#) takes precedence-)
- F23C 6/00 Combustion apparatus characterised by the combination of two or more combustion chambers {or combustion zones, e.g. for staged combustion}**
- F23C 6/04 · in series connection (-consuming smoke or fumes in separate combustion apparatus [F23G 7/06](#)-)
- F23C 6/042 · · {with fuel supply in stages (-for staged combustion [F23C 6/047](#)-)}
- F23C 7/00 Combustion apparatus characterised by arrangements for air supply (-inlets for fluidisation air [F23C 10/20](#)-)**
- F23C 7/002 · {the air being submitted to a rotary or spinning motion (-cyclonic combustion chamber [F23C 3/006](#)-)}
- F23C 7/008 · {Flow control devices (-[F23C 7/006](#) takes precedence-)}
- F23C 7/02 · Disposition of air supply not passing through burner (-to obtain a cyclonic tapering flame when burning pulverulent fuel [F23C 5/32](#)-)
- F23C 7/06 · · for heating the incoming air (-arrangements of regenerators and recuperators [F23L 15/00](#)-)
- F23C 9/00 Combustion apparatus characterised by arrangements for returning combustion products or flue gases to the combustion chamber (-fluidised bed combustion apparatus with means for recirculation of particles entrained from the bed [F23C 10/02](#) ; fluidised bed combustion apparatus with devices for removal and partial reintroduction of material from the bed [F23C 10/26](#)-)**
- F23C 9/003 · {for pulverulent fuel (-for fluidized bed [F23C 10/02](#)-)}
- U F23C 10/00 Fluidised bed combustion apparatus**

- F23C 10/002 · {for pulverulent solid fuel (~~F23C 10/005 to F23C 10/32 take precedence~~)}
- U F23C 10/18 · Details; Accessories
- F23C 10/22 · · Fuel feeders specially adapted for fluidised bed combustion apparatus (~~F23C 10/26 takes precedence~~)
- F23C 10/24 · · Devices for removal of material from the bed (~~devices for controlling the level of the bed or the amount of material in the bed F23C 10/30~~)
- F23C 13/00 Apparatus in which combustion takes place in the presence of catalytic material (~~in a fluidised bed of catalytic particles F23C 10/01 ; radiant gas burners using catalysis for flameless combustion F23D 14/18~~)**
- F23C 15/00 Apparatus in which combustion takes place in pulses influenced by acoustic resonance in a gas mass (~~for generating combustion products of high pressure or high velocity F23R 7/00 ; starting devices F23D 11/42~~)**
- U **F23C 99/00 Subject-matter not provided for in other groups of this subclass**
- F23C 99/001 · {Applying electric means or magnetism to combustion (~~for combustion engines F02B 51/04 , F02M 27/04~~)}
- F23C 99/003 · {Combustion process using sound or vibrations (~~for combustion engines F02B 51/06 , F02M 27/08 ; liquid fuel burners using ultrasonic means for spraying the fuel F23D 11/34~~)}
- F23C 99/005 · {Suspension-type burning, i.e. fuel particles carried along with a gas flow while burning (~~fluidized-bed combustion apparatus F23C 10/00~~)}
- F23C 99/006 · {Flameless combustion stabilised within a bed of porous heat-resistant material (~~F23C 13/00 takes precedence; gas burners with radiant combustion on a porous surface F23D 14/16~~)}
- U **F23C 2203/00 Flame cooling methods otherwise than by staging or recirculation**
- F23C 2203/20 · using heat absorbing device in flame (~~F23C 2203/10 takes precedence~~)
- U **F23C 2900/00 Special features of, or arrangements for combustion apparatus using fluid fuels or solid fuels suspended in air; Combustion processes therefor**
- F23C 2900/03003 · Annular combustion chambers (~~for gas turbines F23R 3/50~~)

Project: N/A (F23D)

- U **F23D 11/00 Burners using a direct spraying action of liquid droplets or vaporised liquid into the combustion space (spraying in general B05B, B05D)**
- U F23D 11/36 · Details {e.g. burner cooling means, noise reduction means}
- U F23D 11/44 · · Preheating devices; Vaporising devices (vaporising devices per se F23K 5/22)
- F23D 11/441 · · · {Vaporizing devices incorporated with burners}
- U **F23D 21/00 Burners not otherwise provided for**
- NOTE
{ combinations of spraying or vaporising means covered by sub-groups F23D 5/00 and F23D 21/00 are classified in F23D 11/008}
- F23D 21/005 · {specially adapted for use in particular heating operations}
- U **F23D 99/00 Subject matter not provided for in other groups of this subclass**
- F23D 99/003 · {specially adapted for use in particular heating operations}
- F23D 99/006 · · {for heating liquids, e.g. for vaporising, for concentrating}
- U **F23D 2900/00 Special features of, or arrangements for burners using fluid fuels or solid fuels suspended in a carrier gas**

- F23D 2900/00006
- Liquid fuel burners using pure oxygen or O₂-enriched air as oxidant (for gaseous fuels [F23D 14/32](#))

Project: N/A (F23J)

- U F23J 15/00** Arrangement of devices for treating smoke or fumes (treating smoke or fumes, see the relevant class for the treatment, e.g. [B01D 53/00](#))
- U F23J 15/02** • of purifiers, e.g. for removing noxious material (traps for solid {deposits} [F23J 3/04](#))
- F23J 15/022 • • {-for removing solid particulate material from the gasflow}
- U F23J 2211/00** Flue gas duct systems
- F23J 2211/10 • Balanced flues (*combining air supply and flue gas exhaust*)~~(combining air supply and flue gas exhaust)~~
- U F23J 2217/00** Intercepting solids
- F23J 2217/50 • by cleaning fluids (*washers or scrubbers*)~~(washers or scrubbers)~~

Project: N/A (F23L)

- U F23L 7/00** Supplying non-combustible liquids or gases, other than air, to the fire, e.g. oxygen, steam
- U F23L 7/002** • {Supplying water}
- F23L 7/005 • • {-Evaporated water; Steam}

Project: N/A (F23M)

- F23M** **CASINGS, LININGS, WALLS OR DOORS SPECIALLY ADAPTED FOR COMBUSTION CHAMBERS, e.g. FIREBRIDGES; DEVICES FOR DEFLECTING AIR, FLAMES OR COMBUSTION PRODUCTS IN COMBUSTION CHAMBERS; SAFETY ARRANGEMENTS SPECIALLY ADAPTED FOR COMBUSTION APPARATUS; ~~CONSTRUCTION~~-DETAILS OF COMBUSTION CHAMBERS, NOT OTHERWISE PROVIDED FOR (~~construction or support of tube walls for steam boilers F22B; generating combustion products of high pressure or high velocity F23R~~)**
- F23M 3/00** Firebridges ~~(baffles non confining the fire F23M 9/06)~~
- F23M 5/00** Casings; -Linings; -Walls (~~casings, linings, or walls of heat-treatment chambers of ovens, kilns, or retorts F27D~~*construction or support of tube walls for steam boilers F22B*)
- F23M 7/00** Doors ~~specifically adapted for combustion chambers (in general E06B; for flues or smoke-boxes F23J 13/08)~~
- F23M 9/00** Baffles or deflectors for air or combustion products (*structurally associated with burners F23D*); ~~Flame shields~~
- F23M 9/04 • with air- supply passages in the baffle or shield
- F23M 11/00** Safety arrangements (~~by controlling combustion F23N 5/24~~*structurally associated with burners F23D; for liquid fuel feeding F23K 5/16; involving control of combustion F23N 5/24; structurally associated with igniters F23Q*)
- N F23M 20/00** Details of combustion chambers, not otherwise provided for {, e.g. means for storing heat from flames}
- N F23M 20/005** • {Noise absorbing means}

- D F23M 99/00** **Subject matter not provided for in other groups of this subclass, { e.g. heat storage from flames}**
- D F23M 99/005** · {Noise absorbing means}

Project: N/A (F23N)**F23N**

REGULATING OR CONTROLLING COMBUSTION (-control devices specially adapted for fluidised-bed combustion apparatus [F23C 10/28](#) ; condition reponsive controls for regulating combustion in domestic stoves with open fires for solid fuel [F24B 1/187](#)-)

U F23N 1/00

Regulating fuel supply

- F23N 1/002** · {using electronic means (-[F23N 1/04](#) to [F23N 1/10](#) take precedence-)}
- F23N 1/005** · {using electrical or electromechanical means (-[F23N 1/04](#) to [F23N 1/10](#) take precedence-)}
- F23N 1/007** · {using mechanical means (-[F23N 1/04](#) to [F23N 1/10](#) take precedence-)}

F23N 3/00

Regulating air supply or draught (-conjointly with fuel supply [F23N 1/00](#)-)

- F23N 3/002** · {using electronic means (-[F23N 3/02](#) to [F23N 3/08](#) take precedence-)}
- F23N 3/005** · {using electrical or electromechanical means (-[F23N 3/02](#) to [F23N 3/08](#) take precedence-)}
- F23N 3/007** · {using mechanical means (-[F23N 3/02](#) to [F23N 3/08](#) take precedence-)}
- F23N 3/06** · by conjoint operation of two or more valves or dampers (-[F23N 3/08](#) takes precedence-)

F23N 5/00

Systems for controlling combustion (-[F23N 1/00](#) , [F23N 3/00](#) take precedence-)

- F23N 5/003** · {using detectors sensitive to combustion gas properties (-[F23N 5/02](#) , [F23N 5/18](#) to [F23N 5/26](#) take precedence-)}
- U F23N 5/02** · using devices responsive to thermal changes or to thermal expansion of a medium
- F23N 5/022** · · {using electronic means (-[F23N 5/04](#) to [F23N 5/14](#) take precedence-)}
- F23N 5/025** · · {using electrical or electromechanical means (-[F23N 5/04](#) to [F23N 5/14](#) take precedence-)}
- F23N 5/027** · · {using mechanical means (-[F23N 5/04](#) to [F23N 5/14](#) take precedence-)}
- F23N 5/12** · · using ionisation-sensitive elements, i.e. flame rods{(-testing of other ignition means, e.g. flame [F02P 17/12](#) ; analysing gases by investigating the ionisation by using heat [G01N 27/626](#)-)}
- F23N 5/24** · Preventing development of abnormal or undesired conditions, i.e. safety arrangements (-[F23N 5/02](#) to [F23N 5/18](#) take precedence-)

U F23N 2027/00

Ignition or checking

- F23N 2027/22** · Pilot burners (-ignition circuits therefor [F23N 2027/32](#)-)

F23N 2037/00

Controlling (-[F23N 5/00](#) takes precedence-)

Project: N/A (F23Q)**U F23Q 2/00**

Lighters containing fuel, e.g. for cigarettes

- U F23Q 2/16** · Lighters with gaseous fuel, e.g. the gas being stored in liquid phase

- F23Q 2/161
- • {-with friction wheel}
- WARNING
groups [F23Q 2/161](#) and [F23Q 2/165](#) are not complete, pending reorganisation. See also [F23Q 2/16](#)
- U F23Q 2/162
- • {-with non-adjustable gas flame (if electrically ignited [F23Q 2/28](#))}
- F23Q 2/163
- • • {Burners (*gas valves*);(*gas valves*)}
- F23Q 2/165
- • {-with more than one flame}
- U F23Q 2/32
- Lighters characterised by being combined with other objects (combinations with smokers` equipment [A24F](#))
- F23Q 2/325
- • {-combined with clock, timer or counter}
- WARNING
groups [F23Q 2/325](#) is not complete, pending reorganisation. See also [F23Q 2/32](#)
- U F23Q 2/34
- Component parts or accessories
- F23Q 2/345
- • {-Scent-distribution or flame-colouring devices}
- WARNING
[N: WARNING, groups [F23Q 2/345](#) is not complete, pending reorganisation. See also [F23Q 2/34](#)
- U F23Q 2/36
- • Casings
- F23Q 2/365
- • • {-Tabletop lighters}
- WARNING
groups [F23Q 2/365](#) is not complete, pending reorganisation. See also [F23Q 2/36](#)
- U **F23Q 13/00**
- Igniters not otherwise provided for**
- F23Q 13/005
- • {-using light, e.g. sunlight or laser}

Project: N/A (F24B)

- U **F24B 1/00**
- Stoves or ranges**
- U F24B 1/02
- Closed stoves
- F24B 1/04
- • built-up from glazed tiles (~~-F24B 1/08~~ , [F24B 1/14](#) take precedence-)
- F24B 1/06
- • • Construction of tiles and bracing means therefor, e.g. shim liner (~~-forming of tiles [B28B](#) ; glazing of tiles [C04B](#)-)~~
- U F24B 1/08
- • with fuel storage in a single undivided hopper within stove or range
- F24B 1/10
- • • with combustion in horizontal direction (~~-F24B 1/14~~ takes precedence-)
- U F24B 1/18
- Stoves with open fires, e.g. fireplaces
- F24B 1/1802
- • {adapted for the use of both solid fuel and another type of fuel or energy supply (~~-for stoves [F24C 1/02](#)-~~)}
- F24B 1/182
- • with additional provisions for cooking (~~-other stoves with additional provisions for cooking [F24B 1/26](#)-~~)
- F24B 1/185
- • with air-handling means, heat exchange means, or additional provisions for convection heating (~~-F24B 1/183~~ takes precedence; component parts or accessories having air-handling means, heat exchange means, or additional provisions for convection heating [F24B 1/191](#)-); Regulating combustion; Controls therefor

- F24B 1/187
 - • Condition responsive controls for regulating combustion (-valves or dampers for air supply [F23L](#) ; regulating or controlling combustion [F23N](#) ; controlling or regulating in general [G05](#)-)
- F24B 1/188
 - • characterised by use of heat exchange means,{e.g. using a particular heat exchange medium, e.g. oil, gas} (-[F24B 1/187](#) takes precedence-)
- F24B 1/189
 - • characterised by air-handling means, i.e. of combustion-air, heated-air, or flue-gases, e.g. draught control dampers (-[F24B 1/187](#) , [F24B 1/188](#) take precedence-)
- U F24B 1/191
 - • Component parts; Accessories
- F24B 1/192
 - • Doors; Screens; Fuel guards{ fire-screens [A47G 5/04](#) , protective guards [F24C 15/36](#)-}
- F24B 1/26
 - Stoves with additional provisions for cooking (-stoves with open-fires with additional provisions for cooking [F24B 1/182](#)-)
- F24B 3/00**

Heaters not covered by group [F24B 1/00](#) , e.g. charcoal brazier (-for cooking [A47J 27/00](#) to [A47J 37/00](#)-)
- F24B 5/00**

Combustion-air or flue-gas circulation in or around stoves or ranges (-stoves with open fires with air-handling means [F24B 1/185](#)-)
- U F24B 5/02
 - in or around stoves
- F24B 5/021
 - • {combustion-air circulation (-regulating combustion [F23N](#) ; air supply for combustion apparatus [F23L](#)-)}
- F24B 7/00**

Stoves, ranges or flue-gas ducts, with additional provisions for convection heating (-stoves with open fires characterised by use of heat exchange means [F24B 1/185](#) ; air heaters having heat generating means [F24H 3/00](#)-)
- F24B 7/06
 - without air ducts {no material}
- F24B 9/00**

Stoves, ranges or flue-gas ducts, with additional provisions for heating water (-[F24B 1/182](#) , [F24B 1/183](#) take precedence-)
- F24B 13/00**

Details solely applicable to stoves or ranges burning solid fuels (-component parts or accessories for stoves with open-fires [F24B 1/191](#) ; removing ash, clinker or slag from combustion chambers [F23J 1/00](#) ; removing solid residues from passages or chambers beyond the fire [F23J 3/00](#) ; joints or connections for chimneys or flues [F23J 13/04](#) ; mouths or inlet holes for chimneys or flues [F23J 13/06](#) ; means for supervising combustion [F23M 11/04](#)-)
- F24B 13/004
 - {Doors specially adapted for stoves or ranges (-doors for open fires [F24B 1/192](#)-)}
- F24B 13/02
 - Arrangement or mountings of fire-grate assemblies (-grates [F23H](#)-); Arrangement or mountings of linings for fire-boxes, e.g. fire-back (-ceramic materials [C04B 33/00](#) , [C04B 35/00](#) ; casings, linings, walls for combustion chambers [F23M](#)-)
- F24B 13/04
 - Arrangements for feeding solid fuel, e.g. hoppers (-feeding solid fuel to combustion apparatus in general [F23K](#)-)
- F24B 15/00**

Implements for use in connection with stoves or ranges (ash sieves{in general} [B07B](#) ; fire lighters [C10L 11/00](#) ; removal of ashes [F23J](#) ; other devices for igniting [F23Q](#)-)
- F24B 15/005
 - {Igniting devices; Fire-igniting fans (-bellows [F04B 45/02](#) ; gas pokers [F23Q 13/02](#)-)}

Project: N/A (F24C)

- U F24C 3/00
 - Stoves and ranges for gaseous fuels**

- U F24C 3/12
 - Arrangement for mounting of control and safety devices (control valves [F16K](#); safety devices for burners [F23D](#); regulating or controlling combustion [F23N](#))
- F24C 3/122
 - • {-on stoves}
- U F24C 7/00** **Stoves or ranges heated by electrical energy (electric heating elements or arrangements [H05B](#))**
- U F24C 7/04
 - with heat radiated directly from the heating element ([F24C 7/10](#) takes precedence)
- F24C 7/046
 - • {-Ranges}
 - WARNING
Group [F24C 7/046](#) is not complete, pending reorganisation. See also [F24C 7/04](#)
- U F24C 7/06
 - Arrangement or mounting of electric heating elements
- F24C 7/067
 - • {-on ranges}
 - WARNING
Group [F24C 7/067](#) is not complete, pending reorganisation. See also [F24C 7/06](#)
- U F24C 7/08
 - Arrangement or mounting of control or safety devices (switches [H01H](#); circuit arrangements for electric heating [H05B](#))
- F24C 7/082
 - • {-on ranges, e.g. control panels, illumination}
- F24C 7/083
 - • • {-on tops, hot plates}
 - WARNING
Groups [F24C 7/083](#), [F24C 7/085](#), [F24C 7/086](#) are not complete, pending reclassification. See also [F24C 7/082](#)
- F24C 7/085
 - • • {-on baking ovens}
- F24C 7/086
 - • • {-touch control}
- U F24C 14/00** **Stoves or ranges having self-cleaning provisions, e.g. continuous or catalytic cleaning, electrostatic cleaning**
- F24C 14/005
 - {-using a cleaning liquid}
- U F24C 15/00** **Details**
- F24C 15/006
 - {-Arrangements for circulation of cooling air}
- U F24C 15/02
 - Doors specially adapted for stoves or ranges (in general [E06B](#); for combustion chambers [F23M](#))
- F24C 15/025
 - • {-with air curtain closures}
 - WARNING
Groups [F24C 15/025-F24C 15/028](#) are not complete, pending reclassification. See also [F24C 15/02](#)
- F24C 15/026
 - • {-stowing of door in open position}
- F24C 15/027
 - • {-located at bottom side of housing}
- F24C 15/028
 - • {-Stoves doors}
- U F24C 15/04
 - • with transparent panels
- F24C 15/045
 - • • {-being dismountable, e.g. giving access for cleaning}
- U F24C 15/08
 - Foundations or supports plates; legs or pillars; Casings; Wheels ([F24C 15/10](#) takes precedence)

- F24C 15/083
- • {-Anti-tip arrangements}
- WARNING
Groups [F24C 15/083-F24C 15/086](#) are not complete, pending reclassification. See also [F24C 15/08](#)
- F24C 15/086
- • {-Adjustable legs or pillars}
- U F24C 15/10
- Tops, e.g. hot plate; Rings ([F24C 15/12](#), [F24C 15/14](#) take precedence)
- U F24C 15/102
- • {-electrically heated}
- F24C 15/103
- • • {-being movable or rotatable}
- F24C 15/105
- • • {-Constructive details concerning the regulation of the temperature }
- F24C 15/107
- • {-Pan supports or grates therefor}
- F24C 15/108
- • {-Mounting of hot plate on worktop}
- WARNING
Group [F24C 15/108](#) is not complete, pending reclassification. See also [F24C 15/10](#)
- U F24C 15/16
- Shelves, racks, { rotisserie spits,} or trays inside ovens; Supports therefor
- F24C 15/164
- • {-Rotisserie spits inside ovens}
- F24C 15/166
- • {-with integrated heating means}
- F24C 15/168
- • {-with telescopic rail systems}
- U F24C 15/20
- Removing cooking fumes (parts, details or accessories of cooking-vessels for withdrawing or condensing cooking vapours from such vessels [A47J 36/38](#))
- F24C 15/2007
- • {-from oven cavities}
- WARNING
Groups [F24C 15/2007](#), [F24C 15/2014](#), [F24C 15/2028-F24C 15/2092](#) are not complete, pending reclassification. See also [F24C 15/20](#)
- F24C 15/2014
- • • {-with means for oxidation of cooking fumes}
- F24C 15/2021
- • {-Arrangement or mounting of control or safety systems}
- F24C 15/2028
- • {-using an air curtain}
- F24C 15/2035
- • {-Arrangement or mounting of filters ([F24C 15/2021](#) takes precedence; filters per se [B01D 46/00](#))}
- F24C 15/2042
- • {-Devices for removing cooking fumes structurally associated with a cooking range ([F24C 15/2007](#) takes precedence)}
- F24C 15/2057
- • {-using a cleaning liquid}
- F24C 15/2064
- • {-illumination for cooking hood}
- F24C 15/2071
- • {-mounting of cooking hood}
- F24C 15/2078
- • {-movable}
- F24C 15/2085
- • • {-adjustable in height}
- F24C 15/2092
- • • {-extendable or pivotable}

Project: N/A (F24D)**F24D**

DOMESTIC- OR SPACE-HEATING SYSTEMS, e.g. CENTRAL HEATING SYSTEMS; DOMESTIC HOT-WATER SUPPLY SYSTEMS; ELEMENTS OR COMPONENTS THEREFOR (preventing corrosion [C23F](#); water supply in general [E03](#); using steam or condensate extracted or exhausted from steam engine plants for heating purposes [F01K 17/02](#); steam traps [F16T](#); domestic stoves or ranges [F24B](#), [G F24C](#); water or air heaters having heat generating means [F24H](#); combined heating and refrigeration systems [F25B](#); heat exchange apparatus or elements [F28](#); removing furring [F28G](#))

NOTE

In this subclass, the following expression is used with the meaning indicated:

- "Central heating system" means a system in which heat is generated or stored at central sources and is distributed by means of a transfer fluid to the spaces or areas to be heated.

U F24D 3/00

Hot-water central heating systems ([F24D 10/00](#), [F24D 11/00](#) take precedence)

U F24D 3/08

• in combination with systems for domestic hot-water supply

F24D 3/087

• • {-Tap water heat exchangers specially adapted therefore}

U F24D 3/10

• Feed-line arrangements, e.g. providing for heat-accumulator tanks, expansion tanks { Hydraulic components of a central heating system}

U F24D 3/1008

• • {expansion tanks}

F24D 3/1016

• • • {-Tanks having a bladder}

F24D 3/1025

• • • {-Compressor controlled pressure heads}

F24D 3/1033

• • • {-with compressed gas cylinder}

F24D 3/1041

• • • {-Flow-through}

U F24D 3/1058

• • {disposition of pipes and pipe connections}

U F24D 3/1066

• • • {Distributors for heating liquids}

F24D 3/1075

• • • • {-Built up from modules}

F24D 3/1083

• • {-Filling valves or arrangements for filling}

F24D 3/1091

• • {-Mixing cylinders}

U F24D 3/12

• Tube and panel arrangements for ceiling, wall, or underfloor heating (electric underfloor heating [F24D 13/02](#); special adaptations of floors for incorporating ducts, e.g. for heating or ventilating, [E04B 5/48](#); building elements of block or other shape for the construction of parts of buildings characterised by special adaptations, e.g. serving for locating conduits, [E04C 1/39](#); building elements of relatively thin form for the construction of parts of buildings with special adaptations for auxiliary purposes, e.g. serving for locating conduits, [E04C 2/52](#))

F24D 3/122

• • {-Details}

F24D 3/125

• • • {-Hydraulic pipe connections}

F24D 3/127

• • • {-Mechanical connections between panels}

U F24D 3/14

• • incorporated in a ceiling, wall or floor

U F24D 3/141

• • • {Tube mountings specially adapted therefor}

F24D 3/143

• • • • {-Tube clips with barbed anchors}

F24D 3/144

• • • • {-Clips for fastening heating tubes on a reinforcement net or mesh, e.g. mesh for concrete reinforcement}

F24D 3/148

• • • {-with heat spreading plates}

- F24D 3/149
 - · · {-Tube-laying devices}
- U F24D 11/00** **Central heating systems using heat accumulated in storage masses (self-contained storage heating units [F24D 15/02](#); storage masses, see the relevant subclasses)**
 - F24D 11/02
 - using heat pumps {using heat-pumps-(for producing heat in general [F25B 29/00](#))}
- U F24D 13/00** **Electric heating systems (electric water or air heaters [F24H](#))**
 - U F24D 13/02
 - solely using resistance heating, e.g. under-floor heating
 - U F24D 13/022
 - · {-resistances incorporated in construction elements}
 - F24D 13/028
 - · · {-Glass panels, e.g. mirrors, design radiators, etc.}
- U F24D 17/00** **Domestic hot-water supply systems (combined with domestic- or space-heating systems [F24D 1/00](#) to [F24D 15/00](#))**
 - U F24D 17/0078
 - {Recirculation systems}
 - F24D 17/0084
 - · {-Coaxial tubings}
 - F24D 17/0089
 - {-Additional heating means, e.g. electric heated buffer tanks or electric continuous flow heaters, located close to the consumer, e.g. directly before the water taps in bathrooms, in domestic hot water lines}
 - F24D 17/0094
 - {-Recovering of cold water}
- U F24D 19/00** **Details (of water or air heaters [F24H 9/00](#); of heat-exchange or heat-transfer apparatus, of general application [F28F](#))**
 - F24D 19/0002
 - {-Means for connecting central heating radiators to circulation pipes}
 - F24D 19/0004
 - · {-In a one pipe system}
 - F24D 19/0007
 - · · {-Comprising regulation means}
 - F24D 19/0009
 - · {-In a two pipe system}
 - F24D 19/0012
 - · · {-Comprising regulation means}
 - F24D 19/0014
 - · {-Connection means adaptable for one and two pipe systems}
 - F24D 19/0017
 - · {-Connections between supply and inlet or outlet of central heating radiators}
 - F24D 19/0019
 - · · {-Means for adapting connections}
 - F24D 19/0021
 - · · {-Flexible tubes or hoses}
 - F24D 19/0024
 - · · {-Connections for plate radiators}
 - F24D 19/0026
 - · {-Places of the inlet on the radiator}
 - F24D 19/0029
 - · · {-on a top corner}
 - F24D 19/0031
 - · · {-on the top in the middle}
 - F24D 19/0034
 - · · {-on a bottom corner}
 - F24D 19/0036
 - · · {-on the bottom in the middle}
 - F24D 19/0039
 - · {-Places of the outlet on the radiator}
 - F24D 19/0041
 - · · {-on the top in the middle}
 - F24D 19/0043
 - · · {-on the opposite top corner}
 - F24D 19/0046
 - · · {-on the top on the same side}
 - F24D 19/0048
 - · · {-on the bottom in the middle}
 - F24D 19/0051
 - · · {-on the bottom on the opposite corner}
 - F24D 19/0053
 - · · {-on the bottom on the same side}
 - F24D 19/0056
 - · {-Supplies from the central heating system}
 - F24D 19/0058
 - · · {-coming out the floor}
 - F24D 19/006
 - · · · {-Alongside the radiator}

- F24D 19/0063 {-under the radiator}
- F24D 19/0065 . . . {-coming out the wall}
- F24D 19/0068 {-alongside the radiator}
- F24D 19/007 {-under the radiator}
- F24D 19/0073 . . {-Means for changing the flow of the fluid inside a radiator}
- F24D 19/0075 . . {-Valves for isolating the radiator from the system}
- F24D 19/0078 . . {-Plugs}
- F24D 19/008 . . {-Details related to central heating radiators}
- F24D 19/0082 . . {-Humidifiers for radiators}
- F24D 19/0085 . . {-Fresh air entries for air entering the room to be heated by the radiator}
- F24D 19/0087 . . {-Fan arrangements for forced convection}
- F24D 19/009 . . {-Magnets, e.g. for attaching a cover}
- F24D 19/0097 . . {-Casings or frame structures for hydraulic components}
- U F24D 19/02 . . Arrangement of mountings or supports for radiators
- F24D 19/0203 . . {-Types of supporting means}
- F24D 19/0206 {-Tube shaped supports inserted into a wall}
- F24D 19/0209 {-Supporting means having bracket}
- F24D 19/0213 {-Floor mounted supporting means}
- F24D 19/0216 {-Supporting means having a rail}
- F24D 19/022 . . . {-Constructional details of supporting means for radiators}
- F24D 19/0223 {-Distance pieces between the radiator and the wall}
- F24D 19/0226 {-Additional means supporting the process of mounting}
- F24D 19/023 {-Radiators having fixed suspension means for connecting the radiator to the support means}
- F24D 19/0233 {-Templates for installing the radiator}
- F24D 19/0236 {-Water tubes or pipes forming part of the supporting means}
- F24D 19/024 . . . {-Functioning details of supporting means for radiators}
- F24D 19/0243 {-Means for moving the radiator horizontally to adjust the radiator position}
- F24D 19/0246 {-Means for moving the radiator vertically to adjust the radiator position}
- F24D 19/025 {-Eccentric means for moving the radiator vertically}
- F24D 19/0253 {-Adjusting a dimension, e.g. length, of the radiator support, e.g. telescopic rails}
- F24D 19/0256 {-Radiators clamped by supporting means}
- F24D 19/0259 {-Radiators clamped by supporting means around a column or tube}
- F24D 19/0263 {-Radiators clamped by supporting means between two columns or tubes}
- F24D 19/0273 {-Radiators fixed in order to prevent undesired detachment}
- F24D 19/0276 {-Radiators fixed on the bottom}
- F24D 19/0279 {-Radiators fixed on the sides}
- F24D 19/0283 {-Radiators fixed on the top}
- F24D 19/0286 {-Radiators fixed using a spring}
- F24D 19/0289 {-Radiators fixed using a flexible clip}
- F24D 19/0293 {-Radiators rotating without being demounted}
- U F24D 19/06 . . Casings, cover lids or ornamental panels, for radiators
- F24D 19/064 . . . {-Coverings not directly attached to a radiator, e.g. box-like coverings}
- F24D 19/065 . . . {-Grids attached to the radiator and covering its top}

- F24D 19/067
- F24D 19/068
- U F24D 19/10
 - • {-Front coverings attached to the radiator}
 - • {-Side coverings attached to the radiator}
 - Arrangement or mounting of control or safety devices (control valves [F16K](#) ; only the heater being controlled [F24H 9/20](#)){ including control or safety methods}
- U F24D 19/1006
 - • {for water heating systems}
- U F24D 19/1009
 - • • {for central heating}
- U F24D 19/1015
 - • • • {using a valve or valves}
- F24D 19/1018
 - • • • • {-Radiator valves}
- F24D 19/1036
 - • • • • {-Having differential pressure measurement facilities}
- U F24D 2220/00** **Components of central heating installations excluding heat sources**
- U F24D 2220/20
 - Heat consumers
- U F24D 2220/2009
 - • Radiators
- F24D 2220/2027
 - • • Convector *(radiators wherein heat transfer mainly takes place by convection)*~~(radiators wherein heat transfer mainly takes place by convection)~~

Project: N/A (F24F)

- F24F 1/00** **Rooms units, e.g. receiving primary air from a central station { or with supply of heating or cooling agents from a central station, such as those applied to air-treatment systems included in [F24F 3/00](#) and [F24F 5/00](#)-(arrangement or assembly of components for the primary treatment of air [F24F 11/08](#); mixing chambers for air [F24F 13/04](#))}**
- WARNING**
[F24F 1/08](#) to [F24F 1/24](#) and [F24F 1/28](#) to [F24F 1/68](#) not complete pending the completion of a reclassification; see also other groups of [F24F 1/00](#)
- U F24F 1/0007
 - {Fan coil units, e.g. using an evaporating refrigerant}
- U F24F 1/0011
 - • {characterised by the air outlet}
- F24F 1/0014
 - • • {-with two or more blow out openings}
- F24F 1/0018
 - • {-characterised by the fan}
- F24F 1/0022
 - • • {-Centrifugal or radial fan}
- F24F 1/0025
 - • • {-Cross flow or tangential fan}
- F24F 1/0029
 - • • {-Axial fan}
- F24F 1/0033
 - • • {-comprising two or more fans}
- U F24F 3/00** **Air-conditioning systems in which conditioned primary air is supplied from one or more central stations to distributing units in the rooms or spaces where it may receive secondary treatment; Apparatus specially designed for such systems (room units [F24F 1/00](#); construction of heat-exchangers [F28](#)){[F24F 3/044](#) takes precedence; arrangement or assembly of components for the primary treatment of air [F24F 11/08](#)}**
- F24F 3/001
 - {-in which the air treatment in the central station takes place by means of a heat-pump or by means of a reversible cycle (regulation of heat-pump circuit in air treatment systems [F25B 29/00](#); heat pumps [F25B 13/00](#), [F25B 29/00](#); reversible cycle for humidifying and drying air [F24F 3/147](#))}
- U F24F 3/12
 - characterised by the treatment of the air otherwise than by heating and cooling ([F24F 3/02](#), [F24F 3/06](#) take precedence, apparatus for the individual treatment, see the appropriate subclasses for the treatments)
- U F24F 3/14
 - • by humidification; by dehumidification

- U F24F 3/1411 . . . {by absorbing or adsorbing water, e.g. using an hygroscopic desiccant}
- F24F 3/1429 {-alternatively operating a heat exchanger in an absorbing/adsorbing mode and a heat exchanger in a regeneration mode}

- U F24F 5/00** **Air-conditioning systems or apparatus not covered by [F24F 1/00](#) or [F24F 3/00](#) { e.g. using solar heat; combined with household units such as an oven or water heater}**

- U F24F 5/0007 . {cooling apparatus specially adapted for use in air-conditioning (self-contained room units [F24F 1/02](#); [F24F 5/0046](#) takes precedence; air-humidification [F24F 6/00](#))}
- U F24F 5/0017 . . {using cold storage bodies, e.g. ice}
- F24F 5/0021 . . . {-using phase change material [PCM]} for storage}
- F24F 2005/0039 . . {using a cryogen, e.g. CO₂ liquid or N₂ liquid-}
- F24F 5/0042 . {characterised by the application of thermo-electric units or the Peltier effect (refrigerators and cooling systems using magnetic or electrical effects in general [F25B 21/02](#); for semi-conductors [H01L 23/38](#); thermobatteries or thermogenerators [H01L 35/00](#)-)}
- U F24F 5/0046 . {using natural energy, e.g. solar energy, energy from the ground}
- F24F 5/005 . . {-using energy from the ground by air circulation, e.g. "Canadian well"}
- F24F 5/0085 . {-Systems using a compressed air circuit ([B64D 13/00](#), [B60H](#) take precedence)}
- U F24F 5/0089 . {Systems using radiation from walls or panels}
- F24F 5/0092 . . {-ceilings, e.g. cool ceilings}

- U F24F 6/00** **Air-humidification, e.g. for increasing comfort in living spaces by "room humidifiers" { cooling by humidification}**
- U F24F 6/02 . by evaporation of water in the air {humidifiers specially adapted for radiators see [F24D 19/008](#)}
- F24F 6/025 . . {-using electrical heating means ([F24F 6/105](#) takes precedence)}

- U F24F 7/00** **Ventilation, { e.g. by means of wall-ducts; systems using window or roof apertures}**
- U F24F 7/007 . with forced flow (using ducting systems [F24F 7/06](#))
- F24F 7/013 . . using wall or window fans, displacing air through the wall or window {possibly through a grill or through a shutter or flap-(with heating elements [F24F 3/00](#) to [F24F 3/14](#); ventilators with provision for recirculating air or piping it away [F24F 7/06](#); room ventilators, portable ventilators [F04D 25/08](#))}
- F24F 7/04 . with ducting systems {also by double walls; with natural circulation-([F24F 7/02](#) takes precedence)}
- F24F 7/06 . . with forced air circulation, e.g. by fan {positioning of a ventilator in or against a conduit-(ventilators per se [F04D 25/08](#))}

- U F24F 13/00** **Details common to, or for air-conditioning, air-humidification, ventilation or use of air currents for screening**
- U F24F 13/02 . Ducting arrangements
- F24F 13/0209 . . {-characterised by their connecting mens, e.g. flanges}
- F24F 13/0218 . . {-Flexible soft ducts, e.g. ducts made of permeable textiles}
- F24F 13/0227 . . {-using parts of the building, e.g. air ducts inside the floor, walls or ceiling of a building (air ducts or channels of buildings [E04F 17/04](#))}
- F24F 13/0236 . . {-with ducts including air distributors, e.g. air collecting boxes with at least three openings}
- F24F 13/0245 . . {-Manufacturing or assembly of air ducts; Methods therefor}
- F24F 13/0254 . . {-characterised by their mounting means, e.g. supports}

- F24F 13/0263 · · {-Insulation for air ducts}
- F24F 13/0272 · · {-Modules for easy installation or transport}
- F24F 13/0281 · · {-Multilayer duct}
- F24F 13/029 · · {-Duct comprising an opening for inspection, e.g. manhole}

Project: N/A (F24H)

- U F24H 1/00** **Water heaters having heat generating means, e.g. boiler, flow- heater, water-storage heater (F24H 7/00, F24H 8/00 take precedence; details F24H 9/00; steam boilers F22B; domestic stoves or ranges with additional provisions for heating water F24B 9/00, F24C 13/00)**
- F24H 1/0072 · {-Special adaptations}
 - F24H 1/0081 · · {-for bath tubs}
 - F24H 1/009 · · {-for vehicle systems}
 - U F24H 1/22 · Water heaters other than continuous-flow or water storage heaters, e.g. water-heaters for central heating (F24H 1/50 takes precedence)
 - F24H 1/225 · · {-electrical central heating boilers}
 - U F24H 1/48 · Water heaters for central heating incorporating heaters for domestic water
 - U F24H 1/52 · · incorporating heat exchangers for domestic water (F24H 1/50 takes precedence)
 - F24H 1/523 · · · {-Heat exchangers for sanitary water directly heated by the burner}
 - F24H 1/526 · · · {-Pipes in pipe heat exchangers for sanitary water}
- U F24H 3/00** **Air heaters having heat generating means (F24H 7/00, F24H 8/00 take precedence; details F24H 9/00; domestic stoves or ranges with additional provision for convection heating of air F24B, F24C)**
- F24H 3/006 · {-using fluid combustibles}
 - U F24H 3/02 · with forced circulation (F24H 3/12 takes precedence)
 - U F24H 3/04 · · the air being in direct contact with the heating medium, e.g. electric heating element
 - F24H 3/0405 · · · {-using electric energy supply, e.g. the heating medium being a resistive element; Heating by direct contact, i.e. with resistive elements, electrodes and fins being bonded together without additional element in-between (F24H 3/06, F24H 3/08, F24H 3/10 take precedence)}
 - F24H 3/0429 · · · · {-For vehicles}
 - F24H 3/0435 · · · · · {-Structures comprising heat spreading elements in the form of fins}
 - F24H 3/0441 · · · · · {-Interfaces between the electrodes of a resistive heating element and the power supply means}
 - F24H 3/0447 · · · · · · {-Forms of the electrode terminals, e.g. tongues or clips}
 - F24H 3/0452 · · · · · · {-Frame constructions}
 - F24H 3/0458 · · · · · · · {-One-piece frames}
 - F24H 3/0464 · · · · · · · {-Two-piece frames, e.g. two-shell frames, also including frames as a central body with two covers}
 - F24H 3/047 · · · · · · · {-Multiple-piece frames assembled on their four or more edges}
 - F24H 3/0476 · · · · · · · {-Means for putting the electric heaters in the frame under strain, e.g. with springs}
 - F24H 3/0482 · · · · · · · {-Frames with integrated fan}
 - U F24H 3/06 · · the air being kept separate from the heating medium, e.g. using forced circulation of air over radiators

- F24H 3/062
 - • • {-using electric energy supply; the heating medium being the resistive element; [F24H 3/08](#), [F24H 3/10](#) takes precedence}
- U F24H 3/08
 - • • by tubes
- U F24H 3/081
 - • • • {using electric energy supply}
- F24H 3/082
 - • • • • {-The tubes being an electrical isolator containing the heater}
- F24H 3/084
 - • • • • {-The tubes being an electrode for the heater}
- F24H 3/085
 - • • • • {-The tubes containing an electrically heated intermediate fluid, e.g. water}
- U F24H 9/00** **Details**
- U F24H 9/0005
 - {for water heaters}
- U F24H 9/001
 - • {Guiding means}
- U F24H 9/0015
 - • • {in water channels}
- F24H 9/0021
 - • • • {-Sleeves surrounding heating elements or heating pipes, e.g. pipes filled with heat transfer fluid, for guiding heated liquid}
- F24H 9/0047
 - • {-Protections against galvanic corrosion, e.g. cathodic protections, electrolytic protections}
- F24H 9/0084
 - {-Combustion air preheating}
- F24H 9/0089
 - • {-by double wall boiler mantle}
- F24H 9/0094
 - {-having means for transporting the boiler}
- F24H 9/06
 - Arrangement of mountings or supports { for heaters, e.g. boilers, other than space heating radiators-(space heating radiators [F24D 19/02](#))}
- U F24H 9/14
 - Connecting different sections, e.g. in water-heaters (in radiators [F28F 9/26](#))
- F24H 9/142
 - • {-Connecting hydraulic components}
- F24H 9/144
 - • • {-Valve seats, piping and heat exchanger connections integrated into a one-piece hydraulic unit}
- F24H 9/146
 - • {-Connecting elements of a heat exchanger}
- F24H 9/148
 - • {-Arrangements of boiler components on a frame or within a casing to build the fluid heater, e.g. boiler}
- U F24H 9/16
 - Arrangements for water drainage (valves for drainage [F16K](#), e.g. [F16K 21/00](#); in pipes or pipe systems in general [F16L 55/00](#); in domestic- or space-heating systems [F24D 19/08](#))
- F24H 9/165
 - • {-Devices for retaining leaking fluid from heaters}
- U F24H 9/18
 - Arrangement or mounting of grates, burners, or heating elements (burners [F23D](#); grates [F23H](#); electric heating elements [H05B](#))
- U F24H 9/1809
 - • {for water heaters}
- U F24H 9/1818
 - • • {electric heating means}
- F24H 9/1827
 - • • • {-PTC Positive temperature coefficient resistor}
- U F24H 9/1854
 - • {for air heaters}
- U F24H 9/1863
 - • • {electric heating means}
- F24H 9/1872
 - • • • {-PTC Positive temperature coefficient resistor}
- U F24H 9/20
 - Arrangement or mounting of control or safety devices { or methods}(control valves [F16K](#); safety devices for burners [F23D](#); combustion control devices [F23N](#); of systems comprising a heater, see the relevant subclasses, e.g. of control heating systems [F24D 19/10](#); automatic switching for electric heating apparatus [H05B 1/02](#))
- U F24H 9/2007
 - • {for water heaters}
- F24H 9/2035
 - • • {-for heaters using fluid combustibles}

Project: N/A (F24J)

- U F24J 2/00** Use of solar heat, e.g. solar heat collectors (distillation or evaporation of water using solar energy [C02F 1/14](#); devices for producing mechanical power from solar energy [F03G 6/00](#); semiconductor devices specially adapted for converting solar energy into electrical energy [H01L 31/00](#); photovoltaic [PV] cells including means directly associated with the PV cell to utilise heat energy [H01L 31/0525](#); PV modules including means associated with the PV module to utilise heat energy [H02S 40/44](#))

NOTE

Supporting structures also intended for use with photovoltaic modules should further be classified in the relevant groups of subclass [H02S](#).

- U F24J 2/04
- Solar heat collectors having working fluid conveyed through collector
- F24J 2/0422
- • {-Solar collectors integrated in fixed constructions, e.g. in buildings}
- F24J 2/0427
- • • {-in the form of a fence, a balustrade or a handrail}
- F24J 2/0461
- • {-using pools or ponds}
- F24J 2/0466
- • • {-Salt gradient solar ponds}
- F24J 2/0472
- • • {-Floating solar collectors or covers}
- F24J 2/0477
- • {-having circuits for more than one working fluid ([F24J 2/30](#) takes precedence)}
- F24J 2/0483
- • {-having two or more passages for the same working fluid ([F24J 2/20](#), [F24J 2/24](#) take precedence)}
- F24J 2/0488
- • {-Solar heat collectors having absorber surfaces of a particular form}
- F24J 2/0494
- • • {-having two or more absorber surfaces}
- U F24J 2/06
- • having concentrating elements (optical elements or systems per se [G02B](#))
- U F24J 2/10
- • • having reflectors as concentrating elements
- F24J 2002/1004
- • • • {Special shape not covered by [F24J 2/1047](#) - [F24J 2/18](#)}
- F24J 2/1052
- • • • {-flexible ([F24J 2/125](#), [F24J 2/145](#) take precedence)}
- F24J 2/1057
- • • • {-characterised by the material or the construction of the reflector}
- U F24J 2/20
- • the working fluid being conveyed between plates
- F24J 2/202
- • • {-having conduits formed by paired plates and internal partition means}
- F24J 2/204
- • • {-having conduits formed by paired plates, only one of which is plane}
- F24J 2/205
- • • {-having conduits formed by paired non-plane plates}
- U F24J 2/24
- • the working fluid being conveyed through tubular heat absorbing conduits
- F24J 2/242
- • • {-the tubular conduits being integrated in a block; the tubular conduits touching each other}
- U F24J 2/42
- Solar heat systems not otherwise provided for {(solar heat systems in greenhouses [A01G 9/243](#); distillation by solar energy [C02F 1/14](#); devices for producing mechanical power from solar energy [F03G 6/00](#); central heat systems using heat solar energy [F24D 11/003](#), [F24D 11/007](#), [F24D 11/0221](#), [F24D 11/0264](#); domestic hot-water supply systems using solar energy [F24D 17/0015](#), [F24D 17/0042](#), [F24D 17/0063](#); air-conditioning systems using solar energy [F24F 5/0046](#); refrigeration machines, plants or systems using solar energy [F25B 27/002](#); drying solid materials or objects by radiation, e.g. from the sun [F26B 3/28](#))}
- F24J 2/426
- • {-for showers}
- U F24J 2/46
- Component parts, details or accessories of solar heat collectors
- F24J 2/4607
- • {-Safety or protection arrangements; Arrangements for preventing malfunction; Auxiliary devices, e.g. means for testing (control means [F24J 2/40](#))}

- F24J 2/461
 - • • {-Means for cleaning or for removing snow}
- U F24J 2/4612
 - • • {Means for preventing corrosion or protecting against contaminants, e.g. preventing condensations}
- F24J 2/4614
 - • • • {-for draining rain water}
- F24J 2/4616
 - • • • {-for maintaining vacuum, e.g. by using getters}
- F24J 2/4618
 - • • • {-for preventing condensation}
- F24J 2/462
 - • • • {-for deaerating or degassing the working fluid}
- F24J 2/4621
 - • • {-Means for overtemperature protection (arrangements for draining the working fluid: [F24J 2/4634](#)); Means for overpressure protection}
- F24J 2/4623
 - • • • {-Arrangements for modifying heat collecting features, e.g. by defocusing or by changing the position of heat receiving elements}
- F24J 2/4625
 - • • • {-Cooling arrangements, e.g. by using external heat dissipating means or internal cooling circuits ([F24J 2/4627](#) takes precedence)}
- F24J 2/4627
 - • • • {-Arrangements for venting solar collector enclosures}
- F24J 2/4629
 - • • • {-Arrangements for preventing overpressure inside solar collector enclosures ([F24J 2/4627](#) takes precedence)}
- F24J 2/463
 - • • • {-Arrangements for preventing overpressure inside solar collector circuits}
- F24J 2/4632
 - • • {-Means for freezing protection (arrangements for draining the working fluid: [F24J 2/4634](#))}
- F24J 2/4634
 - • • {-Arrangements for draining the working fluid}
- F24J 2/4636
 - • • {-Arrangements to accommodate differential expansion of solar collector elements}
- F24J 2/4638
 - • • {-Arrangements for protecting solar collectors against adverse weather conditions ([F24J 2/4609](#) takes precedence)}
- F24J 2/464
 - • {-Casings}
- F24J 2/4641
 - • • {-characterised by using specific material}
- F24J 2/4643
 - • • • {-Plastic materials}
- F24J 2/4645
 - • • • {-Metallic materials}
- F24J 2/4647
 - • {-Means for fluidically interconnecting different solar collectors or for connecting solar connectors with other components; Headers; Fluid distributing means}
- F24J 2/4649
 - • {-Selection of particular working medium (materials for heat transfer [C09K 5/00](#))}
- F24J 2/465
 - • {-Arrangements of sealing means}
- F24J 2/4652
 - • {-Solar heat collectors having absorber surfaces provided with special coatings, e.g. anti-reflective coatings}
- F24J 2/4654
 - • {-Materials for the heat-exchange conduits ([F24J 2/201](#), [F24J 2/243](#), [F24J 2/48](#) take precedence)}
- U F24J 2/50
 - • Transparent coverings
- F24J 2/507
 - • • {-using evacuated elements ([F24J 2/05](#) takes precedence)}
- U F24J 2/52
 - • Arrangement of mountings or supports
- F24J 2/5201
 - • • {-Stationary supporting structures for solar modules; Load-bearing elements for movable supporting structures}
- F24J 2/5203
 - • • • {-comprising elongated rigid mounting elements, e.g. mounting profiles or rails for covering a building surface with solar modules; Module frames ([F24J 2/523](#) takes precedence)}
- F24J 2/5205
 - • • • • {-Substantially planar profile assemblies, e.g. grids comprising coplanar profiles or stacked profiles}

- F24J 2/5207 {-comprising profiles of particular shape having in cross-section first and second module supporting portions for coupling adjacent solar modules}
- F24J 2/5209 {-Substantially coplanar profile assemblies comprising longitudinal profiles laterally coupled with transversal profiles}
- F24J 2/5211 {-Solar module peripheral frames}
- F24J 2/5228 {-comprising plate-like mounting elements, e.g. profiled or corrugated plates; Plate-like module frames ([F24J 2/523](#) takes precedence)}
- F24J 2/523 {-comprising elongated standing elements, e.g. posts, legs; Standing structures for supporting solar modules at defined orientation; Three-dimensional frameworks; Volumetric supporting structures, e.g. box-like elements or shaped bodies}
- F24J 2/5232 {-Posts coupled with upper profiles}
- F24J 2/5233 {-Profile arrangements, e.g. assemblies of base profiles with vertical or inclined profiles, three-dimensional frameworks ([F24J 2/5232](#) takes precedence)}
- F24J 2/5235 {-comprising bent plates or assemblies of plates}
- F24J 2/5237 {-comprising shaped bodies, e.g. molded box-like elements, concrete elements, foamed elements; Massive supporting structures}
- F24J 2/5239 {-Interconnected assemblies of stands; Stands having first and second module supporting portions for coupling adjacent modules}
- F24J 2/5241 {-comprising elongated non rigid elements, e.g. straps, wires, ropes}
- F24J 2/5243 {-Fixation means, e.g. connectors or fasteners}
- F24J 2/5245 {-Connectors for anchoring solar modules or supporting elements to the ground or to building structures}
- F24J 2/5247 {-in the form of bent strips or assemblies of strips; Hook-like connectors; Connectors to be mounted between building covering elements}
- F24J 2/5249 {-for anchoring to protrusions of buildings, e.g. to corrugations or to standing seams}
- F24J 2/525 {-Ground anchoring means; Foundations for supporting elements; Massive elements for anchoring supporting structures to the ground or to flat horizontal surfaces}
- F24J 2/5252 {-Connectors for fixing solar modules, or solar module peripheral frames to supporting elements, e.g. to profiled mounting members}
- F24J 2/5254 {-Solar module side connectors or base connectors}
- F24J 2/5256 {-Clamping or clipping elements}
- F24J 2/5258 {-with clamping action by using screw-threaded elements}
- F24J 2/526 {-Connectors for coupling adjacent supporting elements together, e.g. profile to profile connectors}
- F24J 2/5262 {-Connectors for coupling adjacent solar modules or solar module peripheral frames together ([F24J 2/5252](#) takes precedence)}
- F24J 2/5264 {-comprising means for adjusting the final position or the final orientation of a supporting element relative to another one or relative to a mounting surface; comprising means for compensating mounting tolerances}
- U F24J 2/54 specially adapted for rotary movement {([F24J 2/5269](#) takes precedence)}
- F24J 2/5403 {-with only one rotation axis}
- F24J 2/5406 {-with vertical axis}
- F24J 2/541 {-with horizontal axis}
- F24J 2/5413 {-with inclined axis}

- F24J 2/5417 {-with two rotation axis}
- F24J 2/542 {-with vertical primary axis}
- F24J 2/5424 {-with horizontal primary axis}
- F24J 2/5427 {-with inclined primary axis}
- F24J 2/5431 {-with more than two rotation axis or with multiple degrees of freedom }

U F24J 3/00 Other production or use of heat, not derived from combustion (use of solar heat [F24J 2/00](#))

- F24J 3/003 . {-using heat resulting from internal friction of a moving fluid or from friction between a fluid and a moving body}
- U F24J 3/06 . using natural heat
- U F24J 3/08 . . using geothermal heat
- F24J 3/081 . . . {-by circulating a working fluid through underground channels, the working fluid not coming into direct contact with the ground}
- F24J 3/082 {-Compact tube assemblies inserted into the ground, e.g. geothermal probes}
- F24J 3/083 {-in the form of bent tubes or in the form of tubes assembled with connectors or with return headers}
- F24J 3/084 {-in the form of tubes being closed at one end, i.e. return type}
- F24J 3/085 . . . {-by injecting a working fluid directly into the ground or by using underground water, e.g. systems using injection and recovery wells}
- F24J 3/086 . . . {-by injecting a working fluid into a closed well; by using intermediate working fluids, e.g. by using heat pipes}

Project: N/A (F25B)

U F25B 9/00 Compression machines, plant, or systems, in which the refrigerant is air or other gas of low boiling point

- U F25B 9/002 . {characterised by the refrigerant}
- F25B 9/004 . . {-the refrigerant being air (air conditioning [F24F](#))}

U F25B 31/00 Compressor arrangements (compressors per se [F04](#))

- F25B 31/002 . {-lubrication (of compressors per se [F04B](#), of machines or engines in general [F01M](#))}

U F25B 39/00 Evaporators; Condensers

- U F25B 39/02 . Evaporators
- F25B 39/026 . . {-specially adapted for sorption type systems}

U F25B 49/00 Arrangement or mounting of control or safety devices (testing refrigerators [G01M](#); control in general [G05](#))

- U F25B 49/02 . for compression type machines, plant or systems
- F25B 49/022 . . {-Compressor control arrangements (in general [F04B](#))}

Project: N/A (F25D)

F25D

REFRIGERATORS; COLD ROOMS; ICE-BOXES; COOLING OR FREEZING APPARATUS NOT COVERED BY ANY OTHER SUBCLASS (-refrigerated show cases [A47F 3/04](#) ; thermally-insulated vessels for domestic use [A47J 41/00](#) ; refrigerated vehicles, see the appropriate subclasses of classes [B60](#) to [B64](#) ; containers with thermal insulation in general [B65D 81/38](#) ; heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants, or materials for the production of heat or cold by chemical reactions other than by combustion [C09K 5/00](#) ; thermally-insulated vessels for liquefied or solidified gases [F17C](#) ; air-conditioning or air-humidification [F24F](#) ; refrigeration machines, plants or systems [F25B](#) ; cooling of instruments and comparable apparatus without refrigeration [G12B](#) ; cooling of engines or pumps, see the relevant classes-)

NOTES

In this subclass, the following term is used with the meaning indicated:

- "device" means an enclosed space to be cooled; such devices being associated either with refrigerating machinery, e.g. in a refrigerator, or with other cold sources, e.g. in an ice-box.

Attention is drawn to Note (2) following the title of subclass [F24F](#) .

- U F25D 3/00** **Devices using other cold materials; Devices using cold-storage bodies**
 F25D 3/10 · using liquefied gases, e.g. liquid air{(-for cooling semiconductor devices [H01L 23/445](#)-)}
- F25D 7/00** **Devices using evaporation effects without recovery of the vapour (-butter or cheese dishes with cooling devices [A47G 19/26](#)-)**
- F25D 9/00** **Devices not covered by groups [F25D 1/00](#) to [F25D 7/00](#); -Combinations of devices covered by two or more of the groups [F25D 1/00](#) to [F25D 7/00](#)**
- U F25D 11/00** **Self-contained movable devices, e.g. domestic refrigerator**
 F25D 11/04 · specially adapted for storing deep-frozen articles (-[F25D 11/02](#) takes precedence-)
- F25D 15/00** **Devices not covered by group [F25D 11/00](#) or [F25D 13/00](#) , e.g. non-self-contained movable devices**
- F25D 16/00** **Devices using a combination of a cooling mode associated with refrigerating machinery with a cooling mode not associated with refrigerating machinery**
- F25D 17/00 - F25D 31/00** **Details or features of the devices covered by groups [F25D 1/00](#) to [F25D 16/00](#)**
- U F25D 17/04** · for circulating air, e.g. by convection
 F25D 17/042 · - {Air treating means within refrigerated spaces (air conditioning in general [F24F](#))}
- F25D 19/00** **Arrangement or mounting of refrigeration units with respect to devices {or objects to be refrigerated, e.g. infra-red detectors}**
- F25D 21/00** **Defrosting; Preventing frosting; Removing condensed or defrost water (-removing ice or water from heat-exchange apparatus in general [F28F 17/00](#) ; heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#)-)**

- U F25D 21/002 · {Defroster control}
- F25D 21/004 · · {Control mechanisms (-F25D 21/006 takes precedence-)}
- F25D 21/06 · Removing frost (-defrosting cycles F25B 47/02-)
- F25D 23/00 General constructional features (-F25D 21/00 takes precedence-)**
- F25D 23/02 · Doors; Covers (-F25D 23/08 takes precedence-){ locks or fastenings
E05B 65/0042-}
- F25D 23/06 · Walls (-F25D 23/08 takes precedence; containers with thermal insulation
B65D 81/38-)
- U F25D 25/00 **Charging, supporting, and discharging the articles to be cooled**
- F25D 25/04 · by conveyers (-in general B65G-)
- F25D 27/00 Lighting arrangements (-in general F21-)**
- U F25D 31/00 **Other cooling or freezing apparatus**
- F25D 31/002 · {Liquid coolers, e.g. beverage cooler (-receptacle coolers F25D 31/006-)}

Project: N/A (F25J)

- F25J **LIQUEFACTION, SOLIDIFICATION OR SEPARATION OF GASES OR GASEOUS { or liquefied gaseous} MIXTURES BY PRESSURE AND COLD TREATMENT { or by bringing them into the supercritical state (-cryogenic pumps F04B 37/08; gas storage vessels, gas holders F17; filling vessels with, or discharging from vessels, compressed, liquefied or solidified gases F17C; refrigeration machines, plants, or systems F25B)}**
- U F25J 1/00 **Processes or apparatus for liquefying or solidifying gases or gaseous mixtures {(for ammonia in general C01C 1/00; solidification of carbonic acid C01B 31/22; recovering volatile solvents by condensation B01D 5/00; vapor recovery systems combined with filling nozzles B67D 7/54)(not used)}**
- F25J 1/0002 · {-characterised by the fluid to be liquefied (not used)}
- F25J 1/0005 · · {-Light or noble gases (F25J 1/0012 takes precedence)}
- F25J 1/0007 · · · {-Helium}
- F25J 1/001 · · · {-Hydrogen}
- F25J 1/0012 · · {-Primary atmospheric gases, e.g. air}
- F25J 1/0015 · · · {-Nitrogen}
- F25J 1/0017 · · · {-Oxygen}
- F25J 1/002 · · · {-Argon}
- F25J 1/0022 · · {-Hydrocarbons, e.g. natural gas}
- F25J 1/0025 · · · {-Boil-off gases "BOG" from storages}
- F25J 1/0027 · · {-O_xides of carbon e.g. CO₂}
- F25J 1/003 · {-characterised by the kind of cold generation within the liquefaction unit for compensating heat leaks and liquid production (not used)}
- F25J 1/0032 · · {-using the feed stream itself or separated fractions from it, i.e. "internal refrigeration" (not used)}
- F25J 1/0035 · · · {-by gas expansion with extraction of work}
- F25J 1/0037 · · · · {-of a return stream}
- F25J 1/004 · · · {-by flash gas recovery (F25J 1/0267 takes precedence)}
- F25J 1/0042 · · · {-by liquid expansion with extraction of work}
- F25J 1/0045 · · · {-by vaporising a liquid return stream}

- F25J 1/0047 . . {-using an "external" refrigerant stream in a closed vapor compression cycle ([F25J 1/0221](#), [F25J 1/0225](#) take precedence)(not used)}
- F25J 1/005 . . . {-by expansion of a gaseous refrigerant stream with extraction of work}
- F25J 1/0052 . . . {-by vaporising a liquid refrigerant stream}
- F25J 1/0055 {-originating from an incorporated cascade}
- F25J 1/0057 {-after expansion of the liquid refrigerant stream with extraction of work}
- F25J 1/006 . {-characterised by the refrigerant fluid used (refrigerants in vapor compression cycles [F25B 9/002](#), refrigerant materials per se [C09K 5/00](#))(not used)}
- F25J 1/0062 . . {-Light or noble gases, mixtures thereof ([F25J 1/007](#) takes precedence)}
- F25J 1/0065 . . . {-Helium}
- F25J 1/0067 . . . {-Hydrogen}
- F25J 1/007 . . {-Primary atmospheric gases, mixtures thereof}
- F25J 1/0072 . . . {-Nitrogen}
- F25J 1/0075 . . . {-Oxygen}
- F25J 1/0077 . . . {-Argon}
- F25J 1/008 . . {-Hydrocarbons (not used)}
- F25J 1/0082 . . . {-Methane}
- F25J 1/0085 . . . {-Ethane; Ethylene}
- F25J 1/0087 . . . {-Propane; Propylene}
- F25J 1/009 . . . {-Hydrocarbons with four or more carbon atoms}
- F25J 1/0092 . . . {-Mixtures of hydrocarbons comprising possibly also minor amounts of nitrogen}
- F25J 1/0095 . . {-Oxides of carbon, e.g. CO₂}
- F25J 1/0097 . . {-Others, e.g. F-, Cl-, HF-, HClF-, HCl-hydrocarbons etc. or mixtures thereof}
- F25J 1/02 . . requiring the use of refrigeration, e.g. of helium or hydrogen { Details and kind of the refrigeration system used; Integration with other units or processes; Controlling aspects of the process-(not used)}
- F25J 1/0201 . . {-using only internal refrigeration means, i.e. without external refrigeration}
- F25J 1/0202 . . . {-in a quasi-closed internal refrigeration loop ([F25J 1/0208](#), [F25J 1/0219](#), [F25J 1/0224](#) take precedence)}
- F25J 1/0203 . . {-using a single-component refrigerant [SCR] fluid in a closed vapor compression cycle ([F25J 1/0211](#) takes precedence) (not used)}
- F25J 1/0204 . . . {-as a single flow SCR cycle}
- F25J 1/0205 . . . {-as a dual level SCR refrigeration cascade}
- F25J 1/0207 . . . {-as at least a three level SCR refrigeration cascade}
- F25J 1/0208 . . . {-in combination with an internal quasi-closed refrigeration loop e.g. with deep flash recycle loop ([F25J 1/021](#) takes precedence)}
- F25J 1/0209 {-as at least a three level refrigeration cascade}
- F25J 1/021 {-using a deep flash recycle loop}
- F25J 1/0211 . . {-using a multi-component refrigerant (MCR) fluid in a closed vapor compression cycle (not used)}
- F25J 1/0212 . . . {-as a single flow MCR cycle}
- F25J 1/0214 . . . {-as a dual level refrigeration cascade with at least one MCR cycle}
- F25J 1/0215 {-with one SCR cycle}
- F25J 1/0216 {-using a C3 pre-cooling cycle}
- F25J 1/0217 . . . {-as at least a three level refrigeration cascade with at least one MCR cycle}

- F25J 1/0218 {-with one or more SCR cycles e.g. with a C3 pre-cooling cycle}
- F25J 1/0219 . . . {-in combination with an internal quasi-closed refrigeration loop, e.g. using a deep flash recycle loop}
- F25J 1/0221 . . {-using the cold stored in an external cryogenic component in an open refrigeration loop}
- F25J 1/0222 . . . {-in combination with an intermediate heat exchange fluid between the cryogenic component and the fluid to be liquefied ([F25J 1/0224](#) takes precedence)}
- F25J 1/0223 . . . {-in combination with the subsequent re-vaporisation of the originally liquefied gas at a second location to produce the external cryogenic component}
- F25J 1/0224 . . . {-in combination with an internal quasi-closed refrigeration loop ([F25J 1/0208](#), [F25J 1/0219](#) take precedence)}
- F25J 1/0225 . . {-using other external refrigeration means not provided before, e.g. heat driven absorption chillers}
- F25J 1/0227 . . . {-within a refrigeration cascade}
- F25J 1/0228 . . {-Coupling of the liquefaction unit to other units or processes, so-called integrated processes (combined plants, e.g. engine plant combined with an industrial process [F01K 23/064](#); gas turbine plants in combination with other processes [F02C 6/00](#))}
- F25J 1/0229 . . . {-Integration with a unit for using hydrocarbons, e.g. consuming hydrocarbons as feed stock}
- F25J 1/023 {-for the combustion as fuels, i.e. integration with the fuel gas system}
- F25J 1/0231 {-for the working-up of the hydrocarbon feed, e.g. reinjection of heavier hydrocarbons into the liquefied gas}
- F25J 1/0232 . . . {-integration within a pressure letdown station of a high pressure pipeline system}
- F25J 1/0234 . . . {-Integration with a cryogenic air separation unit (cryogenic separation of air [F25J 3/04](#))}
- F25J 1/0235 . . . {-Heat exchange integration}
- F25J 1/0236 {-providing refrigeration for different processes treating not the same feed stream}
- F25J 1/0237 {-integrating refrigeration provided for liquefaction and purification/ treatment of the gas to be liquefied, e.g. heavy hydrocarbon removal from natural gas (details related to rectification [F25J 3/02](#); details related to partial condensation [F25J 3/06](#); working-up natural gas [C10L 3/10](#))}
- F25J 1/0238 {-Purification/treatment step is integrated within one refrigeration cycle only, i.e. the same or single refrigeration cycle provides feed or overhead gas cooling}
- F25J 1/0239 {-Purification or treatment step being integrated between two refrigeration cycles of a refrigeration cascade, i.e. first cycle providing feed gas cooling and second cycle providing overhead gas cooling}
- F25J 1/0241 {-wherein the overhead cooling comprises providing reflux for a fractionation step}
- F25J 1/0242 {-Waste heat recovery, e.g. from heat of compression}
- F25J 1/0243 . . {-Start-up or control of the process; Details of the apparatus used; Details of the refrigerant compression system used (not used)}
- F25J 1/0244 . . . {-Operation; Control and regulation; Instrumentation ([F25J 1/0279](#) takes precedence)}
- F25J 1/0245 {-Different modes, i.e. 'runs', of operation; Process control}
- F25J 1/0247 {-start-up of the process}

- F25J 1/0248 {-Stopping of the process, e.g. defrosting or deriming, maintenance; Back-up mode or systems}
- F25J 1/0249 {-Controlling refrigerant inventory, i.e. composition or quantity (charging or discharging refrigerants in cooling systems [F25B 45/00](#))}
- F25J 1/025 {-Details related to the refrigerant production or treatment, e.g. make-up supply from feed gas itself}
- F25J 1/0251 {-Intermittent or alternating process, so-called batch process, e.g. "peak-shaving"}
- F25J 1/0252 {-Control strategy, e.g. advanced process control or dynamic modeling}
- F25J 1/0254 {-controlling particular process parameter, e.g. pressure, temperature}
- F25J 1/0255 {-controlling the composition of the feed or liquefied gas, e.g. to achieve a particular heating value of natural gas}
- F25J 1/0256 {-Safety aspects of operation ([F25J 1/0298](#) takes precedence)}
- F25J 1/0257 . . . {-Construction and layout of liquefaction equipments, e.g. valves, machines ([F25J 1/0279](#) takes precedence)}
- F25J 1/0258 {-vertical layout of the equipments within in the cold box}
- F25J 1/0259 {-Modularity and arrangement of parts of the liquefaction unit and in particular of the cold box e.g. pre-fabrication, assembling and erection, dimensions, horizontal layout "plot"}
- F25J 1/0261 {-Details of cold box insulation, housing and internal structure (buildings forming parts of cooling plants [E04H 5/10](#))}
- F25J 1/0262 {-Details of the cold heat exchange system (constructional details [F25J 5/00](#), construction of cold-exchangers in general [F28](#))}
- F25J 1/0263 {-using different types of heat exchangers}
- F25J 1/0264 {-Arrangement of heat exchanger cores in parallel with different functions, e.g. different cooling streams ([F25J 1/0272](#) takes precedence)}
- F25J 1/0265 {-comprising cores associated exclusively with the cooling of a refrigerant stream, e.g. for auto-refrigeration or economizer}
- F25J 1/0267 {-using flash gas as heat sink}
- F25J 1/0268 {-using a dedicated refrigeration means ([F25J 1/0296](#) takes precedence)}
- F25J 1/0269 {-Arrangement of liquefaction units or equipments fulfilling the same process step, e.g. multiple "trains" concept ([F25J 1/0294](#) takes precedence)}
- F25J 1/027 {-Inter-connecting multiple hot equipments upstream of the cold box}
- F25J 1/0271 {-Inter-connecting multiple cold equipments within or downstream of the cold box}
- F25J 1/0272 {-Multiple identical heat exchangers in parallel}
- F25J 1/0274 {-Retrofitting or revamping of an existing liquefaction unit}
- F25J 1/0275 {-adapted for special use of the liquefaction unit, e.g. portable or transportable devices}
- F25J 1/0276 {-Laboratory or other miniature devices}
- F25J 1/0277 {-Offshore use, e.g. during shipping}
- F25J 1/0278 {-Unit being stationary, e.g. on floating barge or fixed platform}
- F25J 1/0279 . . . {-Compression of refrigerant or internal recycle fluid, e.g. kind of compressor, accumulator, suction drum etc.}
- F25J 1/0281 {-characterised by the type of prime driver, e.g. hot gas expander}
- F25J 1/0282 {-Steam turbine as the prime mechanical driver}

- F25J 1/0283 {-Gas turbine as the prime mechanical driver}
 - F25J 1/0284 {-Electrical motor as the prime mechanical driver}
 - F25J 1/0285 {-Combination of different types of drivers mechanically coupled to the same refrigerant compressor, possibly split on multiple compressor casings}
 - F25J 1/0287 {-including an electrical motor}
 - F25J 1/0288 {-using work extraction by mechanical coupling of compression and expansion of the refrigerant, so-called companders}
 - F25J 1/0289 {-Use of different types of prime drivers of at least two refrigerant compressors in a cascade refrigeration system}
 - F25J 1/029 {-Mechanically coupling of different refrigerant compressors in a cascade refrigeration system to a common driver}
 - F25J 1/0291 {-Refrigerant compression by combined gas compression and liquid pumping}
 - F25J 1/0292 {-Refrigerant compression by cold or cryogenic suction of the refrigerant gas}
 - F25J 1/0294 {-Multiple compressor casings/strings in parallel, e.g. split arrangement}
 - F25J 1/0295 {-Shifting of the compression load between different cooling stages within a refrigerant cycle or within a cascade refrigeration system}
 - F25J 1/0296 {-Removal of the heat of compression, e.g. within an inter- or afterstage-cooler against an ambient heat sink}
 - F25J 1/0297 {-using an externally chilled fluid, e.g. chilled water}
 - F25J 1/0298 {-Safety aspects and control of the refrigerant compression system, e.g. anti-surge control}
- U F25J 3/00 Processes or apparatus for separating the constituents of gaseous { or liquefied gaseous} mixtures involving the use of liquefaction or solidification {(not used)}**
- U F25J 3/02 . by rectification, i.e. by continuous interchange of heat and material between a vapour stream and a liquid stream ([F25J 3/08](#) takes precedence; { purification of hydrocarbons in general [C07C 7/00](#); (not used)})
 - F25J 3/0204 . . {-characterised by the feed stream (for air [F25J 3/04](#))(not used)}
 - F25J 3/0209 . . . {-Natural gas or substitute natural gas}
 - F25J 3/0214 {-Liquefied natural gas}
 - F25J 3/0219 . . . {-Refinery gas, cracking gas, coke oven gas, gaseous mixtures containing aliphatic unsaturated C_nH_m or gaseous mixtures of undefined nature}
 - F25J 3/0223 . . . {-H₂/CO mixtures, i.e. synthesis gas; Water gas or shifted synthesis gas-(production of carbon monoxide containing gas in general [C01B 31/18](#), [C10J](#), [C10K](#); production of hydrogen containing gas [C01B 3/00](#))}
 - F25J 3/0228 . . {-characterised by the separated product stream (not used)}
 - F25J 3/0271 . . . {separation of H₂/CO mixtures, i.e. of synthesis gas-(production of carbon monoxide containing gas in general [C01B 31/18](#), [C10J](#), [C10K](#), production of hydrogen containing gas [C01B 3/00](#))}
 - F25J 3/0276 . . . {separation of H₂/N₂ mixtures, i.e. of ammonia synthesis gas-(in general [C01B 3/00](#))}
 - U F25J 3/04 . . for air {(not used)}

WARNING

The reclassification has, for the moment, been carried out only down to January 1, 1960.

- F25J 3/04006 . . . {-Providing pressurised feed air or process streams within or from the air fractionation unit (not used)}
- F25J 3/04012 . . . {-by compression of warm gaseous streams; details of intake or interstage cooling ([F25J 3/04048](#) takes precedence; operation of compressors [F25J 3/04781](#); particular layout of compressors used in air fractionation units [F25J 3/04866](#))}
- F25J 3/04018 {-of main feed air}
- F25J 3/04024 {-of purified feed air, so-called boosted air}
- F25J 3/0403 {-of nitrogen}
- F25J 3/04036 {-of oxygen}
- F25J 3/04042 {-of argon or argon enriched stream}
- F25J 3/04048 . . . {-by compression of cold gaseous streams, e.g. intermediate or oxygen enriched (waste) streams}
- F25J 3/04054 {-of air}
- F25J 3/0406 {-of nitrogen}
- F25J 3/04066 {-of oxygen}
- F25J 3/04072 {-of argon or argon enriched stream}
- F25J 3/04078 . . . {-providing pressurized products by liquid compression and vaporisation with cold recovery, i.e. so-called internal compression (operation of pumps [F25J 3/04781](#); particular layout of pumps used in air fractionation units [F25J 3/04866](#))}
- F25J 3/04084 {-of nitrogen}
- F25J 3/0409 {-of oxygen}
- F25J 3/04096 {-of argon or argon enriched stream}
- F25J 3/04103 {-using solely hydrostatic liquid head}
- F25J 3/04109 . . . {-Arrangements of compressors and /or their drivers (using work extraction by mechanical coupling of compression and cold expansion [F25J 3/04381](#))}
- F25J 3/04115 {-characterised by the type of prime driver e.g. hot gas expander}
- F25J 3/04121 {-Steam turbine as the prime mechanical driver}
- F25J 3/04127 {-Gas turbine as the prime mechanical driver}
- F25J 3/04133 {-Electrical motor as the prime mechanical driver}
- F25J 3/04139 {-Combination of different types of drivers mechanically coupled to the same compressor, possibly split on multiple compressor casings}
- F25J 3/04145 {-Mechanically coupling of different compressors of the air fractionation process to the same driver(s)}
- F25J 3/04151 . . . {-Purification and (pre-)cooling of the feed air; recuperative heat-exchange with product streams (not used)}
- F25J 3/04157 {-Afterstage cooling and so-called "pre-cooling" of the feed air upstream the air purification unit and main heat exchange line ([F25J 3/04618](#) takes precedence)}
- F25J 3/04163 . . . {-Hot end purification of the feed air (arrangements of cold regenerators [F25J 5/00](#))}
- F25J 3/04169 {-by adsorption of the impurities (adsorption in general [B01D 53/02](#))}
- F25J 3/04175 {-at a pressure of substantially more than the highest pressure column}
- F25J 3/04181 {-Regenerating the adsorbents}

- F25J 3/04187 {-Cooling of the purified feed air by recuperative heat-exchange; Heat-exchange with product streams (arrangements of cold exchangers [F25J 5/002](#))}
- F25J 3/04193 {-Division of the main heat exchange line in consecutive sections having different functions}
- F25J 3/042 {-having an intermediate feed connection}
- F25J 3/04206 {-including a so-called "auxiliary vaporiser" for vaporising and producing a gaseous product}
- F25J 3/04212 {-and simultaneously condensing vapor from a column serving as reflux within the or another column}
- F25J 3/04218 {-Parallel arrangement of the main heat exchange line in cores having different functions e.g. in low pressure and high pressure cores ([F25J 3/04503](#) takes precedence)}
- F25J 3/04224 {-Cores associated with a liquefaction or refrigeration cycle}
- F25J 3/0423 {-Subcooling of liquid process streams}
- F25J 3/04236 {-Integration of different exchangers in a single core, so-called integrated cores ([F25J 3/04624](#) takes precedence)}
- F25J 3/04242 {-Cold end purification of the feed air}
- F25J 3/04248 . . . {-Generation of cold for compensating heat leaks or liquid production, e.g. by Joule-Thompson expansion}
- F25J 3/04254 {-using the cold stored in external cryogenic fluids (closed loop [F25J 3/04278](#))}
- F25J 3/0426 {-The cryogenic component does not participate in the fractionation}
- F25J 3/04266 {-and being liquefied hydrocarbons}
- F25J 3/04272 {-and comprising means for reducing the risk of pollution of hydrocarbons into the air fractionation}
- F25J 3/04278 {-using external refrigeration units, e.g. closed mechanical or regenerative refrigeration units}
- F25J 3/04284 {-using internal refrigeration by open-loop gas work expansion, e.g. of intermediate or oxygen enriched (waste-)streams ([F25J 3/04333](#) takes precedence)}
- F25J 3/0429 {-of feed air, e.g. used as waste or product air or expanded into an auxiliary column}
- F25J 3/04296 {-Claude expansion, i.e. expanded into the main or high pressure column}
- F25J 3/04303 {-Lachmann expansion, i.e. expanded into oxygen producing or low pressure column}
- F25J 3/04309 {-of nitrogen}
- F25J 3/04315 {-Lowest pressure or impure nitrogen, so-called waste nitrogen expansion}
- F25J 3/04321 {-of oxygen}
- F25J 3/04327 {-of argon or argon enriched stream}
- F25J 3/04333 {-using quasi-closed loop internal vapor compression refrigeration cycles, e.g. of intermediate or oxygen enriched (waste-)streams}
- F25J 3/04339 {-of air}
- F25J 3/04345 {-and comprising a gas work expansion loop}
- F25J 3/04351 {-of nitrogen}
- F25J 3/04357 {-and comprising a gas work expansion loop}
- F25J 3/04363 {-of oxygen}

- F25J 3/04369 {of argon or argon enriched stream}
- F25J 3/04375 {-Details relating to the work expansion, e.g. process parameter etc.}
- F25J 3/04381 {-using work extraction by mechanical coupling of compression and expansion so-called companders}
- F25J 3/04387 {-using liquid or hydraulic turbine expansion}
- F25J 3/04393 {-using multiple or multistage gas work expansion}
- F25J 3/044 . . . {-using a single pressure main column system only ([F25J 3/0446](#), [F25J 3/04624](#), [F25J 3/04636](#) take precedence)}
- F25J 3/04406 . . . {-using a dual pressure main column system ([F25J 3/0446](#), [F25J 3/04624](#), [F25J 3/04636](#) and [F25J 3/04715](#) take precedence)(not used)}
- F25J 3/04412 {-in a classical double column flowsheet, i.e. with thermal coupling by a main reboiler-condenser in the bottom of low pressure respectively top of high pressure column}
- F25J 3/04418 {-with thermally overlapping high and low pressure columns}
- F25J 3/04424 {-without thermally coupled high and low pressure columns, i.e. a so-called split columns}
- F25J 3/0443 {-A main column system not otherwise provided, e.g. a modified double column flowsheet}
- F25J 3/04436 . . . {-using at least a triple pressure main column system ([F25J 3/0446](#), [F25J 3/04624](#), [F25J 3/04636](#) and [F25J 3/04715](#) take precedence)(not used)}
- F25J 3/04442 {-in a double column flowsheet with a high pressure pre-rectifier}
- F25J 3/04448 {-in a double column flowsheet with an intermediate pressure column}
- F25J 3/04454 {-a main column system not otherwise provided, e.g. serially coupling of columns or more than three pressure levels}
- U F25J 3/0446 . . . {using the heat generated by mixing two different phases}
- F25J 3/04466 {-for producing oxygen as a mixing column overhead gas by mixing gaseous air feed and liquid oxygen}
- F25J 3/04472 . . . {-using the cold from cryogenic liquids produced within the air fractionation unit and stored in internal or intermediate storages (not used)}
- F25J 3/04478 {-for controlling purposes, e.g. start-up or back-up procedures ([F25J 3/04496](#) takes precedence)}
- F25J 3/04484 {-for purity control during steady state operation}
- F25J 3/0449 {-for rapid load change of the air fractionation unit}
- F25J 3/04496 {-for compensating variable air feed or variable product demand by alternating between periods of liquid storage and liquid assist}
- F25J 3/04503 {-by exchanging "cold" between at least two different cryogenic liquids, e.g. independently from the main heat exchange line of the air fractionation and/or by using external alternating storage systems}
- F25J 3/04509 {-within the cold part of the air fractionation, i.e. exchanging "cold" within the fractionation and/or main heat exchange line}
- F25J 3/04515 {-Simultaneously changing air feed and products output}
- F25J 3/04521 . . . {-Coupling of the air fractionation unit to an air gas-consuming unit, so-called integrated processes (combined plants, e.g. engine plant combined with an industrial process [F01K 23/064](#); gas-turbine plants supplying working fluid to a chemical process [F02C 6/10](#))(not used)}
- F25J 3/04527 {-Integration with an oxygen consuming unit, e.g. glass facility, waste incineration or oxygen based processes in general}
- F25J 3/04533 {-for the direct combustion of fuels in a power plant, so-called "oxyfuel combustion"}

- F25J 3/04539 {-for the H₂/CO synthesis by partial oxidation or oxygen consuming reforming processes of fuels}
- F25J 3/04545 {-for the gasification of solid or heavy liquid fuels, e.g. integrated gasification combined cycle (IGCC)}
- F25J 3/04551 {-for the metal production}
- F25J 3/04557 {-for pig iron or steel making e.g. blast furnace, Corex}
- F25J 3/04563 {-Integration with an nitrogen consuming unit, e.g. for purging, inerting, cooling or heating}
- F25J 3/04569 {-for enhanced or tertiary oil recovery}
- F25J 3/04575 {-for a gas expansion plant e.g. dilution of the combustion gas in a gas turbine}
- F25J 3/04581 {-Hot gas expansion of indirect heated nitrogen}
- F25J 3/04587 {-for the NH₃ synthesis e.g. for adjusting the H₂/N₂ ratio}
- F25J 3/04593 {-The air gas consuming unit is also fed by an air stream}
- F25J 3/046 {-Completely integrated air feed compression, i.e. common MAC}
- F25J 3/04606 {-Partially integrated air feed compression, i.e. independent MAC for the air fractionation unit plus additional air feed from the air gas consuming unit}
- F25J 3/04612 {-Heat exchange integration with process streams, e.g. from the air gas consuming unit}
- F25J 3/04618 {-for cooling an air stream fed to the air fractionation unit}
- F25J 3/04624 {-using integrated mass and heat exchange, so-called non-adiabatic rectification, e.g. dephlegmator, reflux exchanger}
- F25J 3/0463 {-Simultaneously between rectifying and stripping sections, i.e. double dephlegmator}
- F25J 3/04636 {-using a hybrid air separation unit, e.g. combined process by cryogenic separation and non-cryogenic separation techniques ([F25J 3/04733](#) and [F25J 3/04757](#) take precedence)}
- F25J 3/04642 {-Recovering noble gases from air (from gas mixtures other than air [F25J 3/028](#) or [F25J 3/0685](#))}
- U F25J 3/04648 [argon (not used)]
- F25J 3/04654 {-Producing crude argon in a crude argon column}
- F25J 3/0466 {-as a parallel working rectification column or auxiliary column system in a single pressure main column system}
- F25J 3/04666 {-as a parallel working rectification column of the low pressure column in a dual pressure main column system}
- F25J 3/04672 {-having a top condenser}
- F25J 3/04678 {-cooled by oxygen enriched liquid from high pressure column bottoms}
- F25J 3/04684 {-and a bottom re-boiler ([F25J 3/04696](#) takes precedence)}
- F25J 3/0469 {-and an intermediate re-boiler/condenser ([F25J 3/04696](#) takes precedence)}
- F25J 3/04696 {-a bottom re-boiler and an intermediate re-boiler/condenser}
- F25J 3/04703 {-being arranged in more than one vessel}
- F25J 3/04709 {-as an auxiliary column system in at least a dual pressure main column system}
- F25J 3/04715 {-The auxiliary column system simultaneously produces oxygen}
- F25J 3/04721 {-Producing pure argon, e.g. recovered from a crude argon column}

- F25J 3/04727 {-using an auxiliary pure argon column for nitrogen rejection ([F25J 3/04739](#) takes precedence)}
- F25J 3/04733 {-using a hybrid system, e.g. using adsorption, permeation or catalytic reaction}
- F25J 3/04739 {-in combination with an auxiliary pure argon column}
- F25J 3/04745 {-Krypton and/or Xenon}
- F25J 3/04751 {-Producing pure krypton and/or xenon recovered from a crude krypton/xenon mixture}
- F25J 3/04757 {-using a hybrid system, e.g. using adsorption, permeation or catalytic reaction}
- F25J 3/04763 . . . {-Start-up or control of the process; Details of the apparatus used (not used)}
- F25J 3/04769 {-Operation, control and regulation of the process; Instrumentation within the process}
- F25J 3/04775 {-Air purification and pre-cooling}
- F25J 3/04781 {-Pressure changing devices, e.g. for compression, expansion, liquid pumping}
- F25J 3/04787 {-Heat exchange, e.g. main heat exchange line; Subcooler, external reboiler-condenser ([F25J 3/04793](#) and [F25J 3/0486](#) take precedence)}
- F25J 3/04793 {-Rectification, e.g. columns; Reboiler-condenser ([F25J 3/0486](#) takes precedence)}
- F25J 3/048 {-Argon recovery}
- F25J 3/04806 {-High purity argon purification}
- F25J 3/04812 {-Different modes, i.e. "runs" of operation ([F25J 3/04472](#) takes precedence)}
- F25J 3/04818 {-Start-up of the process}
- F25J 3/04824 {-Stopping of the process, e.g. defrosting or deriming; Back-up procedures}
- F25J 3/0483 {-Rapid load change of the air fractionation unit}
- F25J 3/04836 {-Variable air feed, i.e. "load" or product demand during specified periods e.g. during periods with high respectively low power costs ([F25J 3/0483](#) takes precedence)}
- F25J 3/04842 {-Intermittent process, so-called batch process}
- F25J 3/04848 {-Control strategy, e.g. advanced process control or dynamic modeling}
- F25J 3/04854 {-Safety aspects of operation}
- F25J 3/0486 {-of vaporisers for oxygen enriched liquids, e.g. purging of liquids}
- F25J 3/04866 {-Construction and layout of air fractionation equipments, e.g. valves, machines ([F25J 5/00](#) takes precedence)}
- F25J 3/04872 {-Vertical layout of cold equipments within in the cold box, e.g. columns, heat exchangers etc.}
- F25J 3/04878 {-Side by side arrangement of multiple vessels in a main column system, wherein the vessels are normally mounted one upon the other or forming different sections of the same column (multiple vessels of a crude argon column [F25J 3/04703](#))}
- F25J 3/04884 {-Arrangement of reboiler-condensers}
- F25J 3/0489 {-Modularity and arrangement of parts of the air fractionation unit, in particular of the cold box, e.g. pre-fabrication, assembling and erection, dimensions, horizontal layout "plot" ([F25J 3/04872](#) takes precedence)}
- F25J 3/04896 {-Details of columns, e.g. internals, inlet/outlet devices}

- F25J 3/04903 {-Plates or trays}
- F25J 3/04909 {-Structured packings}
- F25J 3/04915 {-Combinations of different material exchange elements, e.g. within different columns}
- F25J 3/04921 {-within the same column}
- F25J 3/04927 {-Liquid or gas distribution devices}
- F25J 3/04933 {-Partitioning walls or sheets}
- F25J 3/04939 {-Vertical, e.g. dividing wall columns (details of dephlegmators [F25J 5/007](#))}
- F25J 3/04945 {-Details of internal structure; insulation and housing of the cold box}
- F25J 3/04951 {-Arrangements of multiple air fractionation units or multiple equipments fulfilling the same process step, e.g. multiple trains in a network ([F25J 3/04636](#) takes precedence)}
- F25J 3/04957 {-and inter-connecting equipments upstream of the fractionation unit (s), i.e. at the "front-end"}
- F25J 3/04963 {-and inter-connecting equipment within or downstream of the fractionation unit(s) ([F25J 3/04393](#) takes precedence)}
- F25J 3/04969 {-Retrofitting or revamping of an existing air fractionation unit}
- F25J 3/04975 {-adapted for special use of the air fractionation unit, e.g. transportable devices by truck or small scale use}
- F25J 3/04981 {-for portable medical or home use}
- F25J 3/04987 {-for offshore use}
- F25J 3/04993 {-for space applications, e.g. for rocket use}
- U F25J 3/06 {-by partial condensation ([F25J 3/08](#) takes precedence; by rectification [F25J 3/02](#); { purification of hydrocarbons in general [C07C 7/00](#); (not used))}
- F25J 3/0605 {-characterised by the feed stream (for air [F25J 3/04](#))(not used)}
- F25J 3/061 {-Natural gas or substitute natural gas}
- F25J 3/0615 {-Liquefied natural gas}
- F25J 3/062 {-Refinery gas, cracking gas, coke oven gas, gaseous mixtures containing aliphatic unsaturated C_nH_m or gaseous mixtures of undefined nature}
- F25J 3/0625 {-H₂/CO mixtures, i.e. synthesis gas; Water gas or shifted synthesis gas-(production of carbon monoxide containing gas in general [C01B 31/18](#), [C10J](#), [C10K](#); production of hydrogen containing gas [C01B 3/00](#))}
- F25J 3/063 {-characterised by the separated product stream (not used)}
- F25J 3/0675 {-separation of H₂/CO mixtures, i.e. of synthesis gas-(production of carbon monoxide containing gas in general [C01B 31/18](#), [C10J](#), [C10K](#), production of hydrogen containing gas [C01B 3/00](#))}
- F25J 3/068 {-separation of H₂/N₂ mixtures, i.e. of ammonia synthesis gas-(in general [C01B 3/00](#))}
- F25J 3/0685 {-separation of noble gases (from air [F25J 3/04642](#); in general [C01B 23/00](#))}
- F25J 3/069 {-of helium}
- F25J 3/0695 {-Start-up or control of the process; Details of the apparatus used}
- U **F25J 5/00** **Arrangements of cold exchangers or cold accumulators in separation or liquefaction plants (heat exchangers [F28C](#), [F28D](#), [F28F](#))**
- F25J 5/002 {-for continuously recuperating cold, i.e. in a so-called recuperative heat exchanger}
- F25J 5/005 {-in a reboiler-condenser e.g. within a column}

- F25J 5/007 · · {-combined with mass exchange, i.e. in a so-called dephlegmator}
- U F25J 2235/00** **Processes or apparatus involving steps for increasing the pressure or for conveying of liquid process streams (not used)**
- F25J 2235/52 · the fluid being oxygen enriched compared to air ("*crude oxygen*") ("*crude oxygen*")
- F25J 2235/60 · the fluid being (*a mixture of hydrocarbons*) (*a mixture of hydrocarbons*)
- U F25J 2240/00** **Processes or apparatus involving steps for expanding of process streams (not used)**
- F25J 2240/02 · Expansion of a process fluid in a work-extracting turbine (*i.e. isentropic expansion*), e.g. of the feed stream (*i.e. isentropic expansion*), e.g. of the feed stream

Project: N/A (F26B)**F26B**

DRYING SOLID MATERIALS OR OBJECTS BY REMOVING LIQUID THEREFROM (-racks for drying fruit and vegetables [A01F 25/12](#) ; drying foodstuffs [A23](#); drying hair [A45D 20/00](#) ; body-drying implements [A47K 10/00](#) ; drying household articles [A47L](#), { e.g. drying footwear [A47L 23/20](#) ; } drying gases and vapours [B01D](#); chemical and physical processes for dewatering or like separating liquids from solids [B01D 43/00](#) ; centrifugal apparatus [B04](#); drying ceramics [C04B 33/30](#) ; drying yarns and fabrics in association with some other form of treatment [D06C](#); drying frames for laundry without heating or positive air circulation, domestic and like spin-dryers, wringing and hot pressing laundry [D06F](#); furnaces, kilns, ovens [F27](#); { treatment including a drying step of semiconductor substrates, e.g. wafers, [H01L 21/67028](#) }

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

F26B 11/06	covered by	F26B 11/0486
F26B 13/02	covered by	F26B 13/10
F26B 13/04	covered by	F26B 13/10
F26B 13/20	covered by	F26B 13/104
F26B 23/08	covered by	F26B 3/343
F26B 3/347		

- F26B 1/00** **Preliminary treatment of solid materials or objects to facilitate drying, {e.g. mixing or backmixing the materials to be dried with predominantly dry solids (-[F26B 5/005](#) takes precedence-)}**
- F26B 1/005 · {by means of desintegrating, e.g. crushing, shredding, milling the materials to be dried (-[F26B 17/102](#) , [F26B 17/103](#) take precedence-)}
- F26B 3/00** **Drying solid materials or objects by processes involving the application of heat (-in specific machines or apparatus [F26B 9/00](#) to [F26B 19/00](#)-)**
- F26B 3/02 · by convection, i.e. heat being conveyed from a heat source to the materials or objects to be dried by a gas or vapour, e.g. air{(-[F26B 3/283](#) and [F26B 3/343](#) take precedence-)}
- F26B 3/04 · · the gas or vapour circulating over or surrounding the materials or objects to be dried (-[F26B 3/14](#) takes precedence-)
- F26B 3/06 · · the gas or vapour flowing through the materials or objects to be dried (-[F26B 3/14](#) takes precedence-)
- F26B 3/08 · · · so as to loosen them, e.g. to form a fluidised bed{(-"fluidised-bed" technique in general [B01J 8/24](#) ; centrifugal fluidised beds [F26B 7/007](#)-)}

- F26B 3/082
- • • {arrangements of devices for distributing fluidising gas, e.g. grids, nozzles (~~F26B 3/0926~~ takes precedence; such devices per se [B01J 8/44](#))}
- U F26B 3/10
- • the gas or vapour carrying the materials or objects to be dried with it
- F26B 3/12
- • • in the form of a spray, {i.e. sprayed or dispersed emulsions or suspensions (~~spray drying of solutions [B01D 1/18](#)~~)}
- U F26B 3/18
- by conduction, i.e. the heat is conveyed from the heat source, e.g. gas flame, to the materials or objects to be dried by direct contact
- F26B 3/20
- • the heat source being a heated surface {e.g. a moving belt or conveyer} (~~F26B 3/22~~ takes precedence)
- U F26B 3/22
- • the heat source and the materials or objects to be dried being in relative motion, e.g. of vibration
- F26B 3/225
- • • {the materials or objects to be dried being immersed in a fluidised bed of heated particles} (~~for webs [F26B 13/106](#)~~)
- U F26B 3/28
- by radiation, e.g. from the sun
- F26B 3/30
- • from infra-red-emitting elements {(~~by radiation emanating from passages containing heated fluids other than combustion gases [F26B 23/10](#)~~)}
- U F26B 3/32
- by development of heat within the materials or objects to be dried, {e.g. by fermentation or other microbiological action}
- F26B 3/36
- • by using mechanical effects, e.g. by friction {(~~by using ultrasonic vibrations [F26B 5/02](#)~~)}
- F26B 5/00**
- Drying solid materials or objects by processes not involving the application of heat (~~separating liquids from solids by straining [B01D](#) ; replacing liquids in wet solids by other liquids, e.g. water by spirit, [B01D 12/00](#) ; drying by electrophoresis [B01J](#))~~**
- F26B 5/005
- {by dipping them into or mixing them with a chemical liquid, e.g. organic; chemical, e.g. organic, dewatering aids (~~F26B 3/005~~ takes precedence; using chemical vapours or gases [F26B 21/14](#))}
- F26B 5/02
- by using ultrasonic vibrations {(~~using sonic energy generated by pulse jet combustion [F26B 23/026](#)~~)}
- F26B 5/04
- by evaporation or sublimation of moisture under reduced pressure, e.g. in a vacuum {(~~F26B 11/049~~ and [F26B 17/128](#) take precedence)}
- NOTE
- In subgroups [F26B 5/04](#) and [F26B 5/06](#) , the term "not including the application of heat" is disregarded for classification purposes. When drying with the use of vacuum, frequently heat is applied to compensate for the cooling effect or to promote sublimation from the frozen state
- F26B 5/044
- • {for drying materials in a batch operation in an enclosure having a plurality of shelves which may be heated } (~~F26B 5/045~~ takes precedence)}
- F26B 7/00**
- Drying solid materials or objects by processes using a combination of processes not covered by a single one of groups [F26B 3/00](#) and [F26B 5/00](#) {(~~F26B 1/005~~ , [F26B 5/04](#) , [F26B 23/026](#) take precedence)}**
- F26B 9/00**
- Machines or apparatus for drying solid materials or objects at rest or with only local agitation; Domestic airing cupboards {(~~domestic laundry drying cabinets or chambers having heating or ventilating means [D06F 58/10](#)~~)}**
- F26B 9/02
- in buildings {(~~special types of buildings [E04H](#)~~)}
- U F26B 9/06
- in stationary drums or chambers
- F26B 9/063
- • {for drying granular material in bulk e.g. grain bins or silos with false floor } (~~shallow layer rotary sweep drying bins [F26B 9/10](#) ; perforated wall silos with drying air channels in the stack [F26B 9/103](#)~~)}

- F26B 9/066
- {the products to be dried being disposed on one or more containers, which may have at least partly gas-previous walls, e.g. trays or shelves in a stack (~~-F26B 9/003 takes precedence; in combination with duct systems F26B 21/00-~~)}
- F26B 9/08
- including agitating devices,{e.g. pneumatic recirculation arrangements(~~-unloading devices F26B 25/002 ; spouted beds F26B 3/0926-~~)}
- F26B 9/10
- in the open air; in pans or tables in rooms; Drying stacks of loose material {on floors which may be covered, e.g. by a roof(~~-ventilating means of stacks for agricultural produce A01F 25/08-~~)}
- U F26B 11/00** **Machines or apparatus for drying solid materials or objects with movement which is non-progressive**
- F26B 11/02
- in moving drums or other mainly-closed receptacles (~~-F26B 11/18 takes precedence-~~)
- F26B 11/04
- rotating about a horizontal or slightly-inclined axis(~~-F26B 11/022 , F26B 11/024 , F26B 11/026 , F26B 11/028 take precedence-~~)
- F26B 11/0404
- {with internal subdivision of the drum, e.g. for subdividing or recycling the material to be dried (~~-spiral-type or other inserts for discharging purposes F26B 11/026-~~)}
- F26B 11/0413
- {the subdivision consisting of concentric walls, e.g. multi-pass or recirculation systems; the subdivision consisting of spiral-shaped walls (~~-tubular or annular passages for supply or exhaust of drying gas F26B 11/028-~~)}
- F26B 11/0418
- {the subdivision consisting of a plurality of parallel tubes, e.g. through which the material to be dried is conveyed in single or multi-pass fashion (~~-sector-shaped tubes F26B 11/0409-~~)}
- F26B 11/044
- {the drum or receptacle having a variable outer or inner diameter in axial direction, e.g. tronconical; the drum or receptacle having a polygonal or non-cylindrical shape (~~-F26B 11/0436 , F26B 11/049 take precedence-~~)}
- U F26B 11/0445**
- {having conductive heating arrangements, e.g. heated drum wall}
- F26B 11/045
- {using heated internal elements, e.g. which move through or convey the materials to be dried (~~-loose bodies, e.g. balls F26B 11/0472-~~)}
- F26B 11/0463
- {having internal elements, e.g. which are being moved or rotated by means other than the rotating drum wall (~~-F26B 11/0404 , F26B 11/0445 take precedence-~~)}
- U F26B 11/0468**
- {for disintegrating, crushing, or for being mixed with the materials to be dried}
- F26B 11/0472
- {the elements being loose bodies or materials, e.g. balls, which may have a sorbent effect (~~-chains fixed to the drum F26B 11/0459-~~)}
- F26B 11/0495
- {with provisions for drying by electro-magnetic means, e.g. radiation, microwaves (~~-burner arrangements F26B 11/028-~~)}
- F26B 11/12
- in stationary drums or other mainly-closed receptacles with moving stirring devices (~~-F26B 11/22 takes precedence-~~)
- U F26B 11/18**
- on or in moving dishes, trays, pans, or other mainly-open receptacles
- U F26B 11/181**
- {the receptacle being a foraminous, perforated or open-structured drum or drum-like container, e.g. rotating around a substantially horizontal or vertical axis; the receptacle being multiple perforated drums, e.g. in superimposed arrangement}
- F26B 11/182
- {Arrangements for the supply or exhaust of gaseous drying medium, e.g. perforated tubes (~~-F26B 11/185 takes precedence-~~)}
- F26B 11/184
- {provided with internal means for mixing, stirring or conveying the materials to be dried (~~-F26B 11/182 , F26B 11/185 take precedence-~~)}

- U F26B 13/00** **Machines and apparatus for drying fabrics, fibres, yarns, or other materials in long lengths, with progressive movement**
- U F26B 13/001 · {Drying and oxidising yarns, ribbons or the like}
- F26B 13/003 · · {in the shape of spools, coils, bobbins or the like (~~F26B 21/007~~ takes precedence; drying yarn hanks [F26B 15/124](#)-)}
- F26B 13/10 · Arrangements for feeding, heating, or supporting materials; Regulating movement, tension, or position of materials (~~heating processes [F26B 3/00](#)-~~)
- F26B 13/14 · · Rollers,{drums, cylinders} (~~sorbent surfaces [F26B 13/26](#)-~~); {Arrangement of drives, supports, bearings, cleaning}
- F26B 13/16 · · · perforated {in combination with hot air blowing or suction devices, e.g. sieve drum dryers}(~~F26B 13/18~~ takes precedence-)
- F26B 13/18 · · · heated {or}cooled,{e.g. from inside, the material being dried on the outside surface by conduction}
- F26B 13/24 · Arrangements of devices using drying processes not involving heating (~~such processes per se [F26B 5/00](#)-~~)
- F26B 13/30 · · for applying suction{(~~F26B 13/16~~ takes precedence-)}
- F26B 15/00** **Machines or apparatus for drying objects with progressive movement; Machines or apparatus with progressive movement for drying batches of material in compact form (~~F26B 13/00~~ , ~~F26B 17/00~~ take precedence; conveyers in general [B65G](#))**
- U F26B 15/10 · with movement in a path composed of one or more straight lines, e.g. compound,{the movement being in alternate horizontal and vertical directions}
- U F26B 15/12 · · the lines being all horizontal or slightly inclined
- F26B 15/14 · · · the objects or batches of materials being carried by trays or racks {or receptacles, which may be connected to endless chains or belts(~~trays, racks per se [F26B 25/18](#) ; with vertical movement [F26B 15/22](#)-~~)}
- F26B 15/143 · · · · {the receptacles being wholly or partly foraminous, e.g. containing a batch of loose material (~~F26B 15/146~~ , ~~F26B 15/205~~ , ~~F26B 15/26~~ take precedence-)}
- U F26B 15/20 · · the lines being all vertical or steeply inclined
- F26B 15/22 · · · the objects or batches of materials being carried by endless belts {the objects or batches of material being carried by trays or holders supported by endless belts or chains(~~F26B 15/205~~ takes precedence; vertical bulk material conveyer-driers [F26B 17/06](#)-)}
- F26B 17/00** **Machines or apparatus for drying materials in loose, plastic, or fluidised form, e.g. granules, staple fibres, with progressive movement (~~F26B 13/00~~ takes precedence; { feed or discharge arrangements [F26B 25/002](#) })**
- F26B 17/001 · {the material moving down superimposed floors (~~superimposed belts [F26B 17/08](#)-~~)}
- F26B 17/002 · · {with floors which may rotate and turn over as a whole or in part, e.g. around a horizontal axis (~~superimposed tray conveyers [F26B 15/146](#)-~~)}
- F26B 17/003 · · {with fixed floors provided with scrapers (~~F26B 17/006~~ and ~~F26B 17/007~~ take precedence-)}
- F26B 17/005 · · {with rotating floors, e.g. around a vertical axis, which may have scrapers (~~F26B 17/002~~ , ~~F26B 17/006~~ , ~~F26B 17/007~~ take precedence-)}
- F26B 17/008 · {the material being a slurry or paste applied onto moving elements, e.g. chains, plates, for drying thereon, and subsequently removed therefrom (~~the element being an endless web or belt-like conveyer [F26B 17/023](#) ; the element being a disc [F26B 17/282](#) ; the element being loose inert particles [F26B 3/205](#)-~~)}

- F26B 17/02
 - with movement performed by belts carrying the materials; with movement performed by belts {or elements attached to endless belts or chains} propelling the materials over stationary surfaces {(the movement being in a helical path [F26B 15/26](#) ; [F26B 17/003](#) , [F26B 17/263](#) take precedence-)}
- F26B 17/04
 - • the belts being all horizontal or slightly inclined (-[F26B 17/08](#) takes precedence-)
- F26B 17/06
 - • the belts being all vertical or steeply inclined (-[F26B 17/08](#) takes precedence; { for materials in discrete batches [F26B 15/22](#) })
- F26B 17/08
 - • the belts being arranged in a sinuous or zig-zag path {(-[F26B 17/026](#) takes precedence; superimposed tray conveyers [F26B 15/146](#) -)}
- F26B 17/10
 - with movement performed by fluid currents, e.g. issuing from a nozzle, {e.g. pneumatic, flash, vortex or entrainment dryers} (-[F26B 3/08](#) takes precedence-)
- F26B 17/101
 - • {the drying enclosure having the shape of one or a plurality of shafts or ducts, e.g. with substantially straight and vertical axis} (-[F26B 17/107](#) takes precedence-)}
- F26B 17/102
 - • • {with material recirculation, classifying or desintegrating means} (-[F26B 17/103](#) takes precedence-)}
- F26B 17/106
 - • {the drying enclosure, e.g. its axis, being substantially straight and horizontal, e.g. pneumatic drum dryers; the drying enclosure consisting of multiple substantially straight and horizontal stretches} (-[F26B 17/107](#) takes precedence-)}
- F26B 17/107
 - • {pneumatically inducing within the drying enclosure a curved flow path, e.g. circular, spiral, helical; Cyclone or Vortex dryers} (-swirl or curved flow path induced mechanically, i.e. by rotating element [F26B 3/0923](#)-)}
- U F26B 17/12
 - with movement performed solely by gravity, {i.e. the material moving through a substantially vertical drying enclosure, e.g. shaft}
- U F26B 17/14
 - • the materials moving through a counter-current of gas
- F26B 17/1408
 - • • {the gas being supplied and optionally extracted through ducts extending into the moving stack of material} (-in combination with fluid-heated closed tubes or other heating elements in contact with the stack of material [F26B 17/16](#)-)}
- F26B 17/1433
 - • • {the drying enclosure, e.g. shaft, having internal members or bodies for guiding, mixing or agitating the material, e.g. imposing a zig-zag movement onto the material} (-[F26B 17/1408](#) , [F26B 17/16](#) take precedence-)}
- U F26B 17/1466
 - • • • {the members or bodies being in movement}
- F26B 17/1475
 - • • • • {the movement being a vibration or oscillation} (-[F26B 17/26](#) takes precedence-)}
- F26B 17/16
 - • the materials passing down a heated surface, {e.g. fluid-heated closed ducts or other heating elements in contact with the moving stack of material} (-[F26B 17/128](#) takes precedence-)}
- F26B 17/18
 - with movement performed by rotating helical blades or other rotary conveyers {which may be heated} moving materials in stationary chambers, {e.g. troughs}
- F26B 17/22
 - • the axis of rotation being vertical or steeply inclined ({ [F26B 17/003](#) takes precedence })
- F26B 17/24
 - with movement performed by shooting or throwing the materials, {e.g. after which the materials are subject to impact} (-[F26B 17/108](#) takes precedence-)}
- F26B 17/26
 - with movement performed by reciprocating or oscillating conveyers propelling materials over stationary surfaces; with movement performed by reciprocating or oscillating shelves, sieves, or trays ({ [F26B 17/006](#) takes precedence })

- F26B 17/28
- with movement performed by rollers or discs with material passing over or between them, e.g. suction drum, sieve, {the axis of rotation being in fixed position (-moving rotating rollers [F26B 15/122](#)-)}
- F26B 17/284
- {the materials being dried on the non-perforated surface of heated rollers or drums (-arrangements for heating or cooling drums, for removal of condensate [F26B 13/183](#)-)}
- F26B 17/30
- with movement performed by rotary or oscillating containers; with movement performed by rotary floors ({ the material moving down superimposed floors [F26B 17/001](#) })
- F26B 19/00**
- Machines or apparatus for drying solid materials or objects not covered by groups [F26B 9/00](#) to [F26B 17/00](#)**
- F26B 19/005
- {Self-contained mobile devices, e.g. for agricultural produce (-movable devices with radiation means [F26B 3/28](#) ; small self-contained devices for drying objects at rest [F26B 9/003](#)-)}
- F26B 20/00**
- Combinations of machines or apparatus covered by two or more of groups [F26B 9/00](#) to [F26B 19/00](#)**
- F26B 21/00**
- Arrangements {or duct systems, e.g. in combination with pallet boxes,} for supplying and controlling air or gases for drying solid materials or objects ({ [F26B 9/10](#) takes precedence; systems for vehicle body drying [B60S 3/002](#) } ; air conditioning or ventilation in general [F24F](#)-)**
- U F26B 21/001
- {Drying-air generating units, e.g. movable, independent of drying enclosure}
- F26B 21/002
- {heating the drying air indirectly, i.e. using a heat exchanger (-[F26B 23/001](#) takes precedence; closed-loop systems [F26B 23/10](#)-)}
- F26B 21/004
- {Nozzle assemblies; Air knives; Air distributors; Blow boxes (-[F26B 3/082](#) , [F26B 13/104](#) , [F26B 13/108](#) , [F26B 21/006](#) take precedence-)}
- F26B 21/006
- {the gas supply or exhaust being effected through hollow spaces or cores in the materials or objects, e.g. tubes, pipes, bottles (-[F26B 9/003](#) and [F26B 9/103](#) take precedence-)}
- F26B 21/008
- {the objects being flexible articles, which may be blown up by the drying gas, e.g. tubes, sausage casings (-fire hoses [A62C 33/02](#)-)}
- F26B 21/02
- Circulating air or gases in closed cycles, e.g. wholly within the drying enclosure (-[F26B 21/08](#) , [F26B 21/14](#) , { [F26B 23/022](#) } take precedence)
- F26B 21/022
- {with provisions for changing the drying gas flow pattern, e.g. by reversing gas flow, by moving the materials or objects through subsequent compartments, at least two of which have a different direction of gas flow (-varying fan speed [F26B 21/12](#)-)}
- F26B 21/04
- partly outside the drying enclosure ({ [F26B 21/006](#) takes precedence })
- F26B 21/06
- Controlling, e.g. regulating, parameters of gas supply (-[F26B 21/14](#) takes precedence; control in general [G05](#)-)
- F26B 21/10
- Temperature; Pressure (-[F26B 23/026](#) takes precedence-)}
- F26B 21/12
- Velocity of flow; Quantity of flow, {e.g. by varying fan speed, by modifying cross flow area (-[F26B 21/004](#) takes precedence; changing air flow pattern [F26B 21/022](#)-)}
- U F26B 21/14
- using gases or vapours other than air or steam, {e.g. inert gases}
- F26B 21/145
- {Condensing the vapour onto the surface of the materials to be dried (-using condensing steam [F26B 3/00](#) ; using chemical liquids [F26B 5/005](#)-)}
- F26B 23/00**
- Heating arrangements ({ by radiation, e.g. infra-red, ultra-violet, solar [F26B 3/28](#) and [F26B 3/30](#) } ; using heated air or gases [F26B 21/00](#)-)**
- U F26B 23/001
- {using waste heat}
- F26B 23/002
- {recovered from dryer exhaust gases (-[F26B 23/022](#) takes precedence-)}

- F26B 23/005
 - • • {using a closed cycle heat pump system (-with recycling of drying medium [F26B 21/086](#)-); using a heat pipe system}
- F26B 23/007
 - • {recovered from the dried product (-burning the product [F26B 23/028](#)-)}
- F26B 23/02
 - using combustion heating ({ [F26B 3/305](#) , [F26B 13/186](#) , [F26B 21/001](#) , } [F26B 23/10](#) take precedence-)
- F26B 23/04
 - using electric heating (-[F26B 23/10](#) takes precedence-)
- F26B 23/10
 - using tubes or passages containing heated fluids,{e.g. acting as radiative elements; Closed-loop systems(-for combustion gases [F26B 3/305](#)-)}
- F26B 25/00**

Details of general application not covered by group [F26B 21/00](#) or [F26B 23/00](#) (loading, conveying, and unloading in general [B65G](#))
- U F26B 25/001
 - {Handling, e.g. loading or unloading arrangements}
- F26B 25/002
 - • {for bulk goods (-[F26B 17/103](#) takes precedence-)}
- U F26B 25/003
 - • {for articles}
- F26B 25/004
 - • • {in the shape of discrete sheets (-wicket conveyers [F26B 15/085](#)-)}
- F26B 25/005
 - {Treatment of dryer exhaust gases (-incineration of volatiles [F26B 23/022](#)-)}
- F26B 25/008
 - {Seals, locks, e.g. gas barriers or air curtains, for drying enclosures (-[F26B 11/024](#) and [F26B 13/005](#) take precedence-)}
- F26B 25/009
 - {Alarm systems; Safety systems, e.g. preventing fire and explosions (-using inert gases [F26B 21/14](#)-)}
- F26B 25/04
 - Agitating, stirring, or scraping devices{(-~~Arrangement of doctor blades [F26B 17/286](#)~~ ~~Arrangement of doctor blades [F26B 17/286](#)~~)}
- F26B 25/06
 - Chambers, containers, or receptacles{(-large containers having means for heating, cooling, aerating or other conditioning of contents [B65D 88/74](#)-)}
- F26B 25/063
 - • {Movable containers or receptacles, e.g. carts, trolleys, pallet-boxes (-for use in freeze-drying apparatus [F26B 5/06](#) ; in general [B62D](#)-)}
- F26B 25/066
 - • {Movable chambers, e.g. collapsible, demountable (-self-contained mobile devices, e.g. for agricultural produce [F26B 19/005](#)-)}
- U F26B 25/14
 - • Chambers, containers, receptacles of simple construction
- F26B 25/18
 - • • mainly open, e.g. dish, tray, pan,{rack(-for drying agricultural produce [A01F 25/12](#)-)}
- F26B 25/185
 - • • • {Spacers; Elements for supporting the goods to be dried, i.e. positioned in-between the goods to build a ventilated stack (-separators for articles packaged in stacks [B65D 57/00](#) ; manipulating spacers for stacking purposes [B65G 57/005](#)-)}
- F26B 25/20
 - Rollers (-[F26B 25/06](#) , { [F26B 13/14](#) }take precedence)

Project: N/A (F27B)

- U **F27B 9/00**

Furnaces through which the charge is moved mechanically, e.g. of tunnel type ([F27B 7/14](#) takes precedence); Similar furnaces in which the charge moves by gravity
- U F27B 9/14
 - characterised by the path of the charge during treatment; characterised by the means by which the charge is moved during treatment ([F27B 9/28](#) takes precedence; travelling or movable supports or containers for the charge [F27D 3/12](#))
- U F27B 9/20
 - • the charge moving in a substantially straight path {tunnel furnace}
- U F27B 9/22
 - • • {on rails, e.g.} under the action of scrapers or pushers ([F27B 9/26](#) takes precedence)
- F27B 9/227
 - • • • {-with rotation of the charge ([F27B 9/147](#) takes precedence)}
- U F27B 9/24
 - • • being carried by a conveyer {transport by conveyers in general [B65G](#)}

- F27B 9/2407 {the conveyer being constituted by rollers (*roller hearth furnace*)}~~{roller hearth furnace}}~~
- F27B 9/2453 {Vibrating conveyer (*shaker hearth furnace*)}~~{shaker hearth furnace}}~~
- U F27B 14/00 Crucible or pot furnace**
- U F27B 14/08 . Details peculiar to crucible or pot furnaces
- U F27B 14/10 . . Crucibles
- F27B 2014/108 . . . {Cold crucibles (*transparent to electromagnetic radiations*)}~~{transparent to electromagnetic radiations}}~~
- U F27B 17/00 Furnaces of a kind not covered by any preceding group (structural combinations of furnaces [F27B 19/02](#))**
- U F27B 17/0016 . {Chamber type furnaces}
- F27B 17/0041 . . {-specially adapted for burning bricks or pottery ([F27B 17/0033](#) takes precedence)}

Project: N/A (F27D)

- U F27D 3/00 Charging; Discharging; Manipulation of charge (moving charge through a furnace [F27B 9/14](#))**
- U F27D 3/15 . Tapping equipment; Equipment for removing {or retaining} slag
- U F27D 3/1509 . . {Tapping equipment}
- F27D 3/1536 . . . {-Devices for plugging tap holes, e.g. plugs stoppers}
- NOTE
{ the devices fixed permanently to the melt container are classified in [F27D 3/1509](#)}
- U F27D 5/00 Supports, screens, or the like for the charge within the furnace (travelling or movable supports [F27D 3/12](#))**
- U F27D 5/0006 . {Composite supporting structures}
- F27D 5/0012 . . {-Modules of the sagger or setter type; Supports built up from them}
- F27D 5/0062 . {Shields for the charge (shields for the lining [F27D 1/0033](#)-)}
- U F27D 9/00 Cooling of furnaces or of charges therein ([F27D 1/00](#), [F27D 3/00](#) take precedence)**
- U F27D 2009/007 . {Cooling of charges therein}
- F27D 2009/0081 . . {the cooling medium being a fluid (*other than a gas in direct or indirect contact with the charge*)}~~{other than a gas in direct or indirect contact with the charge}}~~
- U F27D 19/00 Arrangements of controlling devices**
- F27D 2019/0006 . ~~{Monitoring the characteristics (composition, quantities, temperature, pression)}~~*{Monitoring the characteristics (composition, quantities, temperature, pression)}* of at least one of the gases of the kiln atmosphere and using it as a controlling value}
- U F27D 25/00 Devices { or methods} for removing incrustations, { e.g. slag, metal deposits, dust}; { Devices or methods for preventing the adherence of slag}**
- F27D 25/001 . {-comprising breaking tools, e.g. hammers, drills, scrapers (breaking away linings [F27D 1/1694](#); boring machines for forming tapholes [F27D 3/1527](#))}
- F27D 25/003 . . {-used for punching tuyeres}
- F27D 25/005 . . {-used for cleaning the channels of induction furnaces}
- F27D 25/006 . {-using explosives}

F27D 25/008 · ~~{using fluids or gases, e.g. blowers, suction units}~~

U F27D 27/00 **Stirring devices for molten material (F27D 3/14 takes precedence)**

F27D 27/005 · ~~{Pumps}~~

F27D 27/007 · ~~{Pulsating pumps}~~

U F27D 99/00 **Subject matter not provided for in other groups of this subclass**

F27D 99/0001 · ~~{Heating elements or systems}~~

F27D 99/0003 · ~~{with particulate fuel, e.g. aspects relating to the feeding}~~

F27D 99/0005 · ~~{Injecting liquid fuel}~~

F27D 99/0006 · ~~{Electric heating elements or system}~~

F27D 99/0033 · ~~{using burners (manufacture of steel in an electric arc furnace equipped with burners C21C 5/5217)}~~

F27D 99/0035 · · ~~{Heating indirectly through a radiant surface}~~

F27D 99/007 · ~~{Partitions}~~

F27D 99/0073 · ~~{Seals}~~

F27D 99/0075 · ~~{Gas curtain seals}~~

F27D 99/0076 · ~~{Furnace car seals, i.e. seals used in continuous furnaces or kilns for preventing gas or heat exchange between heating chamber and the area comprising driving means}~~

Project: N/A (F28D)

U F28D 1/00 **Heat-exchange apparatus having stationary conduit assemblies for one heat-exchange medium only, the media being in contact with different sides of the conduit wall, in which the other heat-exchange medium is a large body of fluid, e.g. domestic or motor car radiators (F28D 5/00 takes precedence)**

U F28D 1/02 · with heat-exchange conduits immersed in the body of fluid

F28D 1/0206 · ~~{Heat exchangers immersed in a large body of liquid (apparatus using liquid heat storage material F28D 20/0034)}~~

F28D 1/0213 · · ~~{for heating or cooling a liquid in a tank}~~

F28D 1/022 · · ~~{for immersion in a natural body of water, e.g. marine radiators}~~

F28D 1/0233 · ~~{with air flow channels}~~

F28D 1/024 · · ~~{with an air driving element}~~

U F28D 1/04 · with tubular conduits ~~{(F28D 1/0246 takes precedence)}~~

F28D 1/0408 · · ~~{Multi-circuit heat exchangers, e.g. integrating different heat exchange sections in the same unit or heat exchangers for more than two fluids (F28F 9/0234 takes precedence)}~~

F28D 1/0417 · · · ~~{with particular circuits for the same heat exchange medium, e.g. with the heat exchange medium flowing through sections having different heat exchange capacities or for heating/cooling the heat exchange medium at different temperatures}~~

F28D 1/0426 · · · ~~{with units having particular arrangement relative to the large body of fluid, e.g. with interleaved units or with adjacent heat exchange units in common air flow or with units extending at an angle to each other or with units arranged around a central element}~~

F28D 1/0435 · · · · ~~{Combination of units extending one behind the other (F28D 1/0452 takes precedence)}~~

F28D 1/0443 · · · · ~~{Combination of units extending one beside or one above the other (F28D 1/0452 takes precedence)}~~

- F28D 1/0452
 - {-Combination of units extending one behind the other with units extending one beside or one above the other}
- F28D 1/0461
 - {-Combination of different types of heat exchanger, e.g. radiator combined with tube-and-shell heat exchanger; Arrangement of conduits for heat exchange between at least two media and for heat exchange between at least one medium and the large body of fluid}
- U F28D 1/053
 - . . . the conduits being straight
- F28D 1/05308
 - {-Assemblies of conduits connected side by side or with individual headers, e.g. section type radiators ([F28D 1/05358](#) takes precedence)}
- U F28D 1/05316
 - {-Assemblies of conduits connected to common headers, e.g. core type radiators ([F28D 1/05366](#) takes precedence)}
- F28D 1/05341
 - {-with multiple rows of conduits or with multi-channel conduits combined with a particular flow pattern, e.g. multi-row multi-stage radiators}
- U F28D 1/0535
 - {-the conduits having a non-circular cross-section}
- U F28D 1/05366
 - {-Assemblies of conduits connected to common headers, e.g. core type radiators}
- F28D 1/05391
 - {-with multiple rows of conduits or with multi-channel conduits combined with a particular flow pattern, e.g. multi-row multi-stage radiators}
- U F28D 7/00**
 - Heat-exchange apparatus having stationary tubular conduit assemblies for both heat-exchange media, the media being in contact with different sides of a conduit wall**
- F28D 7/0008
 - . {-the conduits for one medium being in heat conductive contact with the conduits for the other medium}
- U F28D 7/0066
 - . {-Multi-circuit heat-exchangers, e.g. integrating different heat exchange sections in the same unit or heat-exchangers for more than two fluids ([F28D 7/103](#) takes precedence)}
- F28D 7/0075
 - . . {-with particular circuits for the same heat exchange medium, e.g. with the same heat exchange medium flowing through sections having different heat exchange capacities or for heating or cooling the same heat exchange medium at different temperatures}
- F28D 7/0083
 - . {-with units having particular arrangement relative to a supplementary heat exchange medium, e.g. with interleaved units or with adjacent units arranged in common flow of supplementary heat exchange medium}
- F28D 7/0091
 - . . {-the supplementary medium flowing in serie through the units}
- U F28D 7/08
 - . the conduits being otherwise bent, e.g. in a serpentine or zig-zag ([F28D 7/10](#) takes precedence){([F28D 7/0016](#) and [F28D 7/0033](#) take precedence)}
- F28D 7/082
 - . {-with serpentine or zig-zag configuration}
- F28D 7/085
 - . . {-in the form of parallel conduits coupled by bent portions}
- F28D 7/087
 - {-assembled in arrays, each array being arranged in the same plane}
- U F28D 9/00**
 - Heat-exchange apparatus having stationary plate-like or laminated conduit assemblies for both heat-exchange media, the media being in contact with different sides of a conduit wall {[F28F 3/083](#), [F28F 3/086](#) take precedence}**
- U F28D 9/0031
 - . {-the conduits for one heat-exchange medium being formed by paired plates touching each other ([F28D 9/0012](#), [F28D 9/0025](#), [F28D 9/0081](#), [F28D 9/04](#) take precedence)}
- U F28D 9/0043
 - . {-the plates having openings therein for circulation of at least one heat-exchange medium from one conduit to another}
- F28D 9/0056
 - . . {-with U-flow or serpentine-flow inside conduits; with centrally arranged openings on the plates}

- F28D 9/0081
- {the conduits for one heat-exchange medium being formed by a single plate-like element ([F28D 9/0012](#) takes precedence); the conduits for one heat-exchange medium being integrated in one single plate-like element- ([F28D 9/0012](#) takes precedence)}
- F28D 15/00** **Heat-exchange apparatus with the intermediate heat-transfer medium in closed tubes passing into or through the conduit walls; {Heat-exchange apparatus employing intermediate heat-transfer medium or bodies- ([F28D 17/00](#), [F28D 19/00](#), [F28D 20/00](#) take precedence)}**
- U F28D 15/02
- in which the medium condenses and evaporates, e.g. heat pipes {(heat pipes used in solar heat collectors [F24J 2/32](#); in radiators [F28D 1/0226](#); in nuclear reactors [G21C 15/257](#))}
- F28D 15/0275
- • {-Arrangements for coupling heat-pipes together or with other structures, e.g. with base blocks; Heat pipe cores}
- U F28D 20/00** **Heat storage plants or apparatus in general (specially adapted for particular applications, see the relevant places, e.g. [F24D 15/02](#)); Regenerative heat-exchange apparatus not covered by groups [F28D 17/00](#) or [F28D 19/00](#)**
- U F28D 20/02
- using latent heat
- F28D 20/028
- • {-Control arrangements therefor}
- U F28D 21/00** **Heat-exchange apparatus not covered by any of the groups [F28D 1/00](#) to [F28D 20/00](#)**
- NOTE
- { Particular use of heat exchangers is classified in [F28D 21/00](#) and subgroups, whereas additionally the type of the heat exchangers is classified in the groups [F28D 1/00](#) to [F28D 20/00](#)}
- F28D 21/0001
- {-Recuperative heat exchangers}
- WARNING
- the groups [F28D 21/0001](#)-[F28D 21/0014](#) are not complete, pending reorganisation. See also [F28D 21/00](#)
- F28D 21/0003
- • {-the heat being recuperated from exhaust gases ([F28D 21/0014](#) takes precedence)}
- F28D 21/0005
- • • {-for domestic or space-heating systems}
- F28D 21/0007
- • • • {-Water heaters}
- F28D 21/0008
- • • • {-Air heaters}
- F28D 21/001
- • • {-for thermal power plants or industrial processes}
- F28D 21/0012
- • {-the heat being recuperated from waste water or from condensates}
- F28D 21/0014
- • {-the heat being recuperated from waste air or from vapors (for air conditioning [F24F 12/001](#))}
- F28D 21/0015
- {-Heat and mass exchangers, e.g. with permeable walls}
- F28D 21/0017
- {-Flooded core heat exchangers (in large body of fluid [F28D 1/0206](#))}

Project: N/A (F28F)

- U F28F 1/00** **Tubular elements; Assemblies of tubular elements (specially adapted for movement [F28F 5/00](#))**
- F28F 1/003
- {-Multiple wall conduits, e.g. for leak detection (leak-detection in metal cooled nuclear reactor steam generators [F22B 1/066](#))}
- U F28F 1/10
- Tubular elements and assemblies thereof with means for increasing heat-transfer area, e.g. with fins, with projections, with recesses (crimped or corrugated elements [F28F 1/06](#), [F28F 1/08](#))

- U F28F 1/42
 - • the means being both outside and inside the tubular element
- F28F 1/422
 - • • {-with outside means integral with the tubular element and inside means integral with the tubular element ([F28F 1/424](#) takes precedence)}
- F28F 1/424
 - • • {-Means comprising outside portions integral with inside portions}
- F28F 1/426
 - • • • {-the outside portions and the inside portions forming parts of complementary shape, e.g. concave and convex}

- U F28F 3/00**
 - Plate-like or laminated elements; Assemblies of plate-like or laminated elements (specially adapted for movement [F28F 5/00](#))**
- U F28F 3/02
 - Elements or assemblies thereof with means for increasing heat-transfer area, e.g. with fins, with recesses, with corrugations ([F28F 3/08](#) takes precedence)
- U F28F 3/04
 - • the means being integral with the element
- F28F 3/042
 - • • {-in the form of local deformations of the element}
- F28F 3/044
 - • • • {-the deformations being pontual, e.g. dimples}
- F28F 3/046
 - • • • {-the deformations being linear, e.g. corrugations}
- F28F 3/048
 - • • {-in the form of ribs integral with the element or local variations in thickness of the element, e.g. grooves, microchannels}

- U F28F 9/00**
 - Casings; Header boxes; Auxiliary supports for elements; Auxiliary members within casings**
- F28F 9/001
 - {-Casings in the form of plate-like arrangements; Frames enclosing a heat exchange core}
- F28F 9/005
 - {-Other auxiliary members within casings, e.g. internal filling means or sealing means}
- U F28F 9/007
 - Auxiliary supports for elements
- U F28F 9/013
 - • for tubes or tube-assemblies
- F28F 9/0131
 - • • {-formed by plates ([F28F 9/0138](#) takes precedence)}
- F28F 9/0138
 - • • {-formed by sleeves for finned tubes}
- U F28F 9/02
 - Header boxes; End plates
- U F28F 9/0202
 - • {-Header boxes having their inner space divided by partitions}
- U F28F 9/0204
 - • • {-for elongated header box, e.g. with transversal and longitudinal partitions}
- F28F 9/0207
 - • • • {-the longitudinal or transversal partitions being separate elements attached to header boxes ([F28F 9/0212](#), [F28F 9/0217](#) take precedence)}
- F28F 9/0246
 - • {-Arrangements for connecting header boxes with flow lines}
- F28F 9/0248
 - • • {-Arrangements for sealing connectors to header boxes}
- F28F 9/0251
 - • • • {-Massive connectors, e.g. blocks; Plate-like connectors}
- F28F 9/0253
 - • • • {-with multiple channels, e.g. with combined inflow and outflow channels}
- F28F 9/0256
 - • • • {-Arrangements for coupling connectors with flow lines}
- F28F 9/0258
 - • • • {-of quick acting type, e.g. with snap action}
- F28F 9/026
 - • {-with static flow control means, e.g. with means for uniformly distributing heat exchange media into conduits}
- F28F 9/0263
 - • • {-by varying the geometry or cross-section of header box}
- F28F 9/0265
 - • • {-by using guiding means or impingement means inside the header box}
- F28F 9/0268
 - • • • {-in the form of multiple deflectors for channeling the heat exchange medium}
- F28F 9/027
 - • • {-in the form of distribution pipes}
- F28F 9/0273
 - • • • {-with multiple holes}
- F28F 9/0275
 - • • • {-with multiple branch pipes}

- F28F 9/0278
 - • • {in the form of stacked distribution plates or perforated plates arranged over end plates}
- F28F 9/028
 - • • {by using inserts for modifying the pattern of flow inside the header box, e.g. by using flow restrictors or permeable bodies or blocks with channels}
- F28F 9/0282
 - • • {by varying the geometry of conduit ends, e.g. by using inserts or attachments for modifying the pattern of flow at the conduit inlet or outlet}
- U F28F 9/26
 - Arrangements for connecting different sections of heat-exchange elements, e.g. of radiators (connecting different sections in water heaters [F24H 9/14](#), {connecting headers with inlet or outlet fittings [F28F 9/0246](#)})
- F28F 9/262
 - • {for radiators ([F28D 1/0408](#) takes precedence)}
- U **F28F 13/00**

Arrangements for modifying heat-transfer, e.g. increasing, decreasing ([F28F 1/00](#) to [F28F 11/00](#) take precedence)
- F28F 13/06
 - by affecting the pattern of flow of the heat-exchange media {([F28F 13/003](#) takes precedence; static flow control means in header boxes [F28F 9/026](#)-)}
- U **F28F 21/00**

Constructions of heat-exchange apparatus characterised by the selection of particular materials {(coatings for modifying heat-transfer [F28F 13/18](#); coatings for preventing the formation of deposits or corrosion [F28F 19/02](#))}
- U F28F 21/08
 - of metal
- F28F 21/081
 - • {Heat exchange elements made from metals or metal alloys}
- F28F 21/082
 - • • {from steel or ferrous alloys}
- F28F 21/083
 - • • • {from stainless steel}
- F28F 21/084
 - • • {from aluminium or aluminium alloys}
- F28F 21/085
 - • • {from copper or copper alloys}
- F28F 21/086
 - • • {from titanium or titanium alloys}
- F28F 21/087
 - • • {from nickel or nickel alloys}
- F28F 21/089
 - • {Coatings, claddings or bonding layers made from metals or metal alloys ([F28F 19/06](#) takes precedence)}

Project: N/A (F28G)

- U **F28G 1/00**

Non-rotary, e.g. reciprocated, appliances ([F28G 3/00](#) takes precedence)
- U F28G 1/16
 - using jets of fluid for removing debris ([F28G 1/12](#) takes precedence)
- F28G 1/163
 - • {from internal surfaces of heat exchange conduits}
- F28G 1/166
 - • {from external surfaces of heat exchange conduits}
- U **F28G 3/00**

Rotary appliances
- U F28G 3/16
 - using jets of fluid for removing debris
- F28G 3/163
 - • {from internal surfaces of heat exchange conduits}
- F28G 3/166
 - • {from external surfaces of heat exchange conduits}
- U **F28G 7/00**

Cleaning by vibration { or pressure waves}
- F28G 7/005
 - {by explosions or detonations; by pressure waves generated by combustion processes}
- U **F28G 13/00**

Appliances or processes not covered by groups [F28G 1/00](#) to [F28G 11/00](#); Combinations of appliances or processes covered by groups [F28G 1/00](#) to [F28G 11/00](#)
- F28G 13/005
 - {cleaning by increasing the temperature of heat exchange surfaces ([F28G 7/005](#), [F28G 11/00](#) take precedence)}
- U **F28G 15/00**

Details (measuring thickness of deposit [G01B](#))

F28G 15/003 · ~~{Control arrangements}~~

Project: N/A (F41A)

F41A 1/00 **Missile propulsion characterised by the use of explosive or combustible propellant charges** (~~projecting missiles without use of explosive or combustible propellant charge F41B ; launching rockets or torpedoes F41F 3/00 ; missile self-propulsion F42B 15/00~~)

F41A 1/06 · Adjusting the range without varying elevation angle or propellant charge data, e.g. by venting a part of the propulsive charge gases, or by adjusting the capacity of the cartridge or combustion chamber~~{adjusting the range by using gas-relieving ports in the barrel F41A 21/28}~~

U F41A 3/00 **Breech mechanisms, e.g. locks**

U F41A 3/02 · Block action, i.e. the main breech opening movement being transverse to the barrel axis

U F41A 3/04 · · with pivoting breech-block

F41A 3/06 · · · about a horizontal axis transverse to the barrel axis at the rear of the block (~~F41A 3/08 takes precedence~~)

F41A 3/08 · · · carrying a rotably mounted obturating plug of the screw-thread or the interrupted-thread type (~~F41A 3/30 takes precedence~~)

U F41A 3/12 · Bolt action, i.e. the main breech opening movement being parallel to the barrel axis

U F41A 3/36 · · Semi-rigid bolt locks, i.e. having locking elements movably mounted on the bolt or on the barrel or breech housing

U F41A 3/38 · · · having rocking locking elements, e.g. pivoting levers or vanes

F41A 3/40 · · · · mounted on the bolt (~~F41A 3/42 takes precedence~~)

U F41A 3/44 · · · having sliding locking elements, e.g. balls, rollers

F41A 3/46 · · · · mounted on the bolt (~~F41A 3/48 takes precedence~~)

F41A 3/60 · Breech mechanisms for guns having two or more barrels (~~F41A 3/58 takes precedence~~; for revolving-cannon guns F41F 1/10)

U F41A 3/64 · Mounting of breech-blocks; Accessories for breech-blocks or breech-block mountings

F41A 3/70 · · Anti-rebound arrangements, i.e. preventing rebound of the bolt out of the firing position; ~~{Safeties for locking the breech-block or bolt in a safety position F41A 17/42}~~

F41A 3/72 · · Operating handles or levers; Mounting thereof in breech-blocks or bolts~~{F41C 7/02 , F41C 7/06 take precedence}~~

U F41A 3/78 · · Bolt buffer or recuperator means

F41A 3/82 · · · Coil spring buffers (~~F41A 3/80 takes precedence~~)

F41A 3/86 · · · · mounted under ~~{or above}~~the barrel

F41A 3/90 · · · Fluid buffers~~{F41A 3/62 takes precedence}~~

U F41A 5/00 **Mechanisms or systems operated by propellant charge energy for automatically opening the lock**

U F41A 5/02 · recoil-operated

F41A 5/10 · · having a movable inertia weight ~~{e.g. for storing energy}~~

U F41A 5/18 · gas-operated

F41A 5/26 · · Arrangements or systems for bleeding the gas from the barrel (~~F41A 5/20 to F41A 5/24 take precedence~~)

- U F41A 7/00 Auxiliary mechanisms for bringing the breech-block or bolt or the barrel to the starting position before automatic firing; Drives for externally-powered guns; Remote-controlled gun chargers**
- F41A 7/02 • Machine gun rechargers, e.g. manually operated (~~F41A 3/72 takes precedence~~)
- U F41A 7/08 • Drives for externally-powered guns, i.e. drives for moving the breech-block or bolt by an external force during automatic firing**
- F41A 7/10 • • using a rotating cylindrical drum having a camming groove (~~F41F 1/10 takes precedence~~)
- F41A 9/00 Feeding or loading of ammunition ({ conveying ammunition through pipes by the action of flowing gases B65G 51/025 } ; adaptations for feeding or loading missiles from magazines in air guns F41B11/02-); Magazines; Guiding means for the extracting of cartridges (-cartridge extractors or ejectors F41A 15/00-)**
- U F41A 9/01 • Feeding of unbelted ammunition**
- U F41A 9/06 • • using cyclically moving conveyers, i.e. conveyers having ammunition pusher or carrier elements which are emptied or disengaged from the ammunition during the return stroke**
- F41A 9/09 • • • Movable ammunition carriers or loading trays, e.g. for feeding from magazines(~~locking of ammunition in ammunition containers or loading trays F42B 39/22-~~)
- U F41A 9/10 • • • • pivoting or swinging**
- U F41A 9/13 • • • • • in a vertical plane**
- U F41A 9/16 • • • • • {which is}parallel to the barrel axis**
- U F41A 9/17 • • • • • • mounted within a smallarm**
- F41A 9/18 • • • • • • • feeding from a {tubular}magazine under the barrel
- F41A 9/19 • • • • • • • feeding from a {tubular}magazine mounted in the stock
- U F41A 9/20 • • • • sliding, e.g. reciprocating**
- F41A 9/21 • • • • • in a vertical direction (~~F41A 9/23 takes precedence~~)
- F41A 9/22 • • • • • in a horizontal direction (~~F41A 9/23 takes precedence~~)
- U F41A 9/24 • • using a movable magazine or clip as feeding element**
- U F41A 9/26 • • • using a revolving drum magazine**
- U F41A 9/27 • • • • in revolver-type guns**
- F41A 9/28 • • • • • of smallarm type (~~in revolvers F41C 3/14-~~)
- U F41A 9/29 • Feeding of belted ammunition**
- F41A 9/34 • • from magazines (~~magazines for belted ammunition per se F41A 9/79-~~)
- U F41A 9/38 • Loading arrangements, i.e. for bringing the ammunition into the firing position**
- F41A 9/45 • • the cartridge chamber or the barrel as a whole being tiltable {or transversely slidable}between a loading and a firing position(~~F41A 9/25 and F41A 9/27 take precedence~~)
- U F41A 9/54 • Cartridge guides, stops or positioners, e.g. for cartridge extraction**
- F41A 9/55 • • Fixed {or movable}guiding means, mounted on, or near, the cartridge chamber
- F41A 9/56 • • Movable guiding means(~~F41A 9/55 takes precedence~~)
- F41A 9/60 • Empty-cartridge-case or belt-link collectors or catchers (~~F41A 9/81 takes precedence~~)
- U F41A 9/61 • Magazines**

- F41A 9/62
 - • having means for indicating the number of cartridges left in the magazine, e.g. last-round indicators ~~(-last-round safeties [F41A 17/40-](#))~~
- U F41A 9/64
 - • for unbelted ammunition
- U F41A 9/65
 - • • Box magazines having a cartridge follower
- F41A 9/66
 - • • • Arrangements thereon for charging i.e. reloading ~~(-apparatus or tools for reloading of magazines [F41A 9/83-](#))~~
- F41A 9/68
 - • • • Plural magazines, e.g. tandem magazines {Arrangements of cartridges in two or more independent rows or channels which are selectively or sequentially brought into operative position}
- F41A 9/82
 - Reloading {or unloading}of magazines
- F41A 9/87
 - Ammunition handling dollies or transfer carts ~~(-[F41A 9/86](#) takes precedence-)~~
- F41A 11/00**

Assembly or disassembly features; Modular concepts; Articulated or collapsible guns ~~(-[F41A 3/64](#) , [F41A 19/10](#) to [F41A 19/15](#) , [F41A 21/48](#) , [F41A 25/26](#) take precedence-)~~
- F41A 11/04
 - Articulated or collapsible guns, i.e. with hinged or telescopic parts for transport or storage ~~(-breakdown shotguns or rifles [F41C 7/11](#) ; folding or telescopic stocks or stock parts [F41C 23/04-](#))~~
- U **F41A 13/00**

Cooling or heating systems; Blowing-through of gun barrels; Ventilating systems
- F41A 13/04
 - Injecting fluids into barrels or cartridge chambers ~~(-[F41A 13/08](#) takes precedence-)~~
- F41A 13/06
 - Evacuating combustion gas from barrels ~~(-[F41A 13/10](#) takes precedence-)~~
- F41A 13/12
 - Systems for cooling the outer surface of the barrel ~~(-[F41A 13/10](#) , [F41A 21/24](#) take precedence-)~~
- F41A 15/00**

Cartridge extractors, i.e. devices for pulling cartridges or cartridge cases at least partially out of the cartridge chamber; Cartridge ejectors, i.e. devices for throwing the extracted cartridges or cartridge cases free of the gun ~~(-[F41A 9/54](#) , { [F41C 9/08](#) }take precedence-;{ Means for removing duds or misfires in rocket throwers [F41F 3/058](#) })~~
- U **F41A 17/00**

Safety arrangements, e.g. safeties
- F41A 17/02
 - Key-operated safeties~~(-[F41A 17/44](#) takes precedence-)~~
- F41A 17/04
 - Safeties of the combination-lock type ~~(-[F41A 17/02](#) takes precedence-)~~
- F41A 17/06
 - Electric or electromechanical safeties ~~(-[F41A 17/04](#) , [F41A 17/08](#) take precedence-)~~
- F41A 17/08
 - for inhibiting firing in a specified direction, e.g. at a friendly person or at a protected area ~~(-[F41A 27/02](#) takes precedence-)~~
- F41A 17/20
 - Grip or stock safeties, i.e. safeties disengaged by clasping the grip or stock ~~(-thumb-operated sliding safeties [F41A 17/52](#) , [F41A 17/62](#) , [F41A 17/70](#) , [F41A 17/80-](#))~~
- U F41A 17/34
 - Magazine safeties
- F41A 17/36
 - • locking the gun {automatically}in a safety condition when the magazine is empty or removed~~(-[F41A 17/44](#) takes precedence-)~~
- F41A 17/40
 - Last-round safeties ~~(-[F41A 17/34](#) takes precedence-)~~
- F41A 17/42
 - Safeties for locking the breech-block or bolt in a safety position ~~(-[F41A 17/32](#) , [F41A 17/36](#) , [F41A 17/40](#) take precedence-)~~~~(-anti-rebound arrangements [F41A 3/70-](#))~~
- F41A 17/46
 - Trigger safeties, i.e. means for preventing trigger movement ~~(-[F41A 17/02](#) to [F41A 17/40](#) take precedence-)~~

- F41A 17/56
 - Sear safeties, i.e. means for rendering ineffective an intermediate lever transmitting trigger movement to firing pin, hammer, bolt or sear (~~F41A 17/02 to F41A 17/40 take precedence~~)
- F41A 17/64
 - Firing-pin safeties, i.e. means for preventing movement of slidably- mounted strikers (~~F41A 17/02 to F41A 17/40 take precedence~~)
- F41A 17/74
 - Hammer safeties, i.e. means for preventing the hammer from hitting the cartridge or the firing pin (~~F41A 17/02 to F41A 17/40 take precedence~~)
- U F41A 19/00 Firing or trigger mechanisms; Cocking mechanisms**
- U F41A 19/01
 - Counting means indicating the number of shots fired
- F41A 19/02
 - • Burst limiters (~~F41A 19/67 takes precedence~~)
- F41A 19/03
 - Shot-velocity control (~~F41A 3/78 , F41A 5/28 , F41A 19/05 , F41A 19/66 take precedence~~)
- F41A 19/06
 - Mechanical firing mechanisms, {e.g. counterrecoil firing, recoil actuated firing mechanisms} (~~F41A 19/01 to F41A 19/05 , F41A 19/59 take precedence~~)
- F41A 19/09
 - • Auxiliary trigger devices (~~F41A 19/08 takes precedence~~)
- F41A 19/11
 - • Trigger guards; Trigger-guard mountings (~~F41A 19/15 takes precedence~~)
- F41A 19/13
 - • Percussion or firing pins, i.e. fixed or slidably-mounted striker elements; Mountings therefor (~~F41A 19/26 takes precedence~~)
- F41A 19/16
 - • Adjustable firing mechanisms; Trigger mechanisms with adjustable trigger pull (~~F41A 19/17 takes precedence~~)
- F41A 19/18
 - • for multibarrel guns {or multiple guns} (~~F41A 19/68 takes precedence~~)
- F41A 19/186
 - • • {having only one striker element and more than one trigger, each trigger acting on a single element (firing mechanisms having only one trigger and only one striker element F41A 19/22)}
- U F41A 19/25
 - • having only slidably-mounted striker elements, i.e. percussion or firing pins
- F41A 19/26
 - • • the percussion or firing pin and the breech-block or bolt forming one piece (~~F41A 19/34 takes precedence~~)
- U F41A 19/27
 - • • the percussion or firing pin being movable relative to the breech-block
- U F41A 19/29
 - • • • propelled by a spring under tension
- U F41A 19/30
 - • • • • in bolt-action guns
- F41A 19/31
 - • • • • Sear arrangements therefor (~~F41A 19/33 takes precedence~~)
- F41A 19/39
 - • • • • Cocking {or firing} mechanisms for other types of guns, e.g. fixed breech-block types, forwardly-slidable barrel types
- U F41A 19/42
 - • having at least one hammer
- U F41A 19/43
 - • • in bolt-action guns
- F41A 19/44
 - • • • Sear arrangements therefor (~~F41A 19/46 takes precedence~~)
- F41A 19/52
 - • • Cocking {or firing} mechanisms for other types of guns, e.g. fixed breech-block types, revolvers
- F41A 19/58
 - Electric firing mechanisms (~~F41A 17/10 , F41A 17/12 take precedence~~)
- U F41A 19/60
 - • characterised by the means for generating electric energy
- F41A 19/61
 - • • Inductive generators (~~F41A 19/63 takes precedence~~)
- U F41A 19/64
 - • for automatic or burst-firing mode
- F41A 19/66
 - • • Electronic shot-velocity control (~~F41A 19/65 takes precedence~~)
- F41A 19/68
 - • for multibarrel guns {or multibarrel rocket launchers or multicannisters} (~~F41A 19/65 takes precedence~~)
- F41A 19/69
 - • Electric contacts or switches peculiar thereto (~~F41A 19/65 takes precedence~~)

- F41A 21/00** **Barrels; Gun tubes; Muzzle attachments; Barrel mounting means** (~~F41A 25/00~~ takes precedence; barrel attachments for firing grenades or riot-control ammunition from smallarms [F41C 27/06](#))
- F41A 21/12 • Cartridge chambers; Chamber liners (~~F41A 3/74~~ , [F41A 9/46](#) , [F41A 21/04](#) take precedence)
- F41A 21/20 • Barrels or gun tubes characterised by the material (~~F41A 21/02~~ takes precedence)
- F41A 21/22 • Barrels which have undergone surface treatment, e.g. phosphating (~~F41A 21/44~~ takes precedence)
- F41A 21/24 • Barrels or gun tubes with fins or ribs, e.g for cooling (~~F41G 1/42~~ takes precedence)
- F41A 21/28 • Gas-expansion chambers; Barrels provided with gas-relieving ports (~~F41A 1/06~~ , [F41A 13/08](#) { and [F41A 21/36](#) } take precedence)
- F41A 21/32 • Muzzle attachments or glands (~~F41A 21/26~~ , [F41A 21/30](#) , [F41A 21/46](#) take precedence; { for projectile velocity measurements [G01P 3/665](#) , [G01P 3/685](#) })
- F41A 21/36 • • for recoil reduction (~~recoil reduction arrangements in general [F41A 25/00](#)~~); {Stabilisers; Compensators, e.g. for muzzle climb prevention}
- F41A 23/00** **Gun mountings, e.g. on vehicles; Disposition of guns on vehicles** (~~F41A 25/00~~ , ~~F41A 27/00~~ take precedence)
- F41A 23/005 • {Locks for connecting guns to their mountings (~~F41A 23/50~~ takes precedence)}
- U F41A 23/02 • Mountings without wheels
- NOTE
Shooting stands for hunting [A01M 31/02](#)
- F41A 23/18 • • Rests for supporting smallarms in non-shooting position (~~racks for storage [A47B 81/00](#)~~ ; racks in vehicles { [B60R 7/14](#) })
- F41A 23/24 • Turret gun mountings (~~feeding, loading or guiding ammunition [F41A 9/00](#)~~ ; mechanical elevating or traversing systems for turret guns [F41A 27/18](#))
- F41A 23/26 • Mountings for transport only; Loading or unloading arrangements for guns for use with carrier vehicles (~~F41A 23/50~~ takes precedence)
- U F41A 23/28 • Wheeled-gun mountings; Endless-track gun mountings
- F41A 23/32 • • with split trails (~~F41A 23/30~~ , [F41A 23/46](#) takes precedence)
- U F41A 23/34 • on wheeled or endless-track vehicles
- F41A 23/36 • • on trailers (~~F41A 23/42~~ takes precedence)
- F41A 23/56 • Arrangements for adjusting the gun platform in the vertical or horizontal position (~~F41A 17/10~~ , [F41A 17/12](#) take precedence; { ground engaging vehicle fittings for lifting or supporting it [B60S 9/04](#) ; supports for mobile cranes [B66C 23/78](#) })
- F41A 25/00** **Gun mountings permitting recoil or return to battery, e.g. gun cradles; Barrel buffers or brakes** (~~recoilless guns [F41A 1/08](#)~~)
- U **F41A 27/00** **Gun mountings permitting traversing or elevating movement, e.g. gun carriages**
- F41A 27/06 • Mechanical systems (~~F41A 27/02~~ , [F41A 27/04](#) , [F41A 27/30](#) take precedence)
- F41A 27/18 • • for gun turrets (~~F41A 27/08~~ takes precedence)
- F41A 27/22 • • Traversing gear (~~F41A 27/18~~ takes precedence)
- F41A 27/24 • • Elevating gear (~~F41A 27/18~~ takes precedence)

- F41A 27/26 · Fluid-operated systems (~~F41A 27/02~~ , ~~F41A 27/04~~ , ~~F41A 27/30~~ take precedence-)
- F41A 27/28 · Electrically-operated systems (~~F41A 27/02~~ , ~~F41A 27/04~~ , ~~F41A 27/30~~ take precedence-)
- F41A 27/30 · Stabilisation or compensation systems, e.g. compensating for barrel weight or wind force {on the barrel}
- F41A 29/00** **Cleaning or lubricating arrangements** (~~injecting fluids into barrels or cartridge chambers F41A 13/04~~ ; { ammunition for cleaning purposes [F42B 5/24](#) })
- F41A 31/00** **Testing arrangements** (~~testing mounts [F41A 23/16](#)~~)
- F41A 33/00** **Adaptations for training** (~~adaptations of barrels for recoil reinforcement [F41A 21/26](#)~~); Gun simulators (~~teaching or practice apparatus for gun-aiming or gun-laying [F41G 3/26](#)~~ ; { shooting games [A63F 9/02](#) ; military simulation [G09B 9/003](#) })
- U F41A 35/00** **Accessories or details not otherwise provided for**
- F41A 35/02 · Dust- or weather-protection caps or covers (~~protecting-caps for trigger guards [F41A 17/54](#)~~)

Project: N/A (F41B)

- U F41B 5/00** **Bows; Crossbows**
- F41B 5/0005 · ~~Single stave recurve bows~~
- F41B 5/001 · ~~characterised by the material~~
- F41B 5/0015 · ~~fibre reinforced~~
- F41B 5/0021 · ~~laminated~~
- F41B 5/0026 · ~~Take-down or foldable bows~~
- F41B 5/0031 · ~~Handle or riser units~~
- F41B 5/0036 · ~~characterised by the material~~
- F41B 5/0042 · ~~fibre reinforced~~
- F41B 5/0047 · ~~laminated~~
- F41B 5/0052 · ~~Limbs~~
- F41B 5/0057 · ~~characterised by the material~~
- F41B 5/0063 · ~~fibre reinforced~~
- F41B 5/0068 · ~~laminated~~
- F41B 5/0073 · ~~Single stave non-recurve bows~~
- F41B 5/0078 · ~~characterised by the material~~
- F41B 5/0084 · ~~fibre reinforced~~
- F41B 5/0089 · ~~laminated~~
- F41B 5/0094 · ~~Non-traditional bows, e.g. having hinged limbs or non-stave geometry~~
- U F41B 5/06** **Quivers**
- F41B 5/063 · ~~worn on the body of the archer~~
- F41B 5/066 · ~~mounted on the bow or crossbow~~
- U F41B 5/10** **Compound bows** ({ compound crossbows [F41B 5/123](#)})
- F41B 5/105 · ~~Cams or pulleys for compound bows~~
- U F41B 5/12** **Crossbows**
- F41B 5/123 · ~~Compound crossbows~~

- F41B 5/126
 - • {-Repeating crossbows; crossbows with magazines}
- U F41B 5/14
 - Details of bows; Accessories for arc shooting (sighting devices for bows [F41G 1/467](#))
- F41B 5/1403
 - • {-Details of bows; camera's on bows [F41B 5/1492](#)}
- F41B 5/1407
 - • • {-Bow-string silencing devices}
- F41B 5/1411
 - • • {-Bow-strings}
- F41B 5/1415
 - • • • {-Nocking points}
- F41B 5/1419
 - • • • {-String mounted peep sights (*sights mounted on the bow itself*) [F41G 1/467](#)}{sights mounted on the bow itself} [F41G 1/467](#)}
- F41B 5/1423
 - • • • {-Kissers}
- F41B 5/1426
 - • • {-Bow stabilisers or vibration dampers}
- F41B 5/143
 - • • {-Arrow rests or guides}
- F41B 5/1434
 - • • {-Clickers or draw indicators}
- F41B 5/1438
 - • • {-Buttons}
- F41B 5/1442
 - • {-Accessories for arc or bow shooting}
- F41B 5/1446
 - • • {-Arrow fletching jigs}
- F41B 5/1449
 - • • {-Bow tensioning devices; Bow presses; Rigs for bow assembly or maintenance}
- F41B 5/1453
 - • • {-Stands, rests or racks for bows}
- F41B 5/1457
 - • • {-Cases, bags or covers for bows}
- F41B 5/1461
 - • • {-Devices for hands-free carrying of strung bows}
- F41B 5/1465
 - • • {-Arrow pullers}
- F41B 5/1469
 - • • {-Bow-string drawing or releasing devices ([F41B 5/1473](#) takes precedence)}
- F41B 5/1473
 - • • {-Archer's finger tabs}
- F41B 5/1476
 - • • {-Devices for archery training}
- F41B 5/148
 - • • {-Accessories and tools for bow shooting not otherwise provided for}
- F41B 5/1484
 - • {-Bows with special adaptations or devices for special purposes}
- F41B 5/1488
 - • • {-with reels for fishing or arrow retrieval}
- F41B 5/1492
 - • • {-with cameras; mounting of cameras on bows}
- F41B 5/1496
 - • • {-with camouflage; Mounting of camouflage on bows}
- F41B 6/00**
 - Electromagnetic launchers; {Plasma-actuated launchers (projectiles for electromagnetic or plasma guns [F42B 6/006](#))}**
- F41B 6/006
 - {-Rail launchers}
- U **F41B 7/00**
 - Spring guns ({[F41J 9/18](#) takes precedence; catapults having a cocking device [F41B 3/005](#)}; catapults [F41B 3/02](#); {throwing apparatus for boomerangs [A63B 65/08](#); spring-loaded devices for projecting sporting balls [A63B 69/407](#))}**
- F41B 7/08
 - Toy guns, {i.e. guns launching objects of the gliding type, e.g. airplanes, parachute missiles- ([F41B 7/006](#) and [F41B 7/02](#) take precedence)}
- U **F41B 9/00**
 - Liquid ejecting guns, e.g. water pistols, { devices ejecting electrically charged liquid jets, devices ejecting liquid jets by explosive pressure}**
- F41B 9/0003
 - {-characterised by the pressurisation of the liquid (for launching torpedoes or stores from submarines [F41F 3/10](#))}
- F41B 9/0006
 - • {-the liquid being pressurised prior to ejection}
- F41B 9/0009
 - • • {-the pressurised liquid being contained in an expandable chamber, e.g. a bladder or a chamber with a spring-loaded slidable wall}

- F41B 9/0012 {the gun having an unpressurised liquid reservoir}
- F41B 9/0015 . . . {the liquid being pressurised by compressed gas, e.g. air (pressurisation by explosion gases [F41B 9/0043](#))}
- F41B 9/0018 {the gas being compressed utilising a manual piston pump}
- F41B 9/0021 {the gas being compressed by non-manual pumping means, e.g. an electric pump}
- F41B 9/0025 {the pressurised liquid and the compressed gas being physically separated from each other, e.g. by a movable wall}
- F41B 9/0028 {the gun having an unpressurised liquid reservoir}
- F41B 9/0031 . . {the liquid being pressurised at the moment of ejection}
- F41B 9/0034 . . . {Pressurisation by deformation of the gun body}
- F41B 9/0037 . . . {Pressurisation by a piston}
- F41B 9/004 {the piston movement being mechanically coupled to the trigger movement, e.g. the piston being part of the trigger}
- F41B 9/0043 . . . {Pressurisation by explosive pressure}
- F41B 9/0046 {Disruptors, i.e. for neutralising explosive devices}
- F41B 9/005 . . {the gun being connected to an external source of pressurised liquid during use of the gun, i.e. at least during ejection of the liquid}
- F41B 9/0053 . . . {the external source being a pressurised water supply system, e.g. the municipal water supply system or a water supply system onboard a ship}
- F41B 9/0056 . . . {the external source being open water and the pressure being generated by an intake travelling at high speed through the water}
- F41B 9/0059 . {characterised by the number or kind of pressure or storage chambers}
- F41B 9/0062 . . {the liquid being stored in the handle, grip or stock of the gun}
- F41B 9/0065 . . {with removable storage tanks}
- F41B 9/0068 . . {with more than one storage tank}
- F41B 9/0071 . {characterised by special valve arrangements}
- F41B 9/0075 . {characterised by special nozzle arrangements, e.g. for a swirling effect or a directional effect}
- F41B 9/0078 . {characterised by the gun housing, e.g. its shape or concealment}
- F41B 9/0081 . . {Special gun housing shapes, e.g. in the form of animals, airplanes, toys or figurines}
- F41B 9/0084 . . {Concealed gun housings, e.g. concealed nozzles in a garment}
- F41B 9/0087 . {characterised by the intended use, e.g. for self-defence, law-enforcement, industrial use, military purposes ([F41B 9/0046](#) takes precedence)}
- F41B 9/009 . . {for ejecting electrically charged jets}
- F41B 9/0093 . . {for riot control, e.g. water cannons therefor}
- F41B 9/0096 . {having means for mixing other agents with the liquid}

Project: N/A (F41C)

- U F41C 9/00 Other smallarms, e.g. hidden smallarms or smallarms specially adapted for underwater use**
- U F41C 9/08 . Muzzle-loading smallarms; Smallarms with flintlock mechanisms; Accessories therefor
- F41C 9/085 . . {Accessories for loading muzzle loading guns, e.g. magazines or tools for loading}
- U F41C 33/00 Means for wearing or carrying smallarms**

- F41C 33/002 • {-Slings for carrying longguns, e.g. straps (attachment of slings [F41C 23/02](#); shooting harnesses [F41C 33/001](#))}
- F41C 33/003 • {-Buttstock supports, i.e. devices for carrying the weight of long firearms in a substantially vertical orientation by supporting the buttstock (holsters [F41C 33/02](#))}
- F41C 33/005 • • {-combined with a second point of support remote from the buttstock, enabling hands-free carrying}
- F41C 33/006 • {-Clips, hooks or the like, for carrying the weight of smallarms (holsters [F41C 33/02](#))}
- F41C 33/007 • • {-for long firearms, e.g. rifles}
- F41C 33/008 • • {-for handguns, i.e. pistols or revolvers}
- U F41C 33/02 • Holsters, i.e. cases for pistols having means for being carried or worn, e.g. at the belt or under the arm
- F41C 33/0209 • • {-Pouch or pocket like containers for small arms covering all or most of the small arm}
- F41C 33/0218 • • • {-having a flap substantially covering the opening of the pouch or pocket}
- F41C 33/0227 • • • {-having a strap or other restraining element only covering the hammer or a part of the upper part of the small arm}
- F41C 33/0236 • • {-Half-holsters covering by encircling only a part of the small arm, e.g. ghost-holsters}
- F41C 33/0245 • • {-Skeleton-holsters, e.g. contacting only a minimal part of the small arm, e.g. contacting the muzzle, ejection port, chamber, trigger guard or hammer}
- F41C 33/0254 • • {-with accommodation for auxiliary devices mounted on the small arm, e.g. telescopic sights, flashlights or laser-devices}
- F41C 33/0263 • • {-having a locking system for preventing un-authorized or accidental removal of the small arm from the holster ([F41C 33/0227](#) takes precedence)}
- F41C 33/0272 • • {-having means for facilitating or accelerating the drawing of the small arm from the holster}
- F41C 33/0281 • • {-with means for assisting in cocking or loading the small arm}
- F41C 33/029 • • {-combined with electronic devices, e.g. GPS}
- U F41C 33/04 • • Special attachments therefor
- F41C 33/041 • • • {-for connecting a holster to a belt, webbing or other object}
- F41C 33/043 • • • • {-for connection in more than one transversal position}
- F41C 33/045 • • • • {-for connection in more than one rotational position around an axle, e.g. by using a rotatable connection}
- F41C 33/046 • • • {-Webbing, harnesses, belts or straps for wearing holsters}
- F41C 33/048 • • • {-for concealed carrying of a small arm}

Project: N/A (F41G)

- F41G 1/00 **Sighting devices (for indirect laying of fire [F41G 3/16](#); bombsights [F41G 3/24](#);{ structurally associated with laser telemeters [F41G 3/065](#); mounting tubular or beam shaped aiming devices on firearms [F41G 11/001](#))}**
- U F41G 1/06 • Rearsights
- F41G 1/08 • • with aperture; {tubular or of ring form; Peep sights-([F41G 1/42](#) takes precedence)}

- F41G 3/00** **Aiming means; -Laying means (sighting-devices [F41G 1/00](#); { mounting tubular or beam shaped aiming devices on firearms [F41G 11/001](#)}; determining direction, distance or velocity by use of radio or other waves [G01S](#); computer [G06](#); aerials [H01Q](#))**
- U F41G 3/26 · Teaching or practice apparatus for gun-aiming or gun-laying {(shooting games [A63F 9/02](#); light- or radiation-emitting guns [F41A 33/02](#); targets therefor [F41J](#); responders, transponders for radar, sonar, lidar [G01S 13/767](#), [G01S 15/74](#), [G01S 17/74](#))}
- U F41G 3/2616 · · {using a light emitting device}
- U F41G 3/2622 · · · {for simulating the firing of a gun or the trajectory of a projectile}
- F41G 3/2661 · · · · {-in which the light beam is sent from the target to the weapon ([F41G 3/2638](#) takes precedence)}
- U F41G 7/00** **Direction control systems for self-propelled missiles (flight control [B64C](#), [G05D 1/00](#); { counter-measures against guided missiles [F41H 11/02](#); spin-stabilised missiles [F42B 10/26](#)}; self-propelled or guided missiles having direction control systems only installed aboard [F42B 15/01](#); rocket torpedoes [F42B 17/00](#); marine torpedoes or sea-mines having self-propulsion means [F42B 19/00](#); locating by use of radio or other waves [G01S](#); computing aspects [G06](#))**
- U F41G 7/20 · based on continuous observation of target position
- U F41G 7/22 · · Homing guidance systems
- F41G 7/2213 · · · {-maintaining the axis of an orientable seeking head pointed at the target, e.g. target seeking gyro}
- F41G 7/2226 · · · {-comparing the observed data with stored target data, e.g. target configuration data}
- F41G 7/2246 · · · {-Active homing systems, i.e. comprising both a transmitter and a receiver}
- F41G 7/2253 · · · {-Passive homing systems, i.e. comprising a receiver and do not requiring an active illumination of the target}
- F41G 7/226 · · · {-Semi-active homing systems, i.e. comprising a receiver and involving auxiliary illuminating means, e.g. using auxiliary guiding missiles}
- F41G 7/2266 · · · · {-Systems comparing signals received from a base station and reflected from the target}
- F41G 7/2273 · · · {-characterised by the type of waves}
- F41G 7/228 · · · · {-using acoustic waves, e.g. for torpedoes}
- F41G 7/2286 · · · · {-using radio waves}
- F41G 7/2293 · · · · {-using electromagnetic waves other than radio waves}
- U F41G 7/30 · · Command link guidance systems {homing [F41G 7/2206](#)}
- U F41G 7/301 · · · {Details}
- F41G 7/306 · · · · {-for transmitting guidance signals; ([F41G 7/308](#) takes precedence)}
- U F41G 7/34 · based on predetermined target position data
- F41G 7/346 · · {-using global navigation satellite systems, e.g. GPS, GALILEO, GLONASS}
- U F41G 9/00** **Systems for controlling missiles or projectiles, not provided for elsewhere**
- F41G 9/008 · {-Means for controlling firing of torpedoes; Torpedo directors (acoustic homing [F41G 7/228](#))}
- U F41G 11/00** **Details of sighting or aiming apparatus; Accessories {(Tools for adjustment of sights [F41G 1/545](#))}**
- F41G 11/001 · {-Means for mounting tubular or beam shaped sighting or aiming devices on firearms}

- F41G 11/002
 - F41G 11/003
 - F41G 11/004
 - F41G 11/005
 - F41G 11/006
 - F41G 11/007
 - F41G 11/008
- • {-Mountings with recoil absorbing means}
 - • {-Mountings with a dove tail element, e.g. "Picatinny rail systems"}
 - • {-Mountings with clamping means on the device embracing at least a part of the firearm, e.g. the receiver or a dustcover ([F41G 11/003](#) takes precedence)}
 - • {-Mountings using a pivot point and an anchoring point}
 - • • {-the device being rotated in a horizontal plane}
 - • • {-the device being tilted in a vertical plane}
 - • • {-the device being pivotable about an axis coaxial with the axis of the barrel, e.g. for loading}

Project: N/A (F41H)**F41H 5/00**

Armour; -Armour plates (processes for manufacturing or treating [B21](#), [C21](#), { heat treatment [C21D 9/42](#); wall or panel structure for safes [E05G 1/024](#)})

- U F41H 5/02
 - F41H 5/023
 - F41H 5/026
 - U F41H 5/04
 - F41H 5/0407
 - F41H 5/0442
 - U F41H 5/06
 - F41H 5/16
 - U F41H 5/22
 - F41H 5/223
 - F41H 5/226
 - F41H 5/24
 - U F41H 5/26
 - F41H 5/263
 - F41H 5/266
 - U **F41H 7/00**
 - F41H 7/005
 - U F41H 7/02
- Plate construction
 - • {-Armour plate, or auxiliary armour plate mounted at a distance of the main armour plate, having cavities at its outer impact surface, or holes, for deflecting the projectile}
 - • • {-Slat armour; Nets}
 - • composed of more than one layer {(outerwear resistant to mechanical aggressions [A41D 31/0055](#); layered products [B32B](#); shaping reinforced articles [B29C 67/00](#))}
 - • • {-Transparent bullet-proof laminates}{ informative reference: layered products essentially comprising glass in general [B32B 17/06](#), e.g. [B32B 17/10009](#); manufacture or composition of glass, e.g. joining glass to glass [C03](#); permanent multiple-glazing windows, e.g. with spacing therebetween, [E06B 3/66](#)}
 - • • {-Layered armour containing metal (in combination with ceramic layers [F41H 5/0421](#); heat treatment of armour plate [C21D 9/42](#))}
 - Shields (in ships [B63G 9/00](#); in aircraft [B64D 7/00](#)){blasting mats [F42D 5/05](#)}
 - • for ordnance {or tanks-[F41H 5/18](#) takes precedence)}
 - Manhole covers, e.g. on tanks; { Doors on armoured vehicles or structures}
 - • {-Manhole covers specially adapted for armoured or fighting vehicles}
 - • {-Doors on armoured vehicles or structures ([F41H 5/263](#) takes precedence)}
 - for stationary use, e.g. fortifications {Shelters, Guard Booths-[E04H 9/04](#)}
 - Peepholes; Windows; { Loopholes}{manufacture or composition of glass [C03](#); Covers therefor}{ informative reference: transparent bullet-proof laminates [F41H 5/0407](#); layered products essentially comprising glass [B32B 17/06](#)}
 - • {-Mounting of transparent armoured panels, e.g. bulletproof windows on vehicles}
 - • {-Periscopes for fighting or armoured vehicles}
 - Armoured or armed vehicles (general vehicle aspects [B60](#); armoured or armed ships [B63G](#); armoured or armed aircraft [B64D](#); mounting guns, e.g. machine guns, on vehicles [F41A 23/00](#))**
 - {-Unmanned ground vehicles, i.e. robotic, remote controlled or autonomous, mobile platforms carrying equipment for performing a military or police role, e.g. weapon systems or reconnaissance sensors ([F41H 11/16](#) takes precedence)}
 - Land vehicles with enclosing armour, e.g. tanks (endless-track vehicles, steering thereof [B62D](#); {vehicles for placing portable or sectional bridges [E01D 15/127](#); vehicles carrying floating bridges [E01D 15/22](#))}

- U F41H 7/04 • • Armour construction (in general [F41H 5/00](#))
- F41H 7/044 • • • {-Hull or cab construction other than floors or base plates for increased land mine protection (mounting of armoured plates [F41H 5/013](#))}
- F41H 7/046 • • • {-Shock resilient mounted seats for armoured or fighting vehicles}
- F41H 7/048 • • • {-Vehicles having separate armoured compartments, e.g. modular armoured vehicles}
- U F41H 13/00 Means of attack or defence not otherwise provided for {(details of radar or sonar systems [G01S 7/00](#))}**
- F41H 13/0012 • {-Electrical discharge weapons, e.g. for stunning, such as tasers}
- F41H 13/0025 • • {-for remote electrical discharge via conducting wires, e.g. via wire-tethered electrodes shot at a target}
- F41H 13/0031 • • {-for remote electrical discharge by means of a wireless projectile}
- F41H 13/0037 • • {-for remote electrical discharge via liquid jets (details of the gun for generating the liquid jets [F41B 9/00](#))}
- F41H 13/0043 • {-Directed energy weapons, i.e. devices that direct a beam of high energy content toward a target for incapacitating or destroying the target}
- F41H 13/005 • • {-the high-energy beam being a laser beam}
- F41H 13/0056 • • • {-for blinding or dazzling, i.e. by overstimulating the opponent's eyes or the enemy's sensor equipment}
- F41H 13/0062 • • • {-causing structural damage to the target}
- F41H 13/0068 • • {-the high-energy beam being of microwave type, e.g. for causing a heating effect in the target}
- F41H 13/0075 • • {-the high-energy beam being a radiofrequency beam}
- F41H 13/0081 • • {-the high-energy beam being acoustic, e.g. sonic, infrasonic or ultrasonic}
- F41H 13/0087 • • {-the high-energy beam being a bright light, e.g. for dazzling or blinding purposes ([F41H 13/0056](#) takes precedence)}
- F41H 13/0093 • {-Devices generating an electromagnetic pulse, e.g. for disrupting or destroying electronic devices}

Project: N/A (F41J)

- U F41J 3/00 Targets for arrows or darts, e.g. for sporting or amusement purposes {(targets for shooting or hurling games [A63F 9/0204](#))}**
- F41J 3/0004 • {-Archery targets}
- F41J 3/0009 • {-Dartboards}
- F41J 3/0014 • • {-Dartboard holders}
- F41J 3/0019 • • • {-Stands or wall mountings especially adapted for dartboards}
- F41J 3/0023 • • • {-Holders especially adapted for rotating the dartboard during use}
- F41J 3/0028 • • • {-Dart cabinets, i.e. cabinets adapted for the dartboard or dartboard accessories}
- F41J 3/0033 • • {-Dartboards for use with safety darts}
- F41J 3/0038 • • • {-having a smooth surface especially for suction tips darts}
- F41J 3/0042 • • • {-having perforations for receiving blunt tip darts}
- F41J 3/0047 • • • {-having protrusions for receiving blunt tip darts in between}
- F41J 3/0052 • • • {-having a hook and loop surface for hook and loop tip darts}
- F41J 3/0057 • • • {-having a magnetic surface for receiving magnetic tip darts}
- F41J 3/0061 • • {-Target faces}
- F41J 3/0066 • • • {-Segmentation of conventional target faces}

- F41J 3/0071 . . . {-Non-conventional target faces}
- F41J 3/0076 . . . {-Target faces simulating a different sport or game, e. g. football, billiard or rugby}
- F41J 3/008 . . . {-characterised by the material}
- F41J 3/0085 . . . {-made of natural fibres}
- F41J 3/009 . . . {-made of plastic or foam}
- F41J 3/0095 . . {-Manufacture of dartboards}

Project: N/A (F42B)

- U F42B 3/00** **Blasting cartridges, i.e. case and explosive (fuse cords, e.g. detonating fuse cords [C06C 5/00](#); chemical aspects of detonators, blasting caps or primers [C06C 7/00](#))**
- U F42B 3/10 . Initiators therefor (percussion fuzes [F42C 7/00](#); percussion caps [F42C 19/10](#); electric primers [F42C 19/12](#))
- NOTE**
Group [F42B 3/18](#) takes precedence over groups [F42B 3/103](#) to [F42B 3/16](#).
- U F42B 3/12 . . Bridge initiators {([F42B 3/103](#), [F42B 3/11](#), [F42B 3/195](#) take precedence; electric ignitors in propellant charges [F42C 19/12](#))}
- F42B 3/124 . . . {-characterised by the configuration or material of the bridge ([F42B 3/13](#) takes precedence)}
- F42B 3/125 . . . {-characterised by the configuration of the bridge initiator case ([F42B 3/11](#) takes precedence)}
- F42B 3/127 {-the case having burst direction defining elements}
- F42B 3/128 . . . {-characterised by the composition of the pyrotechnic material}
- U F42B 3/18 . . Safety initiators resistant to premature firing by static electricity or stray currents
- F42B 3/188 . . . having radio-frequency filters, {e.g. containing ferrite cores or inductances-([F42B 3/185](#) takes precedence)}
- F42B 5/00** **Cartridge ammunition, e.g. separately-loaded propellant charges (shotgun ammunition [F42B 7/00](#); practice or training ammunition [F42B 8/00](#); missiles therefor [F42B 12/00](#), [F42B 14/00](#), [F42B 15/00](#))**
- U F42B 5/02 . Cartridges, i.e. cases with charge and missile
- U F42B 5/18 . . Caseless ammunition; Cartridges having combustible cases
- F42B 5/181 . . . {-consisting of a combustible casing wall and a metal base; Connectors therefor}
- F42B 5/182 . . . {-Caseless cartridges characterised by their shape}
- F42B 5/192 . . . Cartridge cases characterised by the material { of the casing wall-(cartridge bags [F42B 5/38](#))}
- U F42B 10/00** **Means for influencing, e.g. improving, the aerodynamic properties of projectiles or missiles; Arrangements on projectiles or missiles for stabilising, steering, range-reducing, range-increasing or fall-retarding ([F42B 6/00](#) takes precedence)**
- U F42B 10/02 . Stabilising arrangements
- U F42B 10/14 . . using fins spread or deployed after launch, e.g. after leaving the barrel
- F42B 10/143 . . . {-Lattice or grid fins}
- F42B 10/146 . . . {-Fabric fins, i.e. fins comprising at least one spar and a fin cover made of flexible sheet material}

- U F42B 12/00** **Projectiles, missiles or mines characterised by the warhead, the intended effect, or the material (F42B 6/00, F42B 10/00, F42B 14/00 take precedence; for practice or training F42B 8/12, F42B 8/28; self-propulsion or guidance aspects F42B 15/00)**
- U F42B 12/02 · characterised by the warhead or the intended effect
 - U F42B 12/20 · · of high-explosive type (F42B 12/44 takes precedence)
 - F42B 12/201 · · · {-characterised by target class}
 - F42B 12/202 · · · · {-for attacking land area or area targets, e.g. airburst}
 - F42B 12/204 · · · · {-for attacking structures, e.g. specific buildings or fortifications, ships or vehicles}
 - F42B 12/205 · · · · {-for attacking aerial targets}
 - F42B 12/207 · · · {-characterised by the explosive material or the construction of the high explosive warhead, e.g. insensitive ammunition}
 - F42B 12/208 · · · {-characterised by a plurality of charges within a single high explosive warhead}
- U F42B 14/00** **Projectiles or missiles characterised by arrangements for guiding or sealing them inside barrels, or for lubricating or cleaning barrels**
- U F42B 14/06 · Sub-calibre projectiles having sabots; Sabots therefor
 - U F42B 14/061 · · {Sabots for long rod fin stabilised kinetic energy projectiles, i.e. multisegment sabots attached midway on the projectile}
 - F42B 14/062 · · · {-characterised by contact surfaces between projectile and sabot}
 - F42B 14/065 · · {-Sabots carrying several projectiles}
 - F42B 14/067 · · {-Sealing aspects in sabots, e.g. sealing between individual segments of the sabots or sealing between the outer surface of the sabot and the inner surface of the barrel}
 - F42B 14/068 · · {-Sabots characterised by the material (F42B 14/067 takes precedence)}
- U F42B 15/00** **Self-propelled projectiles or missiles, e.g. rockets; Guided missiles (F42B 10/00, F42B 12/00, F42B 14/00 take precedence; for practice or training F42B 8/12; rocket torpedoes F42B 17/00; marine torpedoes F42B 19/00; cosmonautic vehicles B64G; jet-propulsion plants F02K)**
- F42B 15/01 · Arrangements thereon for guidance or control (steering arrangements F42B 10/60; aircraft flight control B64C; guidance systems other than those installed aboard F41G 7/00, F41G 9/00; locating by use of radio or other waves G01S; flight control in general G05D 1/00; computer aspects G06)
- U F42B 23/00** **Land mines; {Land torpedoes} (F42B 12/00 takes precedence; for practice or training F42B 8/28)**
- F42B 23/04 · anti-vehicle {, e.g. anti-aircraft or anti tank (hollow charges per se F42B 1/02; artillery projectiles having hollow charges F42B 12/10)}
- U F42B 39/00** **Packaging or storage of ammunition or explosive charges; Safety features thereof; Cartridge belts or bags**
- F42B 39/20 · Packages or ammunition having valves for pressure-equalising; Packages or ammunition having plugs for pressure release, e.g. meltable {Blow-out panels; Venting arrangements (ventilating arrangements on packages formed from foldable or erectable blanks B65D 5/4295; packages with pressure-relief valves incorporated in a container wall B65D 77/225)}

Project: N/A (F42C)

- U F42C 11/00** Electric fuzes ({in combination with other fuzes [F42C 9/14](#)}; proximity fuzes [F42C 13/00](#); {safety or arming effected by electric means [F42C 15/40](#); electric contact parts for fuzes [F42C 19/06](#)}; electric igniters [F42C 19/12](#), {[F42B 3/12](#) to [F42B 3/18](#); optical initiators [F42B 3/113](#)})
- F42C 11/008 • {-Power generation in electric fuzes ([F42C 11/02](#), [F42C 11/04](#) and [F42C 15/295](#) take precedence)}
- U F42C 19/00** **Details of fuzes (except [F42C 15/00](#))**
- U F42C 19/08** • Primers (initiators for blasting cartridges [F42B 3/10](#); ignition means for rocket engine plants [F02K 9/95](#)); Detonators
- F42C 19/0803 • • {-characterised by the combination of per se known chemical composition in the priming substance}
- F42C 19/0807 • • {-characterised by the particular configuration of the transmission channels from the priming energy source to the charge to be ignited, e. g. multiple channels, nozzles, diaphragms or filters}
- F42C 19/0811 • • {-characterised by the generation of a plasma for initiating the charge to be ignited}
- F42C 19/0815 • • {-Intermediate ignition capsules, i.e. self-contained primary pyrotechnic module transmitting the initial firing signal to the secondary explosive, e.g. using electric, radio frequency, optical or percussion signals to the secondary explosive (initiators for blasting cartridges or air bags [F42B 3/10](#))}
- F42C 19/0819 • • {-Primers or igniters for the initiation of rocket motors, i.e. pyrotechnical aspects thereof}
- F42C 19/0823 • • {-Primers or igniters for the initiation or the propellant charge in a cartridge ammunition (primers for caseless ammunition [F42C 19/085](#))}
- F42C 19/0826 • • • {-comprising an elongated perforated tube, i.e. flame tube, for the transmission of the initial energy to the propellant charge, e.g. used for artillery shells and kinetic energy penetrators}
- F42C 19/083 • • • {-characterised by the shape and configuration of the base element embedded in the cartridge bottom, e.g. the housing for the squib or percussion cap}
- F42C 19/0834 • • • {-Arrangements of a multiplicity of primers or detonators dispersed within a propellant charge for increased efficiency}
- F42C 19/0838 • • {-Primers or igniters for the initiation or the explosive charge in a warhead ([F42C 19/095](#) takes precedence)}
- F42C 19/0842 • • • {-Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for multiple mode selection}
- F42C 19/0846 • • • {-Arrangements of a multiplicity of primers or detonators, dispersed within a warhead, for increased efficiency}

Project: N/A (F42D)

F42D **BLASTING** (-fuses, e.g. fuse cords, [C06C 5/00](#) ; { for obtaining fluid from wells [E21B 43/00](#) ; for mining or quarrying [E21C 37/00](#) ; for making tunnels or galleries [E21D 9/006](#) } ; cartridges [F42B 3/00](#))

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[F42D 7/00](#) covered by [F42D 1/00](#) , [F42D 3/00](#)

- U F42D 1/00** **Blasting methods or apparatus, e.g. loading or tamping**

- F42D 1/02 · Arranging blasting cartridges to form an assembly (-adaptation of blasting cartridges therefor [F42B 3/02](#)-)
- F42D 1/04 · Arrangements for ignition{(ignition systems for shaped charge perforators [E21B 43/1185](#) ; ignition devices for seismic energy generators [G01V 1/06](#)-)}
- F42D 1/041 · · {Tools for adapting cartridges for the mounting of detonators (-~~Cartridges specially adapted for the mounting of detonators~~ [F42B 3/26](#) ~~Cartridges specially adapted for the mounting of detonators~~ [F42B 3/26](#))}
- F42D 1/043 · · {Connectors for detonating cords and ignition tubes, e.g. Nonel tubes (-mounting of detonators in blasting cartridges [F42B 3/26](#)-)}
- F42D 1/045 · · Arrangements for electric ignition (-dynamo-electric generators [H02K](#)-)
- F42D 1/06 · · Relative timing of multiple charges ({ [F42D 1/043](#) and } [F42D 1/055](#) take precedence-)
- U F42D 1/08 · Tamping methods; Methods for loading boreholes with explosives; Apparatus therefor
- F42D 1/20 · · Tamping cartridges, i.e. cartridges containing tamping material (-flexible or deformable blasting cartridges [F42B 3/087](#)-)
- F42D 3/00** **Particular applications of blasting techniques{ explosive welding [B23K 20/08](#) ; explosive bolts or actuators [F42B 3/006](#); explosive valves [F16K 13/06](#) ; cutting devices actuated by explosion [B23D 15/145](#); pyrotechnical actuators [F15B 15/19](#) ; switching devices actuated by explosion [H01H 39/00](#)}**
- U **F42D 5/00** **Safety arrangements**
- F42D 5/04 · Rendering explosive charges harmless, e.g. destroying ammunition ({ [F42B 39/14](#) and [F42B 39/20](#) take precedence } ; extracting primers, dismantling ammunition [F42B 33/04](#) , [F42B 33/06](#) ; { chemical deactivating of explosives [C06B 21/0091](#) }); Rendering detonation of explosive charges harmless

Project: N/A (G01B)

G01B

MEASURING LENGTH, THICKNESS OR SIMILAR LINEAR DIMENSIONS; MEASURING ANGLES; MEASURING AREAS; MEASURING IRREGULARITIES OF SURFACES OR CONTOURS{(-measuring human body, see the relevant places, where such exist, e.g. [A41H 1/00](#) , [A43D 1/02](#) , [A61B 5/103](#) ; measuring appliances combined with walking-sticks [A45B 3/08](#) ; sorting according to dimensions [B07](#); tool-setting or drawing instruments not specially modified for measuring [B23B 49/00](#) , [B23Q 15/00](#) to [B23Q 17/00](#) , [B43L](#); combinations of measuring devices with writing-appliances [B43K 29/08](#) ; geodetical, nautical or aeronautical measuring, surveying, rangefinding [G01C](#); photogrammetry [G01C 11/00](#) ; measuring force or stress, in general [G01L 1/00](#) ; investigating or analysing particle size, investigating or analysing surface area of porous material [G01N](#); measuring position, distance or direction, in general, by reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation [G01S](#); geophysical measuring [G01V](#); measuring length or roll diameter of film in cameras or projectors [G03B 1/60](#) ; combinations of measuring devices with means for controlling or regulating [G05](#); methods or arrangements for converting the position of a manually-operated writing or tracing member into an electrical signal [G06K 11/00](#) ; measuring elapsed travel of recording medium in recording and playback equipment, sensing diameter of record in autochange gramophones [G11B](#); means structurally associated with electric rotary current collectors for indicating brush wear [H01R 39/58](#) ; indicating consumption of electrodes in arc lamps [H05B 31/34](#))}

NOTES

This subclass covers measuring of position or displacement in terms of linear or angular dimensions.

In this subclass, the groups are distinguished by the means of measurement which is of major importance. Thus the mere application of other means for giving a final indication does not affect the classification.

Attention is drawn to the Notes following the title of class [G01](#).

Machines operated on similar principles to the hand-held devices specified in this subclass are classified with these devices.

Measuring arrangements or details thereof covered by two or more of groups [G01B 3/00](#) - [G01B 17/00](#) are classified in group [G01B 21/00](#) if no single other group can be selected as being predominantly applicable.

G01B 3/00

Instruments as specified in the subgroups and characterised by the use of mechanical measuring means (-arrangements for measuring particular parameters [G01B 5/00](#) ; devices of general interest specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material [B65H 75/34](#)-)

- G01B 3/14 · Templates for checking contours{(-templates for mounting doors or windows [E04F 21/0007](#))}
- G01B 3/22 · Feeler-pin gauges, e.g. dial gauges (-for determining profiles [G01B 5/20](#)-)
- U G01B 3/38 · Gauges with an open yoke and opposed faces i.e. calipers, in which the internal distance between the faces is fixed, although it may be preadjustable
- G01B 3/42 · · of limit-gauge type, i.e. "go/no-go"(-[G01B 3/40](#) takes precedence-)
- U G01B 3/46 · Plug gauges for internal dimensions with engaging surfaces which are at a fixed distance, although they may be preadjustable
- G01B 3/50 · · of limit-gauge type, i.e. "go/no-go"(-[G01B 3/48](#) takes precedence-)
- U G01B 3/56 · Gauges for measuring angles or tapers, e.g. conical calipers

- G01B 3/563
- {Protractors (-for use in geodesy [G01C 1/00](#) ; protractor heads for drawing machines [B43L 13/08-](#))}
- G01B 5/00** **Measuring arrangements characterised by the use of mechanical means (-instruments of the types covered by group [G01B 3/00](#) per se [G01B 3/00-](#))**
- U G01B 5/0002
- {Arrangements for supporting, fixing or guiding the measuring instrument or the object to be measured}
- G01B 5/0004
- • {Supports (-in general [F16M](#), [116A2C](#); [G01B 5/025](#) takes precedence-)}
- U G01B 5/0011
- {Arrangements for eliminating or compensation of measuring errors due to temperature or weight}
- G01B 5/0014
- • {due to temperature (-on machine tools [B23Q 11/0003](#))}
- G01B 5/0016
- • {due to weight (-on machine tools [B23Q 11/001-](#))}
- G01B 5/0025
- {Measuring of vehicle parts (-[G01B 5/003](#) takes precedence-)}
- G01B 5/02
- for measuring length, width or thickness (-[G01B 5/004](#) , [G01B 5/08](#) take precedence-)
- G01B 5/025
- • {Measuring of circumference; Measuring length of ring-shaped articles (-[G01B 5/0035](#) takes precedence-)}
- U G01B 5/06
- • for measuring thickness
- G01B 5/068
- • • {of objects while moving (-[G01B 5/066](#) takes precedence-)}
- G01B 5/08
- for measuring diameters{(-[G01B 5/0035](#) takes precedence; measuring radius of curvature [G01B 5/213-](#))}
- G01B 5/14
- for measuring distance or clearance between spaced objects or spaced apertures (-[G01B 5/24](#) takes precedence-)
- U G01B 5/20
- for measuring contours or curvatures
- G01B 5/207
- • using a plurality of fixed, simultaneously operating transducers (-[G01B 5/213](#) to [G01B 5/22](#) take precedence-)
- U G01B 5/24
- for measuring angles or tapers; for testing alignment of axes
- G01B 5/243
- • {for measuring chamfer (-see [G01B 3/56-](#))}
- G01B 5/26
- for measuring areas, e.g. planimeter (-integrators in general [G06G-](#))
- U G01B 7/00** **Measuring arrangements characterised by the use of electric or magnetic means**
- G01B 7/001
- {Constructional details of gauge heads (-[G01B 7/012](#) takes precedence-)}
- G01B 7/002
- {Constructional details of contacts for gauges actuating one or more contacts (-[G01B 7/016](#) takes precedence-)}
- G01B 7/003
- {for measuring position, not involving coordinate determination (-coordinate measuring [G01B 7/004-](#))}
- G01B 7/02
- for measuring length, width or thickness (-[G01B 7/004](#) , [G01B 7/12](#) take precedence-)
- G01B 7/023
- • {for measuring distance between sensor and object (-[G01B 7/082](#) and [G01B 7/102](#) take precedence-)}
- G01B 7/026
- • {for measuring length of cable, band or the like, which has been paid out, e.g. from a reel (-measuring length of objects while moving [G01B 7/04-](#))}
- G01B 7/06
- • for measuring thickness{(-measuring during the manufacture of coatings [C23C 14/54-](#))}
- U G01B 7/063
- • • {using piezo-electric resonators}
- G01B 7/066
- • • • {for measuring thickness of coating (-apparatus or processes for the manufacture of piezo-electric or electrostrictive resonators for obtaining desired frequency [H03H 3/04-](#))}

- U G01B 7/08
 - • • using capacitive means
- G01B 7/087
 - • • • {for measuring of objects while moving (-G01B 7/085 takes precedence-)}
- U G01B 7/10
 - • • using magnetic means, e.g. by measuring change of reluctance
- G01B 7/107
 - • • • {for measuring objects while moving (-G01B 7/105 takes precedence-)}
- G01B 7/14
 - for measuring distance or clearance between spaced objects or spaced apertures (-G01B 7/30 takes precedence-)
- U G01B 7/28
 - for measuring contours or curvatures
- G01B 7/287
 - • using a plurality of fixed, simultaneously operating transducers (-G01B 7/293 takes precedence-)
- G01B 7/32
 - for measuring areas (-integrators in general G06G-)
- G01B 9/00**

Instruments as specified in the subgroups and characterised by the use of optical measuring means (-arrangements for measuring particular parameters G01B 11/00-)
- G01B 9/02
 - Interferometers {for determining dimensional properties of, or relations between, measurement objects}

WARNING
The subgroups [G01B 9/02001](#) - [G01B 9/02097](#) are not complete pending completion of a reorganization, provisionally see [G01B 9/02](#)
- U G01B 9/02001
 - • {characterised by manipulating or generating specific radiation properties}
- G01B 9/02007
 - • • {Two or more frequencies or sources used for interferometric measurement (-using only beat [G01B 9/02003](#)-)}
- U G01B 9/02015
 - • {characterised by a particular beam path configuration}
- G01B 9/02032
 - • • {generating a spatial carrier frequency, e.g. by creating lateral or angular offset between reference and object beam (-shearing interferometers [G01B 9/02098](#)-)}
- U G01B 9/021
 - • using holographic techniques
- G01B 9/023
 - • • for contour producing (-G01B 9/025 to [G01B 9/029](#) take precedence-)
- G01B 9/04
 - Measuring microscopes (-microscopes in general [G02B 21/00](#)-)
- G01B 9/06
 - Measuring telescopes (-telescopes in general [G02B 23/00](#)-)
- G01B 11/00**

Measuring arrangements characterised by the use of optical means (-instruments of the types covered by group G01B 9/00 per se G01B 9/00-)
- G01B 11/02
 - for measuring length, width or thickness (-G01B 11/08 takes precedence-)
- G01B 11/026
 - • {by measuring distance between sensor and object (-G01B 11/0608 takes precedence-)}
- G01B 11/028
 - • {by measuring lateral position of a boundary of the object (-G01B 11/022 , [G01B 11/024](#) , [G01B 11/04](#) take precedence-)}
- G01B 11/06
 - • for measuring thickness, e.g. of sheet material (-thickness measurement by thermal means [G01B 21/085](#)-)
- G01B 11/0691
 - • • {of objects while moving (-G01B 11/0616 takes precedence-)}
- G01B 11/14
 - for measuring distance or clearance between spaced objects or spaced apertures (-G01B 11/26 takes precedence; rangefinders [G01C](#)-)
- U G01B 11/24
 - for measuring contours or curvatures
- G01B 11/2416
 - • {of gears (-optical projection profile comparators [G01B 9/08](#)-)}
- G01B 11/245
 - • using a plurality of fixed, simultaneously operating transducers ({ [G01B 11/2408](#) to [G01B 11/2425](#) , } [G01B 11/255](#) take precedence-)

- G01B 11/25
- • by projecting a pattern, e.g. {one or more lines,} moirè fringes on the object (-G01B 11/255 takes precedence; image analysis for depth or shape recovery G06T 7/0051-)
- G01B 11/255
- • for measuring radius of curvature{(-measuring diameter G01B 11/08-)}
- U G01B 11/26
- • for measuring angles or tapers; for testing the alignment of axes
- G01B 11/27
- • for testing the alignment of axes{(-means for centering or aligning a light guide within a ferrule G02B 6/3834-)}
- G01B 11/28
- • for measuring areas (-integrators in general G06G-)
- G01B 13/00**
- Measuring arrangements characterised by the use of fluids{(-pressure regulation G05D 16/00-)}**
- G01B 13/02
- • for measuring length, width or thickness (-G01B 13/08 takes precedence-)
- G01B 13/12
- • for measuring distance or clearance between spaced objects or spaced apertures (-G01B 13/18 takes precedence-)
- G01B 13/20
- • for measuring areas, e.g. pneumatic planimeter (-integrators in general G06G-)
- G01B 15/00**
- Measuring arrangements characterised by the use of wave or particle radiation (-G01B 9/00 , G01B 11/00 take precedence; { by radar technique G01S })**
- G01B 17/00**
- Measuring arrangements characterised by the use of subsonic, sonic or ultrasonic vibrations{(-by sonar technique G01S 15/00-)}**
- U **G01B 21/00**
- Measuring arrangements or details thereof in so far as they are not adapted to particular types of measuring means of the preceding groups**
- NOTE
- Measuring arrangements or details thereof covered by two or more of groups G01B 3/00 - G01B 17/00 are classified in this group if no single other group can be selected as being predominantly applicable.
- G01B 21/02
- • for measuring length, width, or thickness (-G01B 21/10 takes precedence-)
- U G01B 21/04
- • by measuring coordinates of points
- G01B 21/042
- • • {Calibration or calibration artifacts (-G01B 3/30 , G01B 9/02072 take precedence-)}
- G01B 21/045
- • • {Correction of measurements (-G01B 9/02055 takes precedence-)}
- G01B 21/06
- • specially adapted for measuring length or width of objects while moving{ unwinding or rewinding apparatus incorporating length measuring devices B65H 16/025-}
- U G01B 21/10
- • for measuring diameters
- G01B 21/14
- • internal diameters{(-of boreholes or wells E21B 47/08-)}
- G01B 21/28
- • for measuring areas (-integrators in general G06G-)
- G01B 2290/00**
- Aspects of interferometers not specifically covered by any group under G01B 9/02**

Project: N/A (G01C)**G01C**

MEASURING DISTANCES, LEVELS OR BEARINGS; SURVEYING; NAVIGATION; GYROSCOPIC INSTRUMENTS; PHOTOGRAMMETRY OR VIDEOGRAMMETRY (measuring dimensions or angles of objects [G01B](#); measuring liquid level [G01F](#); measuring intensity or direction of magnetic fields, other than the earth's field, in general [G01R](#); radio navigation, determining distance or velocity by use of propagation effects, e.g. Doppler effects, propagation time, of radio waves, analogous arrangements using other waves [G01S](#); optical systems therefor [G02B](#); maps, globes [G09B](#))

NOTES

In this subclass, the following term is used with the meaning indicated:

"navigation" means determining the position and course of land vehicles, ships, aircraft, and space vehicles.

Attention is drawn to the Notes following the title of class [G01](#).

G01C 1/00

Measuring angles (-in compasses [G01C 17/00](#)-)

U G01C 1/02

- Theodolites

G01C 1/06

- • Arrangements for reading scales (-in general [G01D](#)-)

U G01C 1/08

- Sextants

G01C 1/10

- • including an artificial horizon (-[G01C 1/14](#) takes precedence; artificial horizons per se [G01C 15/14](#)-)

G01C 1/12

- • • with a stabilised mirror (-tilt compensation in general [G12B](#)-)

G01C 1/14

- • Periscopic sextants (-periscopes in general [G02B 23/08](#)-)

G01C 3/00

Measuring distances in line of sight; optical rangefinders (-tapes, chains or wheels for measuring length [G01B](#) ; coupling rangefinders with operating parts of photographic apparatus [G03B](#)-)

U G01C 3/02

- Details

G01C 3/04

- • Adaptation of rangefinders for combination with telescopes or binoculars (-rangefinders coupled with focussing arrangements of cameras [G03B 13/20](#)-)

G01C 3/10

- using a parallactic triangle with variable angles and a base of fixed length in the observation station, e.g. in the instrument (-active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, [G01S 17/48](#)-)

G01C 3/12

- • with monocular observation at a single point, e.g. coincidence type (-[G01C 3/20](#) takes precedence-)

G01C 3/14

- • with binocular observation at a single point, e.g. stereoscopic type (-[G01C 3/20](#) takes precedence-)

G01C 3/18

- • with one observation point at each end of the base (-[G01C 3/20](#) takes precedence-)

G01C 3/22

- using a parallactic triangle with variable angles and a base of fixed length at, near, or formed by the object (-active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, [G01S 17/48](#)-)

G01C 3/24

- using a parallactic triangle with fixed angles and a base of variable length in the observation station, e.g. in the instrument (-active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, [G01S 17/48](#)-)

- G01C 3/26
- using a parallax triangle with fixed angles and a base of variable length, at, near, or formed by the object (-active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves, [G01S 17/48](#)-)
- G01C 5/00**
- Measuring height; Measuring distances transverse to line of sight; Levelling between separated points; Surveyors` levels (-G01C 3/20 , G01C 3/30 take precedence; tracing profiles [G01C 7/00](#) ; levels indicating inclination at a single point [G01C 9/00](#)-)**
- G01C 5/005
- {altimeters for aircraft (-G01C 5/02 , [G01C 5/06](#) take precedence-)}
- G01C 5/02
- involving automatic stabilisation of the line of sight; (-tilt compensation in general [G12B](#) ; regulation of direction in general [G05D 3/00](#)-)
- G01C 5/06
- by using barometric means (-barometers per se [G01L](#)-)
- G01C 7/00**
- Tracing profiles (-by photogrammetry [G01C 11/00](#)-)**
- G01C 7/06
- of cavities, e.g. tunnels (-survey of wells [E21B 47/00](#)-)
- G01C 9/00**
- Measuring inclination, e.g. by clinometers, by levels{(-switches operated by inclination or orientation [H01H 35/02](#)-)}**
- G01C 9/10
- by using rolling bodies {e.g. spheres, cylinders, mercury droplets (-tilting mercury container switches [H01H 29/20](#)-)}
- G01C 9/12
- by using a single pendulum (-plumb lines [G01C 15/10](#)-)
- G01C 11/00**
- Photogrammetry or videogrammetry, e.g. stereogrammetry; Photographic surveying (-cameras combined with surveying instruments, e.g. with theodolites, [G01C 1/00](#) , [G01C 3/00](#) , [G01C 5/00](#) , [G01C 9/00](#) ; surveying cameras [G03B 37/00](#)-)**
- WARNING
- The following IPC group is not used in the CPC scheme: Subject-matter covered by this group is classified in the following CPC groups: [G01C 11/36](#) covered by [G01C 11/00](#) to [G01C 11/34](#)
- U G01C 11/04
- Interpretation of pictures
- U G01C 11/06
- • by comparison of two or more pictures of the same area
- U G01C 11/08
- • • the pictures not being supported in the same relative position as when they were taken
- G01C 11/10
- • • • using computers to control the position of the pictures (-computers per se [G06](#)-)
- U G01C 11/12
- • • the pictures being supported in the same relative position as when they were taken
- G01C 11/14
- • • • with optical projection (-[G01C 11/26](#) takes precedence-)
- G01C 11/22
- • • • with mechanical projection (-[G01C 11/26](#) takes precedence-)
- G01C 11/24
- • • • with optical-mechanical projection (-[G01C 11/26](#) takes precedence-)
- G01C 11/26
- • • • using computers to control the position of the pictures (-computers per se [G06](#)-)
- G01C 13/00**
- Surveying specially adapted to open water, e.g. sea, lake, river, canal (-liquid level metering [G01F](#) ; measuring liquid velocity [G01P](#) ; determining existence of flow of underground water [G01V](#)-)**
- G01C 15/00**
- surveying instruments or accessories not provided for in groups [G01C 1/00](#) to [G01C 13/00](#)**
- G01C 15/002
- {Active optical surveying means (-optical plumbing [G01C 15/105](#)-)}
- G01C 15/14
- Artificial horizons (-tilt compensation in general [G02B](#)-)

- G01C 17/00** **Compasses; Devices for ascertaining true or magnetic north for navigation or surveying purposes (-using gyroscopic effect [G01C 19/00](#) ; for geophysical or prospecting purposes [G01V 3/00](#))**
- U G01C 17/02 · Magnetic compasses
- G01C 17/28 · · Electromagnetic compasses (-with north seeking magnetic elements and having electric pick-offs [G01C 17/26](#)-)
- U G01C 19/00** **Gyroscopes; Turn-sensitive devices using vibrating masses; Turn-sensitive devices without moving masses; Measuring angular rate using gyroscopic effects**
- U G01C 19/02 · Rotary gyroscopes
- U G01C 19/04 · · Details
- U G01C 19/06 · · · Rotors
- G01C 19/065 · · · · {Measurement or control of angular velocity, specifically adapted to gyrorotors (-measuring angular speed in general [G01P](#) ; controlling angular speed [G05D 13/00](#) ; controlling electrical motors [H02P](#)-)}
- G01C 19/08 · · · · electrically driven (-[G01C 19/14](#) takes precedence; dynamoelectric machines [H02K](#)-)
- G01C 19/12 · · · · fluid driven (-[G01C 19/14](#) takes precedence-)
- G01C 19/16 · · · Suspensions; Bearings (-bearings in general [F16C](#) ; balancing rotors [G01M](#)-)
- G01C 19/18 · · · · providing movement of rotor with respect to its rotational axes (-[G01C 19/20](#) , [G01C 19/24](#) takes precedence-)
- G01C 19/26 · · · Caging, i.e. immobilising moving parts, e.g. for transport (-applicable to instruments in general [G01D 11/20](#)-)
- G01C 19/30 · · · Erection devices, i.e. devices for restoring rotor axis to a desired position (-for instrument indicating the vertical [G01C 19/46](#)-)
- G01C 19/32 · · · Indicating or recording means specially adapted for rotary gyroscopes (-in general [G01D](#)-)
- U G01C 19/44 · · for indicating the vertical
- U G01C 19/46 · · · Erection devices for restoring rotor axis to a desired position
- G01C 19/48 · · · · operating by electrical means (-[G01C 19/54](#) takes precedence-)
- G01C 19/50 · · · · operating by mechanical means (-[G01C 19/54](#) takes precedence-)
- G01C 19/52 · · · · operating by fluid means (-[G01C 19/54](#) takes precedence-)
- U G01C 19/56 · Turn-sensitive devices using vibrating masses, e.g. vibratory angular rate sensors based on Coriolis forces
- NOTE**
- Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "micro-structural devices" and "micro-structural systems"
- G01C 19/5607 · · using vibrating tuning forks (-double-ended tuning forks using planar vibrating masses suspended at opposite ends [G01C 19/5719](#)-)
- G01C 19/5776 · · Signal processing not specific to any of the devices covered by groups [G01C 19/5607](#) to [G01C 19/5719](#)
- G01C 19/5783 · · Mountings or housings not specific to any of the devices covered by groups [G01C 19/5607](#) to [G01C 19/5719](#)
- U G01C 19/58 · Turn-sensitive devices without moving masses
- G01C 19/60 · · Electronic or nuclear magnetic resonance gyrometers (-magnetic resonance arrangements in general [G01R 33/20](#)-)

- U G01C 19/64
 - Gyrometers using the Sagnac effect, i.e. rotation-induced shifts between counter-rotating electromagnetic beams
- G01C 19/66
 - Ring laser gyrometers (-ring lasers in general [H01S 3/083](#)-)
- U G01C 19/661
 - {details}
- G01C 19/665
 - {control of the cavity}(-of lasers in general [H01S 3/10](#)-)}
- G01C 21/00**

Navigation; Navigational instruments not provided for in preceding groups (-measuring distance traversed on the ground by a vehicle [G01C 22/00](#) ; measuring linear or angular speed or acceleration [G01P](#) ; control of position, course, altitude or attitude of vehicles [G05D 1/00](#) ; traffic control systems [G08G](#)-)
- G01C 21/005
 - {with correlation of navigation data from several sources, e.g. map or contour matching}(-[G01C 21/30](#) takes precedence-)}
- G01C 21/02
 - by astronomical means (-[G01C 21/24](#) , [G01C 21/26](#) take precedence; measuring time by using position of the sun, moon, or stars [G04B 49/00](#)-)
- G01C 21/04
 - by terrestrial means (-[G01C 21/24](#) , [G01C 21/26](#) take precedence; marking of navigation route for ships [B63B 51/00](#)-)
- G01C 21/10
 - by using measurements of speed or acceleration (-[G01C 21/24](#) , [G01C 21/26](#) take precedence-)
- U G01C 21/12
 - executed aboard the object being navigated; Dead reckoning
- G01C 21/14
 - by recording the course traversed by the object (-[G01C 21/16](#) takes precedence-)
- G01C 21/20
 - Instruments for performing navigational calculations (-[G01C 21/24](#) , [G01C 21/26](#) take precedence; adaptations of digital computers to a specific function or application [G06F 17/00](#) , [G06F 19/00](#)-)
- G01C 21/22
 - Plotting boards (-in general [B43L](#)-)
- U G01C 21/26
 - specially adapted for navigation in a road network
- G01C 21/265
 - {constructional aspects of navigation devices, e.g. housings, mountings, displays}(-[G01C 21/3688](#) takes precedence-)}
- U G01C 21/34
 - Route searching; Route guidance
- U G01C 21/3407
 - {specially adapted for specific applications}
- G01C 21/343
 - {Calculating itineraries, i.e. routes leading from a starting point to a series of categorical destinations using a global route restraint, round trips, touristic trips (-travelling salesman problem [G06Q 10/04](#) ; optimisation of routes [G06Q 10/047](#)-)}
- U G01C 21/3453
 - {Special cost functions, i.e. other than distance or default speed limit of road segments}
- G01C 21/3476
 - {using point of interest [POI]}information, e.g. a route passing visible POIs}}
- G01C 21/3492
 - {employing speed data or traffic data, e.g. real-time or historical}(-traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle [G08G 1/0968](#)-)}
- G01C 21/36
 - Input/output arrangements of navigation systems; { Input arrangements for transferring data to be processed into a form capable of being handled by the computer, and output arrangements for transferring data from processing unit to output unit, e.g. interface arrangements [G06F 3/00](#) ; pointing devices displaced or positioned by the user, e.g. mice, trackballs, pens or joysticks, and accessories therefor [G06F 3/033](#) ; interaction techniques for graphical user interfaces, e.g. interaction with windows, icons or menus [G06F 3/048](#) ; Manipulating 3D models or images for computer graphics [G06T 19/00](#)}

- G01C 21/3602
 - · · · {Input other than that of destination using image analysis, e.g. detection of road signs, lanes, buildings, real preceding vehicles using a camera (image data processing per se [G06T](#))}
- U G01C 21/3605
 - · · · {Destination input or retrieval}
- G01C 21/3608
 - · · · {using speech input, e.g. using speech recognition (-speech recognition per se [G10L 15/00](#)-)}
- G01C 21/3611
 - · · · {using character input or menus, e.g. menus of POIs (-character input methods in general [G06F 3/0233](#)-)}
- G01C 21/3626
 - · · · {Details of the output of route guidance instructions (-Traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle [G08G 1/0968](#)-)}
- G01C 21/3629
 - · · · {Guidance using speech or audio output, e.g. text-to-speech (-text to speech systems per se [G10L 13/00](#)-)}
- G01C 21/3632
 - · · · {Guidance using simplified or iconic instructions, e.g. using arrows (-[G01C 21/365](#) takes precedence-)}
- U G01C 21/3635
 - · · · {Guidance using 3D or perspective road maps}
- G01C 21/3638
 - · · · · {including 3D objects and buildings (three dimensional [3D])} modelling, e.g. data description of 3D objects [G06T 17/00](#) ; geographic models [G06T 17/05](#) †}
- G01C 21/3667
 - · · · {Display of a road map (-[G01C 21/3614](#) takes precedence; guidance using 3D or perspective road maps [G01C 21/3635](#)-)}
- G01C 21/3679
 - · · · {Retrieval, searching and output of POI information, e.g. hotels, restaurants, shops, filling stations, parking facilities (-[G01C 21/3611](#) takes precedence-)}
- G01C 21/3682
 - · · · {output of POI information on a road map (-[G01C 21/3614](#) , [G01C 21/3685](#) take precedence-)}
- G01C 21/3691
 - · · · {Retrieval, searching and output of information related to real-time traffic, weather, or environmental conditions (-arrangements for giving variable traffic instructions [G08G 1/09](#)-)}
- G01C 21/3697
 - · · · {output of additional, non-guidance related information, e.g. low fuel level, fuel efficient driving, gear change, speeding, dangerous curve ahead, slippery road, school zone, speed traps, driving behaviour feedback, advertising, virtual billboards or road signs (-[G01C 21/3679](#) takes precedence-)}
- G01C 22/00**
 - Measuring distance traversed on the ground by vehicles, persons, animals, or other moving solid bodies, e.g. using odometers, using pedometers (-counting mechanisms per se [G06M](#)-)**
- G01C 22/004
 - {for golf carts (-wheeled carriers for golf bags [A63B 55/08](#)-)}
- G01C 22/02
 - by conversion into electric waveforms and subsequent integration, e.g. using tachometer generator((-[G01C 22/002](#) , [G01C 22/004](#) , [G01C 22/006](#) take precedence-)}
- U **G01C 23/00**
 - Combined instruments indicating more than one navigational value, e.g. for aircraft; Combined measuring devices for measuring two or more variables of movement, e.g. distance, speed, acceleration**
- G01C 23/005
 - {Flight directors (-indicating arrangements specially adapted for rotary gyroscopes [G01C 19/32](#) ; indicating or recording in connection with measuring, in general [G01D](#) ; control of course of land or air vehicles by controlling or regulating non-electric variables [G05D 1/00](#) ; arrangements or adaptations of instruments for aircraft [B64D 43/00](#)-)}

G01C 25/00

Manufacturing, calibrating, cleaning, or repairing instruments and devices referred to in the preceding groups (~~testing, calibrating and compensating compasses~~ [G01C 17/38](#))

Project: N/A (G01D)

U G01D 5/00

Mechanical means for transferring the output of a sensing member; Means for converting the output of a sensing member to another variable where the form or nature of the sensing member does not constrain the means for converting; Transducers not specially adapted for a specific variable ([G01D 3/00](#) takes precedence; specially adapted for apparatus giving results other than momentary value of variable [G01D 1/00](#); sensing members, see the relevant subclasses, e.g. of [G01](#), [H01](#); for converting a single current or a single voltage into a mechanical displacement [G01R 5/00](#); specially adapted for high-voltage or high-current measuring arrangements [G01R 15/04](#), [G01R 15/14](#); measuring currents or voltages using digital measurement techniques [G01R 19/25](#); transmission systems for measured values, control or similar signals [G08C](#), e.g. electrical signals [G08C 19/00](#))

NOTE

The subgroups of this main group are distinguished by the means which is of major importance. Thus the mere application of other means for giving a final indication does not affect the classification.

- U G01D 5/12 · using electric or magnetic means ([G01D 5/06](#) takes precedence)
- U G01D 5/14 · · influencing the magnitude of a current or voltage
- U G01D 5/20 · · · by varying inductance, e.g. by a movable armature
- G01D 5/2006 · · · · {-by influencing the self-induction of one or more coils ([G01D 5/22](#) takes precedence)}
- G01D 5/2013 · · · · · {-by a movable ferromagnetic element, e.g. a core ([G01D 5/2033](#) takes precedence)}
- G01D 5/2033 · · · · · {-controlling the saturation of a magnetic circuit by means of a movable element, e.g. a magnet}
- U G01D 5/244 · · influencing characteristics of pulses or pulse trains; generating pulses or pulse trains
- G01D 5/24423 · · · {-Mounting means or means for restraining during shipping ([G01D 5/24442](#) takes precedence)}
- G01D 5/24428 · · · {-Error prevention}
- G01D 5/24433 · · · · {-by mechanical means}
- G01D 5/24438 · · · · · {-Special design of the sensing element or scale}
- G01D 5/24442 · · · · · {-by mounting means}
- G01D 5/24447 · · · · {-by energy backup}
- G01D 5/24452 · · · · {-Calibration}
- G01D 5/24457 · · · {-Failure detection}
- G01D 5/24461 · · · · {-by redundancy or plausibility}
- G01D 5/24466 · · · · · {-Comparison of the error value to a threshold}
- G01D 5/24471 · · · {-Error correction}
- G01D 5/24476 · · · · {-Signal processing ([G01D 5/2448](#) to [G01D 5/24495](#) take precedence)}
- G01D 5/2448 · · · · · {-Correction of gain, threshold, offset or phase control}
- G01D 5/24485 · · · · · {-using other sensors}
- G01D 5/2449 · · · · · {-using hard-stored calibration data}

- G01D 5/24495 {-using previous values}
- U G01D 5/26 . characterised by optical transfer means, i.e. using infra-red, visible, or ultra-violet light
- U G01D 5/28 . . with deflection of beams of light, e.g. for direct optical indication ([G01D 5/40](#) takes precedence; {mechanical adjustment [G01D 5/264](#)})
- U G01D 5/30 . . . the beams of light being detected by photocells
- G01D 5/305 {-controlling the movement of a following part}
- U G01D 5/32 . . with attenuation or whole or partial obturation of beams of light ([G01D 5/40](#) takes precedence; {mechanical adjustment [G01D 5/264](#)})
- U G01D 5/34 . . . the beams of light being detected by photocells
- U G01D 5/353 influencing the transmission properties of an optical fibre
- G01D 5/35306 {-using an interferometer arrangement}

WARNING

This group and its subgroups are not complete pending reclassification; see also **G01D353F**

- G01D 5/35309 {-using multiple waves interferometer}
- G01D 5/35312 {-using a Fabry Perot}
- G01D 5/35316 {-using a Bragg gratings}
- G01D 5/35319 {-using other multiple wave interferometer}
- G01D 5/35322 {-using interferometer with one loop with several directions of circulation of the light, e.g. Sagnac interferometer}
- G01D 5/35325 {-using interferometer with two arms in reflection, e.g. Mickelson interferometer}
- G01D 5/35329 {-using interferometer with two arms in transmission, e.g. Mach-Zender interferometer}
- G01D 5/35332 {-using other interferometers}
- G01D 5/35335 {-Aspects of emitters or receivers used by an interferometer in an optical fibre sensor arrangement (using multiple sensor devices using multiplexing techniques [G01D 5/35383](#))}
- G01D 5/35338 {-using other arrangements than interferometer arrangements}
- G01D 5/35341 {-Sensor working in transmission}
- G01D 5/35345 {-using Amplitude variations to detect the measured quantity}
- G01D 5/35348 {-using stimulated emission to detect the measured quantity}
- G01D 5/35351 {-using other means to detect the measured quantity}
- G01D 5/35354 {-Sensor working in reflection}
- G01D 5/35358 {-using Backscattering to detect the measured quantity}
- G01D 5/35361 {-using inelastic backscattering, e.g. Rayleigh, to detect the measured quantity}
- G01D 5/35364 {-using elastic backscattering, i.e. Brillouin or Raman, to detect the measured quantity}
- G01D 5/35367 {-using reflected light other than backscattered to detect the measured quantity}
- G01D 5/3537 {-Optical fibre sensor using a particular arrangement of the optical fibre itself}

WARNING

This group and its subgroups are not complete pending reclassification; see also **G01D353F**

- G01D 5/35374 {-Particular layout of the fiber}
- G01D 5/35377 {-Means for amplifying or modifying the measured quantity}
- G01D 5/3538 {-using a particular type of fiber, e.g. fibre with several cores, PANDA fiber, fiber with an elliptic core or the like}
- G01D 5/35383 {-using multiple sensor devices using multiplexing techniques}
- G01D 5/35387 {-using wavelength division multiplexing}
- G01D 5/3539 {-using time division multiplexing}
- G01D 5/35393 {-using frequency division multiplexing}
- G01D 5/35396 {-using other forms of multiplexing}

U G01D 9/00**Recording measured values**

- U G01D 9/28 . Producing one or more recordings, each recording being of the values of two or more different variables ([G01D 9/38](#), [G01D 9/40](#) take precedence)
- G01D 9/285 . . {producing additional marks (*e.g. reference lines time marks*)}{*e.g. reference lines time marks*}

Project: N/A (G01F)**U G01F 1/00**

Measuring the volume flow or mass flow of fluid or fluent solid material wherein the fluid passes through the meter in a continuous flow (measuring a proportion of the volume flow [G01F 5/00](#); measuring speed of flow [G01P 5/00](#); indicating presence or absence of flow [G01P 13/00](#); regulating quantity or ratio {[G05D 7/00](#), [G05D 11/02](#)})

NOTE

[G01F 1/72](#), [G01F 1/74](#) and [G01F 1/76](#) take precedence over [G01F 1/05](#) to [G01F 1/68](#)

- U G01F 1/05 . by using mechanical effects
- U G01F 1/06 . . using rotating vanes with tangential admission
- G01F 1/065 . . . {-with radiation as transfer means to the indicating device, e.g. light transmission}
- U G01F 1/10 . . using rotating vanes with axial admission
- G01F 1/103 . . . {-with radiation as transfer means to the indicating device, e.g. light transmission}
- U G01F 1/76 . Devices for measuring mass flow of a fluid or a fluent solid material (weighing a continuous stream of material during flow [G01G 11/00](#))
- U G01F 1/78 . . Direct mass flowmeters
- U G01F 1/80 . . . operating by measuring pressure, force, momentum, or frequency of a fluid flow to which a rotational movement has been imparted
- U G01F 1/84 Gyroscopic mass flowmeters
- G01F 1/8404 {-details of flowmeter manufacturing methods}
- G01F 1/8409 {-constructional details}
- G01F 1/8413 {-means for influencing the flowmeter's motional or vibrational behaviour, e.g., conduit support or fixing means, or conduit attachments}
- G01F 1/8418 {-motion or vibration balancing means}
- G01F 1/8422 {-exciters}
- G01F 1/8427 {-detectors}
- G01F 1/8431 {-electronic circuits}
- G01F 1/8436 {-signal processing}

- G01F 1/844 {-micro-fluidic or miniaturised flowmeters}
- G01F 1/8445 {-micro-machined flowmeters}
- G01F 1/845 {-arrangements of measuring means, e.g., of measuring conduits}
- G01F 1/8454 {-rotating or rotatngly suspended measuring conduits}
- G01F 1/8459 {-vibrating means being located inside the measuring conduits}
- G01F 1/8463 {-the measuring conduits' cross-section being deformed during measurement, e.g. by periodically deflecting a portion of the conduits' surface}

- G01F 1/8468 {-vibrating measuring conduits}
- G01F 1/8472 {-having curved measuring conduits, i.e. whereby the measuring conduits' curved center line lies within a plane ([G01F 1/8481](#) takes precedence)}

- G01F 1/8477 {-with multiple measuring conduits}
- G01F 1/8481 {-having loop-shaped measuring conduits, e.g. the measuring conduits form a loop with a crossing point}

- G01F 1/8486 {-with multiple measuring conduits}
- G01F 1/849 {-having straight measuring conduits}
- G01F 1/8495 {-with multiple measuring conduits}

- U G01F 11/00 Apparatus requiring external operation and adapted at each repeated and identical operation to measure and separate a predetermined volume of fluid or fluent solid material from a supply or container without regard to weight and to deliver it**

- U G01F 11/28 with stationary measuring chambers having constant volume during measurement (with measuring chambers which expand or contract during measurement [G01F 11/02](#))

- G01F 11/288 {-squeezing of the supply vessel causing filling of the measuring chamber and backflow from the measuring chamber to the supply vessel being prevented by a check valve ([G01F 11/46](#) take precedence)}

- U G01F 15/00 Details of, or accessories for, apparatus of the preceding groups insofar as such details or appliances are not adapted to particular types of such apparatus**

- U G01F 15/06 Indicating or recording devices, e.g. for remote indication
- G01F 15/061 {-for remote indication}

- U G01F 23/00 Indicating or measuring liquid level, or level of fluent solid material, e.g. indicating in terms of volume, indicating by means of an alarm (in wells [E21B 47/04](#); adaptation to, or mounting on, steam boilers [F22B 37/78](#); level regulation [G05D](#); alarm devices [G08B](#); {for accumulators [H01M 10/48](#)})**

- U G01F 23/30 by floats (switches operated by floats [H01H 35/18](#), {with magnets [H01H 36/02](#)})
- U G01F 23/32 using rotatable arms or other pivotable transmission elements
- G01F 23/38 {-using magnetically actuated indicating means}

- U G01F 25/00 Testing or calibrating apparatus for measuring volume, volume flow or liquid level, or for metering by volume**

- U G01F 25/0061 {for measuring liquid level}
- G01F 25/0069 {-checking proper indicating of discrete level by floats}

Project: N/A (G01G)

- U G01G 13/00** **Weighing apparatus with automatic feed or discharge for weighing-out batches of material (for weighing a continuous stream [G01G 11/00](#); check-weighing [G01G 15/00](#); for fluids [G01G 17/04](#); apportioning by weight materials to be mixed [G01G 19/22](#); combinatorial weighing [G01G 19/387](#))**
- G01G 13/003 · {-Details; specially adapted accessories (details of weighing apparatus in general [G01G 21/00](#); auxiliary devices for weighing apparatus in general [G01G 23/00](#))}
- U G01G 13/24** · Weighing mechanism control arrangements for automatic feed or discharge
- G01G 13/247 · · {-Checking quantity of material in the feeding arrangement, e.g. discharge material only if a predetermined quantity is present}
- U G01G 19/00** **Weighing apparatus or methods adapted for special purposes not provided for in the preceding groups {(electric measuring arrangements involving comparison with a reference value [G01R 17/00](#))}**
- U G01G 19/40** · with provisions for indicating, recording, or computing price or other quantities dependent on the weight (indicating means for weighing apparatus [G01G 23/18](#); recording means for weighing apparatus [G01G 23/18](#); computers in general [G06](#))
- U G01G 19/413** · · using electromechanical or electronic computing means
- U G01G 19/414** · · · using electronic computing means only
- G01G 19/4142 · · · · {-for controlling activation of safety devices, e.g. airbag systems (electrical circuits for triggering safety arrangements in case of vehicle accidents [B60R 21/015](#))}
- U G01G 21/00** **Details of weighing apparatus**
- U G01G 21/28** · Frames, Housings
- G01G 21/283 · · {-Details related to a user interface}
- G01G 21/286 · · {-with windshields}
- U G01G 23/00** **Auxiliary devices for weighing apparatus**
- U G01G 23/01** · Testing or calibrating of weighing apparatus
- G01G 23/012 · · {-with load cells comprising in-build calibration weights}
- G01G 23/015 · · {-by adjusting to the local gravitational acceleration}
- G01G 23/017 · · {-Securing calibration against fraud}
- U G01G 23/18** · Indicating devices, e.g. for remote indication; Recording devices; Scales, e.g. graduated
- U G01G 23/36** · · indicating the weight by electrical means, e.g. using photoelectric cells
- U G01G 23/37** · · · involving digital counting
- G01G 23/3728 · · · · {-with wireless means}
- G01G 23/3735 · · · · · {-using a digital network}
- G01G 23/3742 · · · · · · {-using a mobile telephone network}

Project: N/A (G01H)

- U G01H 3/00** **Measuring {characteristics of} vibrations by using a detector in a fluid ([G01H 7/00](#), [G01H 9/00](#), [G01H 11/00](#) take precedence)**
- G01H 3/005 · {Testing or calibrating of detectors covered by the subgroups of [G01H 3/00](#)-(calibrating geophysical instruments, e.g. seismic receivers [G01V 13/00](#))}

G01H 11/00

Measuring mechanical vibrations or ultrasonic, sonic or infrasonic waves by detecting changes in electric or magnetic properties, {e.g. capacitance or reluctance-(structural combination of musical instruments with microphones or other pick-up devices [G10H 3/16](#), [G10H 3/18](#), [G10H 3/20](#))}

Project: N/A (G01J)**U G01J 1/00**

Photometry, e.g. photographic exposure meter (spectrophotometry [G01J 3/00](#); specially adapted for radiation pyrometry [G01J 5/00](#)){exposure meters built in cameras [G03B 17/06](#)}

U G01J 1/02

- Details

G01J 1/0204

- · {-Compact construction}

G01J 1/0209

- · · {-Monolithic}

G01J 1/0214

- · {-Constructional arrangements for removing stray light}

G01J 1/0219

- · {-Electrical interface; User interface}

G01J 1/0223

- · {-Sample holders for photometry}

G01J 1/0228

- · {-Control of working procedures; Failure detection; Spectral bandwidth calculation}

G01J 1/0233

- · {-Handheld}

G01J 1/0238

- · {-making use of sensor-related data, e.g. for identification of sensor or optical parts}

G01J 1/0242

- · {-Control or determination of height or angle information of sensors or receivers; Goniophotometry}

G01J 1/0247

- · {-using a charging unit}

G01J 1/0252

- · {-Constructional arrangements for compensating for fluctuations caused by e.g. temperature, or using cooling or temperature stabilization of parts of the device; Controlling the atmosphere inside a photometer; Purge systems, cleaning devices (protection against electromagnetic interferences [G01J 2001/0276](#))}

G01J 1/0266

- · {-Field-of-view determination; Aiming or pointing of a photometer; Adjusting alignment; Encoding angular position; Size of the measurement area; Position tracking; Photodetection involving different fields of view for a single detector}

G01J 1/0271

- · {-Housings; Attachments or accessories for photometers}

G01J 1/029

- · {-Multi-channel photometry}

G01J 1/0295

- · {-Constructional arrangements for removing other types of optical noise or for performing calibration}

U G01J 1/04

- · Optical or mechanical part {supplementary adjustable parts}

G01J 1/0403

- · · {-Mechanical elements; Supports for optical elements; Scanning arrangements}

G01J 1/0407

- · · {-Optical elements not provided otherwise, e.g. manifolds, windows, holograms, gratings}

G01J 1/0411

- · · · {-using focussing or collimating elements, i.e. lenses or mirrors; Aberration correction}

G01J 1/0414

- · · · {-using plane or convex mirrors, parallel phase plates, or plane beam-splitters}

G01J 1/0418

- · · · · {-using attenuators}

G01J 1/0422

- · · · · {-using light concentrators, collectors or condensers}

G01J 1/0425

- · · · · {-using optical fibers}

G01J 1/0429

- · · · · {-using polarisation elements}

- G01J 1/0433
 - • • • {-using notch filters}
- G01J 1/0437
 - • • • {-using masks, aperture plates, spatial light modulators, spatial filters, e.g. reflective filters}
- G01J 1/044
 - • • • {-using shutters}
- G01J 1/0444
 - • • • {-using means for replacing an element by another, e.g. for replacing a filter or grating}
- G01J 1/0448
 - • • • {-Adjustable, e.g. focussing}
- G01J 1/0451
 - • • • {-using means for illuminating a slit efficiently, e.g. entrance slit of a photometer or entrance face of fiber}
- G01J 1/0455
 - • • • {-having a throughhole enabling the optical element to fulfil an additional optical function, e.g. a mirror or grating having a through-hole for a light collecting or light injecting optical fibre}
- G01J 1/0459
 - • • • {-using an optical amplifier of light or coatings to improve optical coupling}
- G01J 1/0462
 - • • • {-Slit arrangements}
- G01J 1/0466
 - • • • {-with a sighting port}
- G01J 1/047
 - • • • {-using extension/expansion of solids or fluids, change of resonant frequency or extinction effect}
- G01J 1/0474
 - • • • {-Diffusers (cavities [G01J 2001/0481](#))}
- G01J 1/0477
 - • • • {-Prisms, wedges}
- G01J 1/0488
 - • • • {-with spectral filtering}
- G01J 1/0492
 - • • • {-using at least two different filters}
- U G01J 1/10
 - by comparison with reference light or electric value {provisionally void}
- U G01J 1/12
 - • using wholly visual means ([G01J 1/20](#) takes precedence)
- G01J 1/122
 - • • {-Visual exposure meters for determining the exposure time in photographic recording or reproducing}
- U G01J 1/42
 - using electric radiation detectors (optical or mechanical part [G01J 1/04](#); by comparison with a reference light or electric value [G01J 1/10](#))
- G01J 1/4204
 - • {-with determination of ambient light (solar light [G01J 2001/4266](#))}
- G01J 1/4228
 - • {-arrangements with two or more detectors, e.g. for sensitivity compensation}
- G01J 2001/4295
 - • {using a physical effect not covered by other subgroups of [G01J 1/42](#)-}
- U G01J 3/00 Spectrometry; Spectrophotometry; Monochromators; Measuring colour**
- U G01J 3/02
 - Details
- G01J 3/0202
 - • {-Mechanical elements; Supports for optical elements}
- G01J 3/0205
 - • {-Optical elements not provided otherwise, e. g. optical manifolds, diffusers, windows}
- G01J 3/0208
 - • • {-using focussing or collimating elements, e.g. lenses or mirrors; performing aberration correction}
- G01J 3/021
 - • • {-using plane or convex mirrors, parallel phase plates, or particular reflectors}
- G01J 3/0213
 - • • {-using attenuators}
- G01J 3/0216
 - • • {-using light concentrators or collectors or condensers}
- G01J 3/0218
 - • • {-using optical fibers}
- G01J 3/0221
 - • • • {-the fibers defining an entry slit}
- G01J 3/0224
 - • • {-using polarising or depolarising elements}
- G01J 3/0227
 - • • {-using notch filters}
- G01J 3/0229
 - • • {-using masks, aperture plates, spatial light modulators or spatial filters, e.g. reflective filters}

- G01J 3/0232 . . . {using shutters}
- G01J 3/0235 . . . {using means for replacing an element by another, for replacing a filter or a grating}
- G01J 3/0237 . . . {Adjustable, e.g. focussing}
- G01J 3/024 . . . {using means for illuminating a slit efficiently (e.g. entrance slit of a spectrometer or entrance face of fiber)}{e.g. entrance slit of a spectrometer or entrance face of fiber)}
- G01J 3/0243 . . . {having a through-hole enabling the optical element to fulfil an additional optical function, e.g. a mirror or grating having a throughhole for a light collecting or light injecting optical fiber}
- G01J 3/0245 . . . {using an optical amplifier of light, e.g. doped fiber}
- G01J 3/0248 . . . {using a sighting port, e.g. camera or human eye}
- G01J 3/0251 . . . {Colorimeters making use of an integrating sphere}
- G01J 3/0254 . . . {Spectrometers, other than colorimeters, making use of an integrating sphere}
- G01J 3/0256 . . {Compact construction}
- G01J 3/0259 . . . {Monolithic}
- G01J 3/0262 . . {Constructional arrangements for removing stray light}
- G01J 3/0264 . . {Electrical interface; User interface}
- G01J 3/0267 . . {Sample holders for colorimetry}
- G01J 3/027 . . {Control of working procedures of a spectrometer; Failure detection; Bandwidth calculation}
- G01J 3/0272 . . {Handheld}
- G01J 3/0275 . . {making use of sensor-related data, e. g. for identification of sensor parts or optical elements}
- G01J 3/0278 . . {Control or determination of height or angle information for sensors or receivers}
- G01J 3/0283 . . {using a charging unit}
- G01J 3/0286 . . {Constructional arrangements for compensating for fluctuations caused by temperature, humidity or pressure, or using cooling or temperature stabilization of parts of the device; Controlling the atmosphere inside a spectrometer, e.g. vacuum}
- G01J 3/0289 . . {Field-of-view determination; Aiming or pointing of a spectrometer; Adjusting alignment; Encoding angular position; Size of measurement area; Position tracking}
- G01J 3/0291 . . {Housings; Spectrometer accessories; Spatial arrangement of elements, e.g. folded path arrangements}
- G01J 3/0294 . . {Multi-channel spectroscopy}
- G01J 3/0297 . . {Constructional arrangements for removing other types of optical noise or for performing calibration}
- U G01J 3/12 . . Generating the spectrum; Monochromators
- U G01J 3/18 . . . using diffraction elements, e.g. grating (gratings per se [G02B](#))
- G01J 3/189 . . . {using at least one grating in an off-plane configuration}
- G01J 3/1895 . . . {using fiber Bragg gratings or gratings integrated in a waveguide}
- U G01J 3/28 . . Investigating the spectrum (using colour filters [G01J 3/51](#))
- G01J 3/2846 . . {using modulation grid; Grid spectrometers}
- U G01J 3/46 . . Measurement of colour; Colour measuring devices, e.g. colorimeters (measuring colour temperature [G01J 5/60](#))

- G01J 3/462
 - • {-Computing operations in or between colour spaces; Colour management systems}
- G01J 3/463
 - • {-Colour matching}
- G01J 3/465
 - • {-taking into account the colour perception of the eye; using tristimulus detection}
- U G01J 3/50
 - • using electric radiation detectors
- G01J 3/501
 - • • {-Colorimeters using spectrally-selective light sources, e.g. LEDs}
- G01J 3/502
 - • • {-using a dispersive element, e.g. grating, prism}
- G01J 3/504
 - • • {-Goniometric colour measurements, for example measurements of metallic or flake based paints}
- G01J 3/505
 - • • {-measuring the colour produced by lighting fixtures other than screens, monitors, displays or CRTs}
- G01J 3/506
 - • • {-measuring the colour produced by screens, monitors, displays or CRTs}
- G01J 3/508
 - • • {-measuring the colour of teeth}
- U G01J 3/51
 - • • using colour filters
- G01J 3/513
 - • • • {-having fixed filter-detector pairs}
- U G01J 3/52
 - • using colour charts
- G01J 3/524
 - • • {-Calibration of colorimeters}
- G01J 3/526
 - • • {-for choosing a combination of different colours, e.g. to produce a pleasing effect for an observer}
- G01J 3/528
 - • • • {-using colour harmony theory}
- U **G01J 5/00**
 - Radiation pyrometry (photometry in general [G01J 1/00](#); spectrometry in general [G01J 3/00](#)){measuring temperature in general, i.e. with a contacting sensor [G01K](#); calorimetry of radiation beams [G01K 17/00](#); direction finders for radiant sources [G01S](#); intrusion detection by radiation [G08B](#)}**
- U G01J 5/0003
 - {for sensing the radiant heat transfer of samples, e.g. emittance meter}
- G01J 5/0007
 - • {-of wafers or semiconductor substrates, e.g. using Rapid Thermal Processing}
- G01J 5/0011
 - • {-Ear thermometers ([G01J 5/021](#) and [G01J 5/049](#) take precedence)}
- U G01J 5/0014
 - {for sensing the radiation from gases, flames}
- G01J 5/0018
 - • {-Flames, plasma or welding}
- U G01J 5/0022
 - {for sensing the radiation of moving bodies}
- G01J 5/0025
 - • {-Living bodies (ear thermometers [G01J 5/0011](#); detecting, measuring or recording for diagnostic purposes [A61B 5/00](#))}
- G01J 5/0037
 - {-for sensing the heat emitted by liquids}
- G01J 5/004
 - • {-by molten metals}
- G01J 5/0044
 - {-Furnaces, ovens, kilns ([G01J 5/0007](#), [G01J 5/004](#) take precedence)}
- G01J 5/0066
 - {-for hot spots detection}
- G01J 5/007
 - {-for earth observation}
- G01J 5/0088
 - {-in turbines}
- G01J 5/0096
 - {-for measuring wires, electrical contacts or electronic systems}
- U G01J 5/02
 - Details
- G01J 5/0205
 - • {-Mechanical elements; Supports for optical elements}
- G01J 5/021
 - • {-Probe covers for thermometers, e.g. tympanic thermometers; Containers for probe covers; Disposable probes}
- G01J 5/0215
 - • {-Compact construction}
- G01J 5/022
 - • • {-Monolithic}

- G01J 5/0225
 - • {-Shape of the cavity itself or of elements contained in or suspended over the cavity}
- G01J 5/023
 - • • {-Particular leg structure or construction or shape; Nanotubes}
- G01J 5/0235
 - • • {-Spacers, e.g. for avoidance of stiction}
- G01J 5/024
 - • • {-Special manufacturing steps or sacrificial layers or layer structures}
- G01J 5/0245
 - • • {-for performing thermal shunt}
- G01J 5/025
 - • {-Interfacing a pyrometer to an external device or network; User interface}
- G01J 5/0255
 - • {-Sample holders for pyrometry; Cleaning of sample (using a gas purge [G01J 5/029](#))}
- G01J 5/026
 - • {-Control of working procedures of a pyrometer, other than calibration (calibration [G01J 2005/0048](#) and [G01J 5/522](#)); Detecting failures in the functioning of a pyrometer; Bandwidth calculation; Gain control; Security control}
- G01J 5/0265
 - • {-Handheld, portable (ear thermometers [G01J 5/049](#))}
- G01J 5/027
 - • {-making use of sensor-related data, e.g. for identification of sensor parts or optical elements}
- G01J 5/0275
 - • {-Control or determination of height or distance or angle information for sensors or receivers}
- G01J 5/028
 - • {-using a charging unit or battery}
- G01J 5/0285
 - • {-Constructional arrangements for compensating for fluctuations caused by humidity, pressure or electromagnetic waves; Controlling the atmosphere inside a pyrometer ([G01J 5/029](#) takes precedence)}
- G01J 5/029
 - • {-using a gas purge}
- G01J 5/0295
 - • {-Nulling devices or absolute detection}
- U G01J 5/04
 - • Casings {Mountings}
- U G01J 5/041
 - • • {Mountings in enclosures or in a particular environment}
- G01J 5/042
 - • • • {-High-temperature environment ([G01J 5/0007](#), [G01J 5/0044](#), [G01J 5/0088](#) and [G01J 5/004](#) take precedence)}
- G01J 5/043
 - • • • {-Prevention or determination of dust, smog or clogging ([G01J 5/029](#) takes precedence)}
- G01J 5/044
 - • • • {-Environment with strong vibrations or shocks}
- G01J 5/045
 - • • • {-Sealings; Vacuum enclosures; Encapsulated packages; Wafer bonding structures; Getter arrangements (getter arrangements per se [H01L 23/26](#) and [H01L 21/3221](#))}
- G01J 5/046
 - • • {-Materials; Selection of thermal materials}
- G01J 5/047
 - • • {-Mobile mounting; Scanning arrangements}
- G01J 5/048
 - • • {-Protective parts}
- G01J 5/049
 - • • {-Casings for tympanic thermometers}
- U G01J 5/08
 - • Optical features {optical-mechanical scanning [H04N 5/33](#), [G02B 26/10](#)}
- G01J 5/0803
 - • • {-Optical elements not provided otherwise, e.g. optical manifolds, gratings, holograms, cubic beamsplitters, prisms, particular coatings}
- G01J 5/0806
 - • • • {-using focussing or collimating elements, e.g. lenses or mirrors}
- G01J 5/0809
 - • • • {-using plane or convex mirrors, parallel phase plates or particular reflectors}
- G01J 5/0812
 - • • • {-using attenuators}
- G01J 5/0815
 - • • • {-using light concentrators, collectors or condensers}
- G01J 5/0818
 - • • • {-using waveguides, rods or tubes}
- G01J 5/0821
 - • • • • {-using optical fibers}

- G01J 5/0825 {-using polarizing elements}
- G01J 5/0828 {-using notch filters}
- G01J 5/0831 {-using masks, e.g. structured apertures, using aperture plates or using spatial light modulators or spatial filters, e.g. reflective filters}
- G01J 5/0834 {-using shutters or modulators}
- G01J 5/0837 {-using micro-antennas, e.g. bow-tie}
- G01J 5/084 {-Adjustable, slidable}
- G01J 5/0843 {-Manually adjustable}
- G01J 5/0846 {-using multiple detectors for performing different types of detection, e.g. radiometry and reflectometry channels}
- G01J 5/085 {-having a throughhole enabling the optical element to fulfil an additional optical function, e.g. a mirror or grating having a throughhole for a light collecting or light injecting optical fiber}
- G01J 5/0853 {-using infrared absorbers other than the usual absorber layers deposited on infrared detectors like bolometers, wherein the heat propagation between the absorber and the detecting element occurs within a solid}
- G01J 5/0856 {-Slit arrangements}
- G01J 5/0859 {-using a sighting arrangement, or a camera for the same purpose}
- G01J 5/0862 {-using optical filters ([G01J 5/602](#), [G01J 5/0828](#) take precedence)}
- G01J 5/0865 {-using means for replacing an element by another, e.g. for replacing a filter}
- G01J 5/0868 {-using means for illuminating a slit or a surface efficiently, e.g. entrance slit of a pyrometer or entrance face of a fiber}
- G01J 5/0871 {-Beam switching arrangements; Photodetection involving different fields of view for a single detector}
- G01J 5/0875 {-Windows or their fastening arrangements}
- G01J 5/0878 {-Diffusers}
- G01J 5/0881 {-Compact construction}
- G01J 5/0884 {-Monolithic}
- G01J 5/0887 {-Integrating cavities mimicking black bodies, wherein the heat propagation between the black body and the measuring element does not occur within a solid; Use of bodies placed inside the fluid stream for measurement of the temperature of gases; Use of the reemission from a surface, e.g. reflective surface; Emissivity enhancement by multiple reflections}
- G01J 5/089 {-Field-of-view determination; Aiming or pointing of a pyrometer; Adjusting alignment; Encoding angular position; Size of the measuring area; Position tracking}
- G01J 5/0893 {-Arrangements to attach devices to a pyrometer, i.e. attaching an optical interface; Spatial relative arrangement of optical elements, e.g. folded beam path ([G01J 5/049](#) takes precedence)}
- G01J 5/0896 {-using a light source, e.g. for illuminating a surface}

Project: N/A (G01K)

- U G01K 1/00** **Details of thermometers not specially adapted for particular types of thermometer (circuits for reducing thermal inertia [G01K 7/42](#))**
- U G01K 1/16 Special arrangements for conducting heat from the object to the sensitive element
- G01K 1/165 {-for application in zero heat flux sensors}

- U G01K 7/00** **Measuring temperature based on the use of electric or magnetic elements directly sensitive to heat (giving results other than momentary value of temperature [G01K 3/00](#); measuring electric or magnetic variables [G01R](#)); {Power supply, e.g. by thermoelectric elements}**
- U G01K 7/34
G01K 7/346
- using capacitive elements (capacitors per se [H01G](#))
 - {for measuring temperature based on the time delay of a signal through a series of logical ports}
- U G01K 7/42
G01K 7/427
- Circuits for reducing thermal inertia; Circuits for predicting the stationary value of temperature
 - {Temperature calculation based on spatial modeling, e.g. spatial inter- or extrapolation}
- U G01K 13/00** **Adaptations of thermometers for specific purposes**
- U G01K 13/02
G01K 13/028
- for measuring temperature of moving fluids or granular materials capable of flow
 - {for use in total air temperature [TAT] probes}
- U G01K 15/00** **Testing or calibrating of thermometers**
- G01K 15/005
G01K 15/007
- {Calibration}
 - {Testing}

Project: N/A (G01L)

- U G01L 1/00** **Measuring force or stress in general (measuring force due to impact [G01L 5/00](#); measuring deformation of bodies as a result of stress by using gauges [G01B](#))**
- U G01L 1/12
G01L 1/122
G01L 1/125
G01L 1/127
- by measuring variations in the magnetic properties of materials resulting from the application of stress
 - {by using permanent magnets}
 - {by using magnetostrictive means (magnetostrictive devices in general [H01L 41/12](#); magnetostrictive sensors [H01L 41/125](#))}
 - {by using inductive means ([G01L 1/122](#), [G01L 1/125](#) take precedence)}
- U G01L 3/00** **Measuring torque, work, mechanical power, or mechanical efficiency in general**
- U G01L 3/02
U G01L 3/04
U G01L 3/10
U G01L 3/101
G01L 3/102
G01L 3/103
G01L 3/104
G01L 3/105
U G01L 3/14
U G01L 3/1407
G01L 3/1414
G01L 3/1421
G01L 3/1428
- Rotary-transmission dynamometers
 - wherein the torque-transmitting element comprises a torsionally-flexible shaft
 - involving electrical or magnetic means for indicating
 - {involving magnetic or electromagnetic means}
 - {involving magnetostrictive means (magnetostrictive devices in general [H01L 41/12](#); magnetostrictive sensors [H01L 41/125](#))}
 - {Details about the magnetic material used}
 - {involving permanent magnets}
 - {involving inductive means ([G01L 3/102](#), [G01L 3/104](#) take precedence)}
 - wherein the torque-transmitting element is other than a torsionally-flexible shaft
 - {involving springs}
 - {using mechanical or hydraulic transducers}
 - {using optical transducers}
 - {using electrical transducers}

- U G01L 5/00** Apparatus for, or methods of, measuring force, e.g. due to impact, work, mechanical power, or torque, adapted for special purposes (measuring pressure of a fluent medium [G01L 7/00](#) to [G01L 21/00](#); measuring rapid changes of pressure in gas, steam or liquid [G01L 23/00](#))
- U G01L 5/0009 · {Force sensors associated with a bearing (testing of bearings [G01M 13/04](#))}
- G01L 5/0014 · · {-by using capacitive sensors}
- G01L 5/0019 · · {-by using strain gages, piezo-electric, piezo-resistive or other ohmic-resistance based sensors}
- G01L 5/0023 · · {-by using magnetic sensors}
- U G01L 5/04 · for measuring tension in ropes, cables, wires, threads, belts, bands or like flexible members {(specially adapted for the strings of tennis rackets [A63B 51/005](#); [G01L 5/0004](#) takes precedence)}
- G01L 5/045 · · {-for measuring the tension across the width of a band-shaped flexible member (measuring flatness [G01B](#); metal rolling in general [B21B](#))}
- U G01L 5/10 · · using electrical means {([G01L 5/042](#), [G01L 5/045](#) take precedence)}
- G01L 5/106 · · · {-by measuring a reaction force applied on a cantilever beam}
- G01L 5/107 · · · {-by measuring a reaction force applied on an element disposed between two supports, i.e. on a plurality of rollers or gliders}
- G01L 5/108 · · · {-by measuring a reaction force applied on a single support or glider}
- U G01L 7/00** Measuring the steady or quasi-steady pressure of a fluid or a fluent solid material by mechanical or fluid pressure-sensitive elements {[G01L 11/004](#) takes precedence}(transmitting or indicating the displacement of mechanical pressure-sensitive elements by electric, { e.g. photoelectric} or magnetic means [G01L 9/00](#); measuring differences of two or more pressure values [G01L 13/00](#); measuring two or more pressure values simultaneously [G01L 15/00](#); measuring tyre pressure or the pressure of other inflated bodies [G01L 17/00](#); vacuum gauges [G01L 21/00](#); hollow bodies deformable or displaceable under internal pressure, per se [G12B 1/04](#); { pressure sensitive switches using Bourbon gauges [H01H 9/00](#); pressure sensitive fluidum level or volume measuring devices [G01F 17/00](#); [G01F 23/14](#), [G01F 23/16](#) pressure sensitive depth meters [G01C 13/008](#); aircraft altitude meters [G01C 5/005](#))}
- U G01L 7/02 · in the form of elastically-deformable gauges
- G01L 7/026 · · {-with optical transmitting or indicating means ([G01L 7/045](#), [G01L 7/065](#), [G01L 7/086](#), [G01L 7/106](#), [G01L 7/187](#) take precedence over [G01L 7/026](#))}
- U G01L 9/00** Measuring steady or quasi-steady pressure of a fluid or a fluent solid material by electric or magnetic pressure-sensitive elements {([G01L 11/004](#) takes precedence)}; Transmitting or indicating the displacement of mechanical pressure-sensitive elements, used to measure the steady or quasi-steady pressure of a fluid or fluent solid material by electric or magnetic means (measuring differences of two or more pressure values [G01L 13/00](#); measuring two or more pressure values simultaneously [G01L 15/00](#); vacuum gauges [G01L 21/00](#); transferring the output of the sensing member to the indicating or recording part in general [G01D 5/00](#))
- U G01L 9/0041 · {Transmitting or indicating the displacement of flexible diaphragms (pressure sensitive flexible diaphragms in general [G01L 7/08](#))}
- G01L 9/0042 · · {-Constructional details associated with semiconductive diaphragm sensors, e.g. etching, or constructional details of non-semiconductive diaphragms (details about the integration or bonding of piezoresistor in or on the diaphragm [G01L 9/0052](#) and [G01L 9/0057](#) respectively)}
- G01L 9/0044 · · · {-Constructional details of non-semiconductive diaphragms}

- G01L 9/0045
 - • • {-Diaphragm associated with a buried cavity}
- G01L 9/0047
 - • • {-Diaphragm with non uniform thickness, e.g. with grooves, bosses or continuously varying thickness}
- G01L 9/0048
 - • • {-Details about the mounting of the diaphragm to its support or about the diaphragm edges, e.g. notches, round shapes for stress relief}
- G01L 9/005
 - • • {-Non square semiconductive diaphragm}
- G01L 9/0091
 - {-Transmitting or indicating the displacement of liquid mediums by electrical, electro-mechanical, magnetic or electro-magnetic means ([G01L 9/0008](#) takes precedence; pressure sensitive liquid mediums in general [G01L 7/18](#))}
- U G01L 9/02
 - by making use of variation in ohmic resistance, e.g. of potentiometers, {, i.e. electric circuits therefor, e.g. bridges, amplifiers or signal conditioning}
- G01L 9/025
 - • {-with temperature compensating means (non electric temperature compensating means [G01L 19/04](#))}
- U G01L 9/04
 - • of resistance-strain gauges
- G01L 9/045
 - • • {-with electric temperature compensating means (non electric temperature compensating means [G01L 19/04](#))}
- U G01L 9/06
 - • of piezo-resistive devices
- G01L 9/065
 - • • {-with temperature compensating means (non electric temperature compensating means [G01L 19/04](#))}
- U G01L 9/08
 - by making use of piezo-electric devices {, i.e. electric circuits therefor}
- G01L 9/085
 - • {-with temperature compensating means (non electric temperature compensating means [G01L 19/04](#))}
- U G01L 9/10
 - by making use of variation in inductance {, i.e. electric circuits therefor}
- G01L 9/105
 - • {-with temperature compensating means (non electric temperature compensating means [G01L 19/04](#))}
- U G01L 9/12
 - by making use of variation in capacitance {, i.e. electric circuits therefor}
- G01L 9/125
 - • {-with temperature compensating means (non electric temperature compensating means [G01L 19/04](#))}
- U G01L 13/00**
 - Devices or apparatus for measuring differences of two or more pressure values**
- U G01L 13/02
 - using elastically-deformable members or pistons as sensing elements
- U G01L 13/025
 - • {using diaphragms}
- G01L 13/026
 - • • {-involving double diaphragm}
- U G01L 19/00**
 - Details of, or accessories for, apparatus for measuring steady or quasi-steady pressure of a fluent medium insofar as such details or accessories are not special to particular types of pressure gauges**
- G01L 19/0007
 - {-Fluidic connecting means}
- G01L 19/003
 - • {-using a detachable interface or adapter between the process medium and the pressure gauge}
- G01L 19/0038
 - • {-being part of the housing (other details about the housing [G01L 19/14](#))}
- G01L 19/0046
 - • {-using isolation membranes ([G01L 13/026](#) and [G01L 19/0645](#) take precedence)}
- G01L 19/0061
 - {-Electrical connection means}
- G01L 19/0069
 - • {-from the sensor to its support}
- G01L 19/0076
 - • • {-using buried connections}
- G01L 19/0084
 - • {-to the outside of the housing (other details about the housing see [G01L 19/14](#))}

- G01L 19/0092
 - {-Pressure sensor associated with other sensors, e.g. for measuring acceleration or temperature ([G01L 9/025](#), [G01L 9/045](#), [G01L 9/065](#), [G01L 9/085](#), [G01L 9/105](#), [G01L 9/125](#), [G01L 19/02](#), [G01L 19/04](#) take precedence; measuring two or more variable [G01D 21/02](#); temperature sensors with pressure compensation [G01K 1/26](#))}
- G01L 19/04
 - Means for compensating for effects of changes of temperature { , i.e. other than electric compensation-(electric compensation [G01L 9/025](#), [G01L 9/045](#), [G01L 9/065](#), [G01L 9/085](#), [G01L 9/105](#) or [G01L 9/125](#))}
- U G01L 19/06
 - Means for preventing overload or deleterious influence of the measured medium on the measuring device or vice versa
- G01L 19/0618
 - • {-Overload protection}
- G01L 19/0627
 - • {-Protection against aggressive medium in general}
- G01L 19/0636
 - • • {-using particle filters}
- G01L 19/0645
 - • • {-using isolation membranes, specially adapted for protection (use of coupling membranes with a coupling fluid in general [G01L 19/0046](#))}
- G01L 19/0654
 - • • {-against moisture or humidity}
- G01L 19/0663
 - • {-Flame protection; Flame barriers}
- G01L 19/0672
 - • {-Leakage or rupture protection or detection (detection of leakage per se [G01M 3/00](#))}
- G01L 19/0681
 - • {-Protection against excessive heat}
- G01L 19/069
 - • {-Protection against electromagnetic or electrostatic interferences}
- G01L 19/14
 - {-Housings ([G01L 19/0007](#), [G01L 19/0084](#), [G01L 19/0092](#), [G01L 19/04](#), **G801L19/06** take precedence)}
- G01L 19/141
 - • {-Monolithic housings, e.g. molded or one-piece housings}
- G01L 19/142
 - • {-Multiple part housings}
- G01L 19/143
 - • • {-Two part housings}
- G01L 19/144
 - • • {-with dismountable parts, e.g. for maintenance purposes or for ensuring sterile conditions (for detachable interface or adapter between the process medium and the pressure gauge [G01L 19/003](#))}
- G01L 19/145
 - • {-with stress relieving means}
- G01L 19/146
 - • • {-using flexible element between the transducer and the support}
- G01L 19/147
 - • {-Details about the mounting of the sensor to support or covering means}
- G01L 19/148
 - • {-Details about the circuit board integration, e.g. integrated with the diaphragm surface or encapsulation}
- G01L 19/149
 - • {-of immersion sensor, e.g. where the sensor is immersed in the measuring medium or for in vivo measurements, e.g. by using catheter tips (catheter tips per se [A61M 25/0067](#); pressure measurements in the body [A61B 5/00](#))}
- U **G01L 23/00**

Devices or apparatus for measuring or indicating or recording rapid changes, such as oscillations, in the pressure of steam, gas, or liquid; Indicators for determining work or energy of steam, internal-combustion, or other fluid-pressure engines from the condition of the working fluid
- U G01L 23/22
 - for detecting or indicating knocks in internal-combustion engines; Units comprising pressure-sensitive members combined with ignitors for firing internal-combustion engines
- U G01L 23/221
 - • {for detecting or indicating knocks in internal combustion engines}
- U G01L 23/225
 - • • {circuit arrangements therefor}
- G01L 23/226
 - • • • {-using specific filtering}
- G01L 23/227
 - • • • {-using numerical analyses}
- U **G01L 27/00**

Testing or calibrating of apparatus for measuring fluid pressure

- G01L 27/002 · {-Calibrating, i.e. establishing true relation between transducer output value and value to be measured, zeroing, linearising or span error determination (calibration of sensors per se [G01D 18/00](#))}
- G01L 27/005 · · {-Apparatus for calibrating pressure sensors}
- G01L 27/007 · {-Malfunction diagnosis, i.e. diagnosing a sensor defect (malfunction detection of sensor not measuring a specific variable per se [G01D 3/08](#))}

Project: N/A (G01M)**G01M**

TESTING STATIC OR DYNAMIC BALANCE OF MACHINES OR STRUCTURES; TESTING STRUCTURES OR APPARATUS NOT OTHERWISE PROVIDED FOR{(-devices for testing the performance of portable percussive tools with fluid-pressure drive [B25D 9/005](#)-)}

NOTE

Attention is drawn to the Note following the title of Class [G01](#).

WARNING

Subject matter covered by these groups is classified in the following CPC groups: - **G01M/38** covered by [G01M 1/14](#) and [G01M 1/30](#) and subgroups

G01M 1/00

Testing static or dynamic balance of machines or structures (-balancing rotary bowls of centrifuges [B04B 9/14](#) ; apparatus characterised by the means for holding wheels or parts thereof [B60B 30/00](#) ; determining the stability factors of ships [B63B](#); stabilising of aircraft [B64C 17/00](#) ; control systems for balancing automatically in operation [G05](#); balancing rotors of dynamo-electric machines [H02K 15/16](#)-)

- U G01M 1/02 · Details of balancing machines or devices
- G01M 1/04 · · Adaptation of bearing support assemblies for receiving the body to be tested{(-tyre chucks in general [G01M 17/021](#)-)}
- G01M 1/08 · · Instruments for indicating directly the magnitude and phase of the unbalance (-measuring electrical variables in general [G01R](#)-)
- G01M 1/12 · Static balancing; Determining position of centre of gravity (-by determining unbalance [G01M 1/14](#)-)
- G01M 1/14 · Determining unbalance (-[G01M 1/30](#) , **G01M1/38** take precedence-)
- U G01M 1/16 · · by oscillating or rotating the body to be tested
- G01M 1/22 · · · and converting vibrations due to unbalance into electric variables (-measuring vibrations in general [G01H](#) ; microphones or like acoustic electromechanical transducers [H04R](#)-)
- G01M 1/225 · · · · {for vehicle wheels (-in situ [G01M 1/28](#)-)}
- G01M 1/30 · Compensating unbalance (-**G01M1/38** takes precedence; counterweights [F16F 15/28](#)-)
- G01M 1/32 · · by adding material to the body to be tested, e.g. by correcting-weights (-correcting-weights per se [F16F 15/32](#)-)

G01M 3/00

Investigating fluid-tightness of structures (-investigating permeability of porous material, investigating the presence of flaws in general [G01N](#)-) { membrane leak detection in blood dialysis [A61M 1/1692](#) ; detecting infusion flow leakage [A61M 5/16831](#) }

- G01M 3/005 · {using pigs or moles (-[G01M 3/246](#) , [G01M 3/2823](#) take precedence-)}
- G01M 3/007 · {Leak detector calibration, standard leaks (-[G01M 3/207](#) takes precedence-)}
- U G01M 3/02 · by using fluid or vacuum
- G01M 3/022 · · {Test plugs for closing off the end of a pipe (-means for stopping flow from pipes [F16L 55/10](#)-)}

- U G01M 3/04 . . . by detecting the presence of fluid at the leakage point
- G01M 3/042 . . . {by using materials which expand, contract, disintegrate, or decompose in contact with a fluid (-G01M 3/12 takes precedence)}
- U G01M 3/06 . . . by observing bubbles in a liquid pool
- U G01M 3/08 for pipes, cables or tubes; for pipe joints or seals; for valves;{for welds}
- G01M 3/085 {for pipe joints or seals (-G01M 3/088 takes precedence)}
- G01M 3/16 using electric detection means (-G01M 3/06 , G01M 3/12 , G01M 3/20 , G01M 3/24 , G01M 3/26 take precedence){ G01M 3/045 takes precedence}
- G01M 3/165 {by means of cables or similar elongated devices, e.g. tapes (-construction of cables in general H01B)}
- U G01M 3/20 . . . using special tracer materials, e.g. dye, fluorescent material, radioactive material
- G01M 3/202 {mass spectrometer detection systems}{-mass spectrometers H01J 49/26)}
- G01M 3/205 {accessories and associated equipment, pump constructions (-pumps F04)}
- U G01M 3/22 for pipes, cables or tubes; for pipe joints or seals; for valves;{for welds; for containers, e.g. radiators}
- U G01M 3/226 {for containers, e.g. radiators}
- G01M 3/229 {removably mounted in a test cell (-test cells also in G01M 3/3281 and G01M 3/363)}
- U G01M 3/26 . . . by measuring rate of loss or gain of fluid, e.g. by pressure-responsive devices, by flow detectors
- G01M 3/28 for pipes, cables or tubes; for pipe joints or seals; for valves {for welds (not used)}
- G01M 3/2807 {for pipes (-G01M 3/2892 , G01M 3/30 take precedence)}
- G01M 3/2838 {for cables (-G01M 3/30 takes precedence)}
- G01M 3/2846 {for tubes (-G01M 3/30 takes precedence)}
- G01M 3/2853 {for pipe joints or seals (-G01M 3/30 takes precedence)}
- G01M 3/2876 {for valves (-G01M 3/30 takes precedence)}
- G01M 3/2884 {for welds (-G01M 3/30 takes precedence)}
- G01M 3/2892 {for underground fuel dispensing systems (-G01M 3/30 takes precedence)}
- U G01M 3/32 for containers, e.g. radiators
- U G01M 3/3236 {by monitoring the interior space of the containers}
- G01M 3/3245 {using a level monitoring device (-G01M 3/3272 takes precedence)}
- G01M 3/3254 {using a flow detector (-G01M 3/3245 , G01M 3/3272 take precedence)}
- G01M 3/3263 {using a differential pressure detector (-G01M 3/3245 , G01M 3/3272 take precedence)}
- G01M 3/38 . . . by using light (-G01M 3/02 takes precedence)
- G01M 5/00** **Investigating the elasticity of structures, e.g. deflection of bridges, air-craft wings (-G01M 9/00 takes precedence; strain gauges G01B)**
- G01M 5/0025 . . . {of elongated objects, e.g. pipes, masts, towers or railways (-G01M 5/0058 takes precedence)}
- G01M 5/0066 . . . {by exciting or detecting vibration or acceleration}{-vibration testing of structures G01M 7/00}

- G01M 5/0075 · {by means of external apparatus, e.g. test benches or portable test systems (-[G01M 5/005](#) takes precedence-)}
- G01M 7/00** **Vibration-testing of structures; Shock-testing of structures (-[G01M 9/00](#) takes precedence; { generating vibrations [B06](#), [G10](#), [H04R](#); vibration measurement [G01H](#); material testing [G01N 3/00](#))}**
- G01M 7/02 · Vibration-testing {by means of a shake table}
- G01M 9/00** **Aerodynamic testing; Arrangements in or on wind tunnels (-building aspects Section E; investigating properties of materials in general [G01N](#)-)**
- U G01M 9/06 · Measuring arrangements specially adapted for aerodynamic testing
- G01M 9/062 · · {Wind tunnel balances; Holding devices combined with measuring arrangements (-measuring components of force in general [G01L 5/16](#)-)}
- G01M 9/065 · · {dealing with flow (-measuring volume flow [G01F](#) ; measuring speed of fluids [G01P 5/00](#)-)}
- G01M 10/00** **Hydrodynamic testing; Arrangements in or on ship-testing tanks or water tunnels (building aspects Section E; investigating properties of materials in general [G01N](#));{ methods for designing, building, maintaining, converting, refitting, repairing or determining properties of vessels, not otherwise provided for and using towing tanks or model basins for designing [B63B 9/02](#) ; for determining vessel properties with respect to stability or balance [B63B 9/08](#) ; apparatus for indicating vessel attitude, e.g. inclination or duration of roll [B63B 39/00](#))}**
- U **G01M 11/00** **Testing of optical apparatus; Testing structures by optical methods not otherwise provided for**
- WARNING
- Groups [G01M 11/30](#) - [G01M 11/39](#) do not correspond to former or future IPC groups. Concordance CPC : IPC for these groups is as follows: - [G01M 11/30](#) -
[G01M 11/39](#) : [G01M 11/00](#)
- G01M 11/02 · Testing of optical properties {of lenses}
- U G01M 11/0242 · · {by measuring geometrical properties or aberrations}
- G01M 11/025 · · · {by determining the shape of the object to be tested (-measuring contours or curvatures by optical means [G01B 11/24](#)-)}
- G01M 11/0278 · · · {Detecting defects of the object to be tested, e.g. scratches or dust (-investigating the presence of flaws or contamination on materials by optical means [G01N 21/88](#)-)}
- G01M 11/0285 · · {by measuring material or chromatic transmission properties (-[G01M 11/0292](#) takes precedence-)}
- G01M 11/0292 · · {of objectives by measuring the optical modulation transfer function (-photometry [G01J](#)-)}
- U G01M 11/06 · · Testing of alignment of vehicle head-light devices
- G01M 11/061 · · · {Details of the mechanical construction of the light measuring system (-[G01M 11/064](#) takes precedence-)}
- G01M 11/08 · Testing of mechanical properties{(-[G01M 11/005](#) takes precedence-)}
- G01M 11/088 · · {of optical fibres; Mechanical features associated with the optical testing of optical fibres (-material testing in general [G01N](#)-)}
- G01M 11/30 · {Testing of optical devices, constituted by fibre optics or optical waveguides (-measuring a given physical parameter of optical fibres, see the relevant subclasses, e.g. [G01B](#), [G01N](#); equipment for monitoring, testing or fault measuring in optical transmission systems [H04B 10/07](#)-)}

- U G01M 11/33
- {with a light emitter being disposed at one fibre or waveguide end-face, and a light receiver at the other end-face}
- G01M 11/332
- • {using discrete input signals (~~G01M 11/333~~ takes precedence)}
- G01M 11/35
- {in which light is transversely coupled into or out of the fibre or waveguide, e.g. using integrating spheres (~~G01M 11/31~~ takes precedence)}
- G01M 13/00**
- Testing of machine parts (investigating the cutting power of tools, [G01N](#), e.g. [G01N 3/58](#))**
- G01M 13/02
- Testing of gearing or of transmission mechanisms (~~measuring efficiency [G01L](#)~~)
- U G01M 15/00**
- Testing of engines**
- NOTE
- Informative note
- References listed below indicate IPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:
- Measurement of mechanical vibrations in general [G01H](#)
- Analysing gases in general [G01N](#)
- Arrangements for testing electrical properties; Arrangements for locating electric faults; Arrangements for electrical testing characterised by what is being tested not provided for elsewhere [G01R 31/00](#) .
- U G01M 15/04
- Testing of internal-combustion engines, e.g. diagnostic testing of piston engines
- NOTES
- Informative note
- References listed below indicate IPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:
- Monitoring or diagnostic devices for exhaust-gas treatment apparatus [F01N 11/00](#)
- Indicating or supervising devices of internal-combustion engines [F02B 77/08](#)
- Running in of internal-combustion engines [F02B 79/00](#)
- Controlling combustion engines [F02D](#)
- Apparatus for testing, tuning or synchronising carburettors, e.g. carburettor flow stands [F02M 19/01](#)
- Testing fuel-injection apparatus [F02M 65/00](#)
- Testing internal-combustion engine ignition, e.g. timing [F02P 17/00](#)
- Devices for determining the value of power, e.g. by measuring and simultaneously multiplying the values of torque and revolutions per unit of time, by multiplying the values of tractive or propulsive force and velocity [G01L 3/24](#)
- Determining the characteristic of torque in relation to revolutions per unit of time [G01L 5/26](#)
- Devices for detecting or indicating knocks in internal-combustion engines [G01L 23/22](#)
- Devices for measuring pressure in inlet or exhaust ducts of internal combustion engines [G01L 23/24](#)
- Means for indicating positions of pistons or cranks of internal-combustion engines by measuring pressure [G01L 23/30](#) .
- Group [G01M 15/05](#) takes precedence over groups [G01M 15/042](#) and [G01M 15/06](#) to [G01M 15/12](#) .
- G01M 15/042
- {by monitoring a single specific parameter not covered by groups [G01M 15/06](#) to [G01M 15/12](#)}
- G01M 15/046
- • {by monitoring revolutions (~~for detecting misfire [G01M 15/11](#)~~)}

- G01M 15/10
- • by monitoring exhaust gases {or combustion flame (analyses of gases per se [G01N](#))}
- U G01M 15/102
- • • {by monitoring exhaust gases}
- G01M 15/104
- • • • {using oxygen or lambda-sensors (-testing catalytic converters [F01N 3/18](#) , [F01N 11/007-](#))}
- G01M 17/00**
- Testing of vehicles (-[G01M 15/00](#) takes precedence; testing fluid tightness [G01M 3/00](#) ; testing elastic properties of bodies or chassis, e.g. torsion testing [G01M 5/00](#) ; testing alignment of vehicle head-lighting devices [G01M 11/06](#) ; { testing brakes [G01L 5/28](#) })**
- G01M 17/007
- {of wheeled or endless-tracked vehicles (-[G01M 17/08](#) takes precedence-)}
- G01M 17/0072
- • {the wheels of the vehicle co-operating with rotatable rolls (-[G01M 17/022](#) , [G01M 17/045](#) , [G01M 17/065](#) take precedence-)}
- G01M 17/0078
- • {Shock-testing of vehicles (-shock-testing of structures in general [G01M 7/08](#) , [G01N 3/30-](#))}
- U G01M 17/02
- • of tyres
- G01M 17/021
- • • {Tyre supporting devices, e.g. chucks (-for balancing [G01M 1/04-](#))}
- U G01M 17/022
- • • {the tyre co-operates with rotatable rolls}
- G01M 17/024
- • • • {combined with tyre surface correcting or marking means (-compensating unbalance [G01M 1/30](#) ; marking location of unbalance [G01M 1/26-](#))}
- G01M 17/025
- • • {using infrasonic, sonic or ultrasonic vibrations (-for material testing in general [G01N 29/00-](#))}
- G01M 17/027
- • • {using light, e.g. infra-red, ultra-violet, holographic techniques (-for material testing in general [G01N 21/00-](#))}
- G01M 17/028
- • • {using X-rays (-for material testing in general [G01N 23/00-](#))}
- G01M 17/06
- • of steering behaviour; of rolling behaviour (-measuring steering angles [G01B](#) ; measuring steering forces [G01L-](#))
- U **G01M 99/00**
- Subject matter not provided for in other groups of this subclass**
- G01M 99/002
- {Thermal testing (-flaw detection [G01N 25/72-](#))}
- G01M 99/005
- {Testing of complete machines, e.g. washing-machines or mobile phones (-testing of machine parts [G01M 13/00](#) ; testing of electric apparatus or components [G01R 31/02-](#))}
- NOTES**
- This group covers mechanical testing of complete machines
- G01M 99/007
- {by applying a load, e.g. for resistance or wear testing (-[G01M 99/001](#) takes precedence; testing the elasticity of structures [G01M 5/00-](#))}

Project: N/A (G01N)

G01N

INVESTIGATING OR ANALYSING MATERIALS BY DETERMINING THEIR CHEMICAL OR PHYSICAL PROPERTIES (-separating components of materials in general [B01D](#), [B01J](#), [B03](#), [B07](#); apparatus fully provided for in a single other subclass, see the relevant subclass e.g. [B01L](#); measuring or testing processes other than immunoassay, involving enzymes or micro-organisms [C12M](#), [C12Q](#); investigation of foundation soil in situ [E02D 1/00](#); sensing humidity changes for compensating measurements of other variables or for compensating readings of instruments for variations in humidity, see [G01D](#) or the relevant subclass for the variable measured; testing or determining the properties of structures [G01M](#); measuring or investigating electric or magnetic properties of materials [G01R](#); systems or methods in general, using reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, [G01S](#); determining sensitivity, graininess, or density of photographic materials [G03C 5/02](#); testing component parts of nuclear reactors [G21C 17/00](#); {controlling or regulating non-electric variables [G05D](#); measuring degree of ionisation of ionised gases, i.e. plasma [H05H 1/0006](#); testing electrographic developer properties [G03G 15/0848](#) }

NOTES

In this subclass, the following terms are used with the meanings indicated :

- "investigating" means testing or determining;
- "materials" includes solid, liquid or gaseous media, e.g. the atmosphere.

Attention is drawn to the Notes following the title of class [G01](#).

Inventions relating to investigating the properties of materials, specially adapted for use in processes covered by subclass [B23K](#), are classified in group [B23K 31/12](#).

U G01N 1/00

Sampling; Preparing specimens for investigation

G01N 1/02

- Devices for withdrawing samples (for medical or veterinary purposes [A61](#); {sampling of foundation soil [E02D 1/04](#)}; obtaining samples of soil or well fluids [E21B 49/00](#); {collecting or conveying radioactive samples [G01T 7/00](#), e.g. [G01T 7/02](#), [G01T 7/08](#) })

G01N 1/10

- • in the liquid or fluent state{burettes, pipettes [B01L 3/02](#); Sampling of ground water [E02D 1/06](#); metering by volume of fluids or fluent solid material [G01F 11/00](#), [G01F 13/00](#)}

U G01N 2001/1031

- • • {Sampling from special places}

G01N 2001/1037

- • • • {from an enclosure (*hazardous waste, radioactive*)}(~~hazardous waste; radioactive~~)

G01N 1/16

- • • with provision for intake at several levels{ [G01N 1/2035](#) }(~~[G01N 1/12](#), [G01N 1/14](#) take precedence~~)

G01N 1/18

- • • with provision for splitting samples into portions (~~[G01N 1/12](#), [G01N 1/14](#) take precedence~~; fraction-collection apparatus for chromatography [B01D 15/08](#)-)

G01N 1/20

- • • for flowing or falling materials{ [G01N 1/2035](#) }(~~[G01N 1/12](#), [G01N 1/14](#) take precedence~~)

G01N 1/22

- • in the gaseous state({-specially adapted for biological material [G01N 33/497](#); measuring breath flow [A61B 5/087](#)-})

U G01N 1/2202

- • • {involving separation of sample components during sampling}

G01N 2001/222

- • • • {other features (not used)}

U G01N 1/2247

- • • {Sampling from a flowing stream of gas}

- U G01N 1/2258 {in a stack or chimney}
- G01N 2001/2261 {preventing condensation (*heating lines*)}(*heating lines*)}
- G01N 1/24 . . . Suction devices{(-G01N 1/22 to G01N 1/2294 take precedence-)}
- G01N 1/28 . Preparing specimens for investigation{ including physical details of (bio-)chemical methods covered elsewhere, e.g. G01N 33/50 , C12Q } (-mounting specimens on microscopic slides G02B 21/34 ; means for supporting the objects or the materials to be analysed in electron microscopes H01J 37/20 ; { laboratory gas handling apparatus B01L 5/00 })
- G01N 1/2813 . . {Producing thin layers of samples on a substrate, e.g. smearing, spinning-on (-G01N 1/30 takes precedence-)}
- G01N 1/286 . . {involving mechanical work, e.g. chopping, disintegrating, compacting, homogenising (-microtomes G01N 1/06 ; pulverising in general B02C ; mixing in general B01F-)}
- G01N 1/30 . . Staining; Impregnating {Fixation; Dehydration; Multistep processes for preparing samples of tissue, cell or nucleic acid material and the like for analysis}
- G01N 1/34 . . Purifying; Cleaning{(-processes or apparatus for extracting or separating nucleic acids from biological samples C12N 15/1003-)}
- G01N 3/00 Investigating strength properties of solid materials by application of mechanical stress (strain gauges G01B; measuring stress in general G01L)**
- NOTE
- This group covers the stressing of materials not only below but also beyond the elastic limit, e.g. until breaking occurs.
- U G01N 3/02 . Details
- G01N 3/06 . . Special adaptations of indicating or recording means (-indicating or recording means for measuring in general G01D-)
- G01N 3/08 . by applying steady tensile or compressive forces (-G01N 3/28 takes precedence-)
- G01N 3/10 . . generated by pneumatic or hydraulic pressure (-G01N 3/18 takes precedence-)
- G01N 3/12 . . . Pressure testing (-testing fluid-tightness G01M 3/00-)
- G01N 3/14 . . generated by dead weight, e.g. pendulum; generated by springs tension (-G01N 3/18 takes precedence-)
- G01N 3/16 . . applied through gearing (-G01N 3/18 takes precedence-)
- G01N 3/165 . . . {generated by rotation, i.e. centrifugal force (-for testing structures or apparatus G01M 99/004-)}
- G01N 3/20 . by applying steady bending forces (-G01N 3/26 , G01N 3/28 take precedence-)
- G01N 3/22 . by applying steady torsional forces (-G01N 3/26 , G01N 3/28 take precedence-)
- G01N 3/24 . by applying steady shearing forces (-G01N 3/26 , G01N 3/28 take precedence-)
- G01N 3/32 . by applying repeated or pulsating forces (-generation of such forces in general, see the relevant classes or subclasses, e.g. B06 , G10-)
- U G01N 3/40 . Investigating hardness or rebound hardness
- G01N 3/42 . . by performing impressions under a steady load by indentors, e.g. sphere, pyramid (-G01N 3/54 takes precedence-)
- G01N 3/48 . . by performing impressions under impulsive load by indentors, e.g. falling ball (-G01N 3/54 takes precedence-)
- G01N 3/50 . . by measuring rolling friction, e.g. by rocking pendulum (-G01N 3/54 takes precedence-)

- G01N 3/52
- by measuring extent of rebound of a striking body (~~G01N 3/54~~ takes precedence)
- U G01N 3/56
- Investigating resistance to wear or abrasion
- G01N 3/567
- {by submitting the specimen to the action of a fluid or of a fluidised material, e.g. cavitation, jet abrasion (~~G01N 3/565~~ takes precedence)}
- G01N 3/60
- Investigating resistance of materials, e.g. refractory materials, to rapid heat changes (thermal testing of structures or apparatus [G01M 99/002](#))
- G01N 5/00**
- Analysing materials by weighing, e.g. weighing small particles separated from a gas or liquid (~~G01N 9/00~~ takes precedence; {weighing per se [G01G](#)})**
- G01N 5/02
- by absorbing or adsorbing components of a material and determining change of weight of the adsorbent, e.g. determining moisture content {absorption bulbs [B01D 53/00](#)}
- U **G01N 7/00**
- Analysing materials by measuring the pressure or volume of a gas or vapour**
- G01N 7/02
- by absorption, adsorption, or combustion of components and measurement of the change in pressure or volume of the remainder {absorption bulbs [B01D 53/00](#)}
- G01N 7/14
- by allowing the material to emit a gas or vapour, e.g. water vapour, and measuring a pressure or volume difference {determining urea [G01N 33/48742](#)}
- G01N 9/00**
- Investigating density or specific gravity of materials; Analysing materials by determining density or specific gravity (weighing apparatus [G01G](#))**
- G01N 9/002
- {using variation of the resonant frequency of an element vibrating in contact with the material submitted to analysis (~~G01N 9/34~~ takes precedence)}
- G01N 9/36
- Analysing materials by measuring the density or specific gravity, e.g. determining quantity of moisture (methods of measurement in general [G01N 9/02](#) to [G01N 9/32](#))
- U **G01N 11/00**
- Investigating flow properties of materials, e.g. viscosity, plasticity; Analysing materials by determining flow properties**
- U G01N 11/10
- by moving a body within the material
- G01N 11/12
- by measuring rising or falling speed of the body; by measuring penetration of wedged gauges (~~G01N 11/16~~ takes precedence)
- G01N 11/14
- by using rotary bodies, e.g. vane (~~G01N 11/16~~ takes precedence)
- G01N 13/00**
- Investigating surface or boundary effects, e.g. wetting power; Investigating diffusion effects; Analysing materials by determining surface, boundary, or diffusion effects (scanning-probe techniques or apparatus [G01Q](#))**
- G01N 15/00**
- Investigating characteristics of particles; Investigating permeability, pore-volume, or surface-area of porous materials (identification of micro-organisms [C12Q](#))**
- G01N 15/02
- Investigating particle size or size distribution (~~G01N 15/04~~, [G01N 15/10](#) take precedence; by measuring osmotic pressure [G01N 7/10](#); by filtering [B01D](#); by sifting [B07B](#))
- G01N 15/0255
- {with mechanical, e.g. inertial, classification, and investigation of sorted collections (with centrifuges [G01N 15/042](#))}
- G01N 15/0272
- {with screening; with classification by filtering ([B01D](#) takes precedence)}
- U G01N 15/04
- Investigating sedimentation of particle suspensions
- G01N 15/042
- {by centrifuging and investigating centrifugates (centrifuges per se [B04B](#))}

- G01N 15/06
- Investigating concentration of particle suspensions (~~G01N 15/04~~, ~~G01N 15/10~~ take precedence; by weighing ~~G01N 5/00~~)

NOTE

References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group and its subgroups:

- Investigating or analysing materials;
- by the use of optical means: [G01N 21/00](#)
 , e.g. [G01N 21/47](#) , [G01N 21/90](#)
 ;
- by other radiations or by particles:
[G01N 23/00](#) , e.g. [G01N 23/02](#) ,
[G01N 23/201](#) ;
- by measuring impedance: [G01N 27/02](#)
 , e.g. [G01N 27/06](#) , [G01N 27/22](#)
 ;
- by electrochemical means: [G01N 27/00](#)
 , e.g. [G01N 27/26](#) , **G01N27/56B**
 ;
- by measuring absorption of sonic or ultrasonic vibrations: [G01N 29/00](#) , e.g. [G01N 29/02](#)

- U G01N 15/0606
- G01N 15/0612
- G01N 15/0618
- G01N 15/0656
- U G01N 15/10
- G01N 15/1031
- G01N 2015/105
- G01N 15/1056
- G01N 2015/1062
- G01N 19/00**
- G01N 19/02
- G01N 19/08
- G01N 21/00**
- {by collecting particles on a support}
 - {Optical scan of the deposits (~~G01N 15/0625~~ takes precedence)}
 - {of the filter type (~~G01N 15/0643~~ takes precedence)}
 - {using electric, e.g. electrostatic methods or magnetic methods (~~by investigating individual particles G01N 15/1031~~, ~~G01N 15/12~~)}
 - Investigating individual particles
 - {by measuring electrical or magnetic effects thereof, e.g. onconductivity or capacity (~~using nano-scale size effects, other than for sizing or counting, by translocation through nano-pores G01N 33/48721~~; involving the use of Coulter counters ~~G01N 15/12~~)}
 - {Other than optical measurement of deformation of individual particles (~~optical measurement G01N 2015/1495~~)}
 - {Micro-structural devices for other than electro-optical measurement (~~for electro-optical measurement G01N 15/1484~~)}
 - {counting the particles by other than electro-optical means (~~by electro-optical means G01N 2015/1486~~)}
 - Investigating materials by mechanical methods (~~G01N 3/00~~ to ~~G01N 17/00~~ take precedence)**
 - Measuring coefficient of friction between materials(~~testing of tyres G01M 17/02~~; determinations of friction coefficient used in vehicle braking or traction control systems ~~B60T 8/172~~)}
 - Detecting presence of flaws or irregularities (~~measuring roughness or irregularity of surfaces G01B 5/28~~)
 - Investigating or analysing materials by the use of optical means, i.e. using infra-red, visible or ultra-violet light (~~G01N 3/00-G01N 19/00~~ take precedence)**

NOTE

This group does not cover the investigation of spectral properties of light per se, or measurements of the properties of materials where spectral properties of light are sensed and primary emphasis is placed on creating, detecting or analysing the spectrum providing that the properties of the materials to be investigated

are of minor importance (see also Note (4) after the title of class [G01](#)). Those subjects are covered by group [G01J 3/00](#).

- U G01N 21/01
 - Arrangements or apparatus for facilitating the optical investigation
- U G01N 21/03
 - Cuvette constructions
- G01N 21/0303
 - {Optical path conditioning in cuvettes, e.g. windows; adapted optical elements or systems; path modifying or adjustment (~~-G01N 21/031 to G01N 21/15 take precedence-~~)}
- G01N 21/0317
 - {High pressure cuvettes; (~~-G01N 21/0332 to G01N 21/15 take precedence-~~)}
- G01N 21/0332
 - {with temperature control (~~-control of temperature G05D 23/00 ; cryostats F17C 3/08-~~)}
- G01N 21/05
 - Flow-through cuvettes (~~-G01N 21/09 takes precedence; handling fluid samples G01N 1/10-~~)
- G01N 21/07
 - Centrifugal type cuvettes (~~-G01N 21/09 takes precedence; centrifuges per se B04B-~~)
- G01N 21/13
 - Moving of cuvettes or solid samples to or from the investigating station{ handling materials for automatic analysis [G01N 35/00](#)}
- G01N 2021/135
 - {Sample holder displaceable (~~-in automatised apparatus G01N 35/02-~~)}
- G01N 21/17
 - Systems in which incident light is modified in accordance with the properties of the material investigated (~~-where the material investigated is optically excited causing a change in wavelength of the incident light G01N 21/63-~~)
- U G01N 21/1702
 - {with opto-acoustic detection, e.g. for gases or analysing solids}
- G01N 2021/1708
 - {with piezotransducers (~~-probes for investigating or analysing materials by the use of ultrasonic, sonic or infrasonic waves G01N 29/24-~~)}
- G01N 2021/1757
 - {Time modulation of light being essential to the method of light modification, e.g. using single detector (~~-circuits for photometry with modulation, using one detector G01J 1/44-~~)}
- G01N 21/21
 - Polarisation-affecting properties (~~-G01N 21/19 takes precedence-~~)
- G01N 21/211
 - {Ellipsometry (~~-optical thickness measurement G01B 11/06-~~)}
- U G01N 21/25
 - Colour; Spectral properties, i.e. comparison of effect of material on the light at two or more different wavelengths or wavelength bands
- U G01N 21/251
 - {Colorimeters; Construction thereof}
- G01N 21/253
 - {for batch operation, i.e. multisample apparatus (~~-analytical automats G01N 35/00-~~)}
- G01N 21/27
 - using photo-electric detection (~~-G01N 21/31 takes precedence-~~){circuits for computing concentration(~~-logarithmic circuits G06G 7/24 ; photometric circuits in general G01J-~~)}
- G01N 21/272
 - {for following a reaction, e.g. for determining photometrically a reaction rate (*photometric cinetic analysis*)}(~~photometric cinetic analysis~~)
- G01N 21/29
 - using visual detection (~~-G01N 21/31 takes precedence-~~)
- G01N 21/31
 - Investigating relative effect of material at wavelengths characteristic of specific elements or molecules, e.g. atomic absorption spectrometry(~~-G01N 21/72 takes precedence-~~)
- G01N 21/314
 - {with comparison of measurements at specific and non-specific wavelengths (~~-dual wavelength spectrometry G01J 3/427-~~)}
- G01N 21/3151
 - {using two sources of radiation of different wavelengths (~~-G01N 21/33 to G01N 21/39 take precedence-~~)}
- G01N 21/33
 - using ultra-violet light (~~-G01N 21/39 takes precedence-~~)
- G01N 21/35
 - using infra-red light (~~-G01N 21/39 takes precedence-~~)

- U G01N 21/3504 for analysing gases, e.g. multi-gas analysis
 G01N 21/3518 Devices using gas filter correlation techniques; Devices using gas pressure modulation techniques
- NOTE
 This group also covers devices without instrumental sources, e.g. radiometric-type devices using ambient infra-red light.
- G01N 21/3554 for determining moisture content
 G01N 21/3577 for analysing liquids, e.g. polluted water
- WARNING
 Group [G01N 21/3577](#) is incomplete pending reclassification of documents from group [G01N 21/35](#).
- Until reclassification is complete, groups [G01N 21/3577](#) and [G01N 21/35](#) should be considered in order to perform a complete search.
- G01N 21/37 using pneumatic detection{(-opto-acoustic detection [G01N 21/1702](#)-)}
- G01N 21/41 Refractivity; Phase-affecting properties, e.g. optical path length (-[G01N 21/21](#) takes precedence-)
- U G01N 21/45 using interferometric methods; using Schlieren methods
 G01N 21/453 {Holographic interferometry}{(-for dimensional measurements [G01B 9/021](#) to [G01B 9/029](#)-)}
- G01N 21/47 Scattering, i.e. diffuse reflection(-[G01N 21/25](#) , [G01N 21/41](#) take precedence-){ [G01N 21/55](#) takes precedence-}
- G01N 21/4738 {Diffuse reflection}{(-precedence is given to [G01N 21/55](#) - [G01N 21/57](#) if specular component is taken into consideration-), e.g. also for testing fluids, fibrous materials}
- G01N 21/4788 {Diffraction}{(-for sizing particles [G01N 15/0205](#)-)}
- G01N 21/4795 {spatially resolved investigating of object in scattering medium}{(-in vivo [A61B](#)-)}
- U G01N 21/49 within a body or fluid
 G01N 21/51 inside a container, e.g. in an ampoule (-[G01N 21/53](#) takes precedence; checking containers for cleanliness [B08B 9/46](#)-)
- G01N 21/53 within a flowing fluid, e.g. smoke (-alarm devices actuated by smoke [G08B 17/10](#)-)
- U G01N 21/55 Specular reflectivity
 U G01N 21/552 Attenuated total reflection
 G01N 21/553 {and using surface plasmons}{(-fluorescence excitation [G01N 21/648](#) ; enhanced Raman [G01N 21/658](#)-)}
- G01N 21/59 Transmissivity(-[G01N 21/25](#) takes precedence-)
- U G01N 21/5907 {Densitometers}
 G01N 21/5911 {of the scanning type}{(-scanning per se [G02B](#)-)}
- G01N 21/61 Non-dispersive gas analysers{(-[G01N 21/3504](#) takes precedence-)}
- U G01N 21/62 Systems in which the material investigated is excited whereby it emits light or causes a change in wavelength of the incident light
- U G01N 21/63 optically excited
 G01N 21/636 {using an arrangement of pump beam and probe beam; using the measurement of optical non-linear properties; (-non-linear optics per se [G02F 1/35](#)-)}

- U G01N 21/64 . . . Fluorescence; Phosphorescence
- G01N 21/6428 {Measuring fluorescence of fluorescent products of reactions or of
fluorochrome labelled reactive substances, e.g. measuring quenching
effects, using measuring "optrodes"(-in vivo [A61B 5/00](#) ; immunoassay
[G01N 33/53](#)-)}
- U G01N 21/645 {Specially adapted constructive features of fluorimeters}
WARNING
Not complete, see also [G01N 21/6428](#) to [G01N 21/6447](#)
- U G01N 21/6456 {Spatial resolved fluorescence measurements; Imaging}
WARNING
Not complete, see also [G01N 21/6428](#) to [G01N 21/6447](#)
- G01N 21/6458 {Fluorescence microscopy(-fluorescence microscopes per se
[G02B 21/0076](#) and [G02B 21/16](#)-)}
WARNING
Not complete, see also [G01N 21/6428](#) to [G01N 21/6447](#)
- G01N 21/6486 {Measuring fluorescence of biological material, e.g. DNA, RNA,
cells(-[G01N 21/6428](#) takes precedence-)}
WARNING
Not complete, see also [G01N 21/6428](#) to [G01N 21/6447](#)
- U G01N 21/66 . . electrically excited, e.g. electroluminescence
- G01N 21/67 . . . using electric arcs or discharges(-spark gaps per se [H01T](#)-)
- G01N 21/69 . . . specially adapted for fluids {e.g. molten metal}
- U G01N 21/71 . . thermally excited
- G01N 21/714 . . . {Sample nebulisers for flame burners or plasma burners (-nebulizers per se
[B05B](#)-)}
- G01N 21/75 . Systems in which material is subjected to a chemical reaction, the progress or
the result of the reaction being investigated (-systems in which material is burnt
in a flame or plasma [G01N 21/72](#) , [G01N 21/73](#)-)
- U G01N 21/77 . . by observing the effect on a chemical indicator
- G01N 21/7703 . . . {using reagent-clad optical fibres or optical waveguides(-using
measurement of total internal reflection or attenuated total reflection
[G01N 21/552](#) ; optical fibres or waveguides per se [G02B](#)-)}
- U G01N 21/84 . Systems specially adapted for particular applications
- G01N 21/8483 . . {Investigating reagent band(-test-element handling not specific to a test
method [G01N 33/4875](#) ; analytical elements specific to chemical analysis of
biological material [G01N 33/52](#) ; autometer with reagent band [G01N 35/04](#)-)}
- U G01N 21/85 . . Investigating moving fluids or granular solids
- G01N 2021/8578 . . . {Gaseous flow(-IR analysers [G01N 21/8507](#)-)}
- G01N 21/86 . . Investigating moving sheets (-[G01N 21/89](#) takes precedence-)
- G01N 2021/8663 . . . {Paper, e.g. gloss, moisture content (-inspecting the presence of flaws
in moving materials, e.g. paper [G01N 21/89](#) ; measurement of gloss in
general [G01N 21/57](#)-)}
- G01N 21/87 . . Investigating jewels(-[G01N 21/88](#) takes precedence-)
- U G01N 21/88 . . Investigating the presence of flaws or contamination
- G01N 21/8803 . . . {Visual inspection(-measuring projectors [G01B 9/08](#)-)}
- U G01N 21/8806 . . . {Specially adapted optical and illumination features}

- G01N 2021/8829 {Shadow projection or structured background, e.g. for deflectometry (-three-dimensional metrology of surfaces [G01B 11/25-](#))}
- G01N 21/8851 {Scan or image signal processing specially adapted therefor, e.g. for scan signal adjustment, for detecting different kinds of defects, for compensating for structures, markings, edges (-[G01N 21/8806](#) and [G01N 21/93](#) to [G01N 21/95692](#) take precedence; optical measurement of dimensions [G01B 11/00](#) ; optical scanning [G02B 26/10](#) ; image transformation [G06T 3/00](#) ; computerised image enhancement [G06T 5/00](#) ; image processing per se for flaw detection [G06T 7/0002-](#))}
- G01N 21/89 in moving material, e.g. running paper or textiles (-[G01N 21/90](#) , [G01N 21/91](#) , [G01N 21/94](#) take precedence-)
- G01N 21/8901 {Optical details; Scanning details (-per se [G02B-](#))}
- U G01N 21/892 characterised by the flaw, defect or object feature examined
- G01N 21/896 Optical defects in or on transparent materials, e.g. distortion, surface flaws {in conveyed flat sheet or rod(-for other objects [G01N 21/958-](#))}
- G01N 21/90 in a container or its contents (-[G01N 21/91](#) takes precedence-)
- G01N 21/93 Detection standards; Calibrating {baseline adjustment, drift correction}
- G01N 2021/933 {Adjusting baseline or gain (*also for web inspection*)}(*also for web inspection*)}
- G01N 21/94 Investigating contamination, e.g. dust (-[G01N 21/85](#) takes precedence-)
- G01N 2021/945 {Liquid or solid deposits of macroscopic size on surfaces, e.g. drops, films, or clustered contaminants (-dust particles and microscopic contaminants in [G01N 21/94-](#))}
- G01N 21/95 characterised by the material or shape of the object to be examined (-[G01N 21/89](#) to [G01N 21/91](#) , [G01N 21/94](#) take precedence-)
- G01N 21/9501 {Semiconductor wafers (-manufacturing processes per se of semiconductor devices implementing a measuring step [H01L 22/10-](#))}
- G01N 2021/9511 {Optical elements other than lenses, e.g. mirrors (testing of optical apparatus in [G01M 11/00](#))}
- G01N 21/9515 {Objects of complex shape, e.g. examined with use of a surface follower device (-measuring contours and curvatures [G01B 11/24-](#))}
- G01N 21/952 Inspecting the exterior surface of cylindrical bodies or wires (-[G01N 21/956](#) takes precedence-)
- G01N 21/956 Inspecting patterns on the surface of objects (-contactless testing of electronic circuits [G01R 31/308](#) ; testing currency [G07D](#) { manufacturing processes per se of semiconductor devices implementing a measuring step [H01L 22/10](#) })
- G01N 21/95623 {using a spatial filtering method (-per se [G02B-](#))}
- G01N 21/958 Inspecting transparent materials {or objects, e.g. windscreens(-for conveyed flat sheet or rod [G01N 21/896-](#))}
- G01N 22/00 Investigating or analysing materials by the use of microwaves (-[G01N 3/00](#) to [G01N 17/00](#) , [G01N 24/00](#) take precedence-)**
- G01N 23/00 Investigating or analysing materials by the use of wave or particle radiation not covered by [G01N 21/00](#) or [G01N 22/00](#) , e.g. X-rays or neutrons (-[G01N 3/00](#) to [G01N 17/00](#) take precedence; measuring stress in general [G01L 1/00](#) ; measurement of nuclear or X-radiation [G01T](#); introducing objects or materials into nuclear reactors, or removing them therefrom, or storing them after treatment therein [G21C](#); construction or operation of X-ray apparatus or circuits therefor [H05G-](#))**
- G01N 23/005 {by using neutrons (-[G01N 23/02](#) to [G01N 23/227](#) take precedence-)}
- U G01N 23/02 by transmitting the radiation through the material

- G01N 23/04 • • and forming a picture (-electron microscope per se [H01J-](#))
- G01N 23/046 • • • {using tomography, e.g. computer tomography (-radiation tomography used in diagnosis [A61B 6/02-](#))}
- U G01N 23/06 • • and measuring the absorption
- G01N 23/063 • • • {X-ray absorption fine structure, i.e. EXAFS (-[G01N 23/2076](#) takes precedence-)}
- G01N 23/066 • • • {Gamma-ray resonance absorption, e.g. Mössbauer effect (-resonant absorbers or driving arrangements therefor, e.g. for Mössbauer effect devices [G21K 1/12-](#))}
- U G01N 23/08 • • • using electric detection means
- G01N 23/083 • • • • the radiation being X-rays (-[G01N 23/10](#) to [G01N 23/18](#) take precedence-)
- WARNING
Not complete, see also [G01N 23/08](#)
- G01N 23/10 • • • • the material being confined in a container (-[G01N 23/09](#) takes precedence-)
- G01N 23/12 • • • • the material being a flowing fluid or a flowing granular solid (-[G01N 23/09](#) takes precedence-)
- G01N 23/16 • • • • the material being a moving sheet {or a sheet or tube examined by a scanning probe}(-[G01N 23/09](#) , [G01N 23/18](#) take precedence-)
- G01N 23/18 • • • • Investigating the presence of flaws (-[G01N 23/09](#) takes precedence-)
- G01N 23/185 • • • • • {in tyres (-testing tyre performance [G01M 17/02-](#))}
- U G01N 23/20 • by using diffraction of the radiation, e.g. for investigating crystal structure; by using reflection of the radiation
- G01N 23/20008 • • {Constructional details; Accessories (-monochromators for XRays using crystals [G21K 1/06](#) ; using gratings [G01J 3/1833-](#))}
- G01N 23/20091 • • {by measuring the energy-dispersion spectrum of diffracted radiation, i.e. EDS (-[G01T 1/36](#) takes precedence-)}
- G01N 23/201 • • by measuring small-angle scattering{ [G01N 23/202](#) takes precedence-}
- G01N 23/205 • • by means of diffraction cameras (-[G01N 23/201](#) takes precedence-)
- G01N 23/2055 • • • {Analysing diffraction patterns (-optical densitometers [G01N 21/5907-](#))}
- G01N 23/206 • • • the radiation being neutrons{(-[G01N 23/2055](#) takes precedence-)}
- G01N 23/207 • • by means of diffractometry using detectors, e.g. using an analysing crystal or a crystal to be analysed in a central position and one or more displaceable detectors in circumferential positions (-[G01N 23/201](#) { [G01N 23/2073](#) } take precedence; spectrometry of detected or measured radiation intensity [G01T 1/36-](#))
- G01N 23/2073 • • • {using neutron detectors (-[G01N 23/202](#) takes precedence; neutron spectrometry [G01T 3/00-](#))}
- G01N 23/2076 • • • {for spectrometry, i.e. using an analysing crystal, e.g. for measuring X-ray fluorescence spectrum of a sample with wavelength-dispersion, i.e. WDXFS (-analysis by X-ray fluorescence in general [G01N 23/223](#) ; Spectrometry of X-rays or gamma-ray beams per se [G01T 1/36-](#))}
- U G01N 23/22 • by measuring secondary emission
- NOTE
Devices per se are classified in the relevant places, e.g. [H01J 37/00](#) , [H01J 49/00](#)
- G01N 23/2202 • • {Preparing specimens (-in general [G01N 1/28-](#))}

- G01N 23/2204
- {Specimen supports; Sample conveying means (-as parts of specific apparatus, see the relevant groups, e.g. [H01J 37/20](#) and [H01J 49/00-](#))}
- G01N 23/223
- • by irradiating the sample with X-rays {or gamma-rays}and by measuring X-ray fluorescence{(-[G01N 23/2076](#) takes precedence-)}
- G01N 23/225
- • using electron or ion microprobe {or incident electron or ion beam}{(-electron or ion beam tubes for microprobe analysis [H01J 37/00-](#))}
- G01N 24/00**
- Investigating or analyzing materials by the use of nuclear magnetic resonance, electron paramagnetic resonance or other spin effects (-arrangements or instruments for measuring magnetic resonance effects [G01R 33/20-](#))**
- G01N 24/002
- {Using resonance on molecular beams}{(-atomic clocks [G04F 5/14](#) ; beam masers [H01S 1/06-](#))}
- G01N 24/006
- {using optical pumping}{(-magnetometers using optical pumping [G01R 33/26](#) , optical pumping of lasers [H01S 3/091-](#))}
- G01N 24/008
- {by using resonance effects in zero field, e.g. in microwave, submillimetric region}{(-by measuring absorption of microwaves by the material [G01N 22/00-](#))}
- G01N 24/08
- by using nuclear magnetic resonance}{(-[G01N 24/12](#) takes precedence-)}
- G01N 24/10
- by using electron paramagnetic resonance}{(-[G01N 24/12](#) takes precedence-)}
- G01N 25/00**
- Investigating or analyzing materials by the use of thermal means}{(-[G01N 3/00](#) to [G01N 23/00](#) take precedence-)}**
- G01N 25/02
- by investigating changes of state or changes of phase; by investigating sintering{(-investigating or analysing oils or hydrocarbon fluids by measuring cloud point or pour point [G01N 33/2811-](#))}
- G01N 25/14
- by using distillation, extraction, sublimation, condensation, freezing, or crystallisation}{(-[G01N 25/02](#) takes precedence-)}
- G01N 25/145
- • {Accessories, e.g. cooling devices}{(-in general [B01L](#) , [F25D-](#))}
- G01N 25/18
- by investigating thermal conductivity}{(-by calorimetry [G01N 25/20](#) ; by measuring change of resistance of an electrically-heated body [G01N 27/18-](#))}
- G01N 25/20
- by investigating the development of heat, i.e. calorimetry, e.g. by measuring specific heat, by measuring thermal conductivity}{(-calorimeters per se [G01K-](#))}
- U G01N 25/22
- • on combustion or catalytic oxidation, e.g. of components of gas mixtures
- U G01N 25/28
- • • the rise in temperature of the gases resulting from combustion being measured directly
- G01N 25/34
- • • • using mechanical temperature-responsive elements, e.g. bimetallic}{(-bimetallic elements per se [G12B 1/02-](#))}
- U G01N 25/48
- • on solution, sorption, or a chemical reaction not involving combustion or catalytic oxidation
- U G01N 25/4806
- • • {Details not adapted to a particular type of sample}
- U G01N 25/4813
- • • • {concerning the measuring means}
- G01N 25/482
- • • • • {concerning the temperature responsive elements}{(-measuring temperature or quantity of heat, thermally-sensitive elements [G01K](#) ; thermoelectric devices [H01L 35/00](#) , [H01L 37/00-](#))}
- G01N 25/4826
- • • • • {concerning the heating or cooling arrangements}{(-heating apparatus for chemical or physical laboratory apparatus in general [B01L 7/00-](#))}
- G01N 25/72
- Investigating presence of flaws}{(-by investigating thermal conductivity [G01N 25/18-](#))}

- G01N 27/00** Investigating or analysing materials by the use of electric, electro-chemical, or magnetic means (~~G01N 3/00 to G01N 25/00 take precedence; measurement or testing electric or magnetic variables or of electric or magnetic properties of materials G01R-~~)
- G01N 27/007 · {by investigating the electric dipolar moment (~~-measuring piezo-electric properties G01R 29/22-~~)}
- U G01N 27/02 · by investigating the impedance of the material
- G01N 27/026 · · {Dielectric impedance spectroscopy (~~-electrochemical impedance spectroscopy for measuring corrosion G01N 17/02-~~)}
- G01N 27/028 · · {Circuits therefor (~~-measuring impedance per se G01R 27/02-~~)}
- G01N 27/04 · · by investigating resistance (~~-for measuring the amount of particles G01N 15/0656-~~)
- G01N 27/045 · · · {Circuits (~~-measuring resistance per se G01R 27/00 , e.g. G01R 27/22-~~)}
- G01N 27/06 · · · of a liquid (~~-involving electrolysis G01N 27/26 ; involving polarography G01N 27/48 ; measuring electric resistance of fluids G01R 27/22-~~)
- U G01N 27/08 · · · · which is flowing continuously
- G01N 27/10 · · · · Investigation or analysis specially adapted for controlling or monitoring operations or for signalling (regulating G05D)
- U G01N 27/12 · · · of a solid body in dependence upon absorption of a fluid; of a solid body in dependence upon reaction with a fluid, {for detecting components in the fluid}
- G01N 27/121 · · · · {for determining moisture content, e.g. humidity, of the fluid (~~-moisture content of the tested material G01N 27/048-~~)}
- U G01N 27/122 · · · · {Circuits particularly adapted therefor, e.g. linearising circuits}
- G01N 27/123 · · · · · {for controlling the temperature (~~-temperature control per se G05D 23/00-~~)}
- G01N 27/129 · · · · {Diode type sensors, e.g. gas sensitive Schottky diodes (~~-capacitor type sensors G01N 27/227 ; field-effect transistor type sensors G01N 27/414-~~)}
- U G01N 27/14 · · · of an electrically-heated body in dependence upon change of temperature
- G01N 27/18 · · · · caused by changes in the thermal conductivity of a surrounding material to be tested (~~-G01N 27/20 takes precedence-~~)
- U G01N 27/22 · · by investigating capacitance
- G01N 27/221 · · · {by investigating the dielectric properties (~~-using microwaves G01N 22/00 ; measuring loss factors or dielectric constants per se G01R 27/26-~~)}
- G01N 27/223 · · · {for determining moisture content, e.g. humidity (~~-rain detectors on vehicle windows B60S 1/0825-~~)}
- G01N 27/227 · · · {Sensors changing capacitance upon adsorption or absorption of fluid components, e.g. electrolyte-insulator-semiconductor sensors, MOS capacitors (~~-G01N 27/225 takes precedence-~~)}
- G01N 27/228 · · · {Circuits therefor (~~-measuring capacitance per se G01R 27/26-~~)}
- G01N 27/26 · by investigating electrochemical variables; by using electrolysis or electrophoresis (~~-investigating resistance to corrosion G01N 17/00 ; investigating or analysing materials by separation into components using adsorption, absorption or similar phenomena or using ion-exchange, e.g. chromatography, G01N 30/00 ; immunoelectrophoresis G01N 33/561 ; electrochemical processes or apparatus in general B01J; standard cells H01M 6/28-~~)

- G01N 27/27
 - Association of two or more measuring systems or cells, each measuring a different parameter, where the measurement results may be either used independently, the systems or cells being physically associated, or combined to produce a value for a further parameter {e.g. electrochemical electrode arrays (-gas sensor arrays [G01N 33/0031](#)-)}
- U G01N 27/28
 - Electrolytic cell components
- G01N 27/30
 - Electrodes, e.g. test electrodes; Half-cells (-[G01N 27/414](#) takes precedence-)
- G01N 27/302
 - {pH sensitive, e.g. quinhydrone, antimony or hydrogen electrodes (-ion selective electrodes [G01N 27/333](#) , glass electrodes [G01N 27/36](#)-)}
- G01N 27/307
 - {Disposable laminated or multilayered electrodes (-[G01N 27/3272](#) takes precedence-)}
- G01N 27/327
 - Biochemical electrodes {electrical and mechanical details of in vitro measurements(-chemical and biological details [C12Q 1/00](#), [G01N 33/543](#) ; in vivo [A61B 5/00](#)-)}
- G01N 27/3271
 - {Amperometric enzyme electrodes for analytes in body fluids, e.g. glucose in blood (-amperometry per se [G01N 27/49](#) ; aspects concerning the enzyme reagent [C12Q 1/001](#)-)}
- G01N 27/3272
 - {Test elements therefor, i.e. disposable laminated substrates with electrodes, reagent and channels (-optical biosensors [G01N 33/52](#)-)}
- G01N 27/3273
 - {Devices therefor, e.g. test element readers, circuitry (-details not specific to biochemical electrodes [G01N 33/4875](#)-)}
- G01N 27/3274
 - {Corrective measures, e.g. error detection, compensation for temperature or hematocrit, calibration (-coding of calibration information [G01N 33/48771](#)-)}
- U G01N 27/3275
 - {Sensing specific biomolecules, e.g. nucleic acid strands, based on an electrode surface reaction}
- G01N 27/3276
 - {being a hybridisation with immobilised receptors (-using a FET type sensor [G01N 27/4145](#) ; concerning the hybridisation [C12Q 1/68](#)-)}
- G01N 27/3277
 - {being a redox reaction, e.g. detection by cyclic voltammetry (-voltammetry per se [G01N 27/42](#) , [G01N 27/48](#)-)}
- G01N 27/3278
 - {involving nanosized elements, e.g. nanogaps or nanoparticles (-nanopores [G01N 33/48721](#) ; magnetic beads [G01N 27/745](#)-)}
- G01N 27/333
 - Ion-selective electrodes or membranes (-glass electrodes [G01N 27/36](#)-)
- G01N 27/3335
 - {the membrane containing at least one organic component (-[G01N 27/3271](#) takes precedence; aspects concerning the enzyme reagent in enzyme electrodes [C12Q 1/001](#)-)}
- U G01N 27/403
 - Cells and electrode assemblies
- G01N 27/4035
 - {Combination of a single ion-sensing electrode and a single reference electrode (-[G01N 27/406](#) and [G01N 27/413](#) take precedence-)}
- G01N 27/404
 - Cells with anode, cathode and cell electrolyte on the same side of a permeable membrane which separates them from the sample fluid {e.g. Clark-type oxygen sensors}
- U G01N 27/406
 - Cells and probes with solid electrolytes
- G01N 27/407
 - for investigating or analysing gases (-[G01N 27/411](#) takes precedence-)}
- G01N 27/413
 - Concentration cells using liquid electrolytes {measuring currents or voltages in voltaic cells}
- U G01N 27/414
 - Ion-sensitive or chemical field-effect transistors, i.e. ISFETS or CHEMFETS
- U G01N 27/4141
 - {specially adapted for gases}

- G01N 27/4143 {Air gap between gate and channel, i.e. suspended gate [SG]}
FETs (-work function measurement per se [G01N 27/002-](#))}
- G01N 27/4148 {Integrated circuits therefor, e.g. fabricated by CMOS processing (-CMOS
processing per se [H01L 21/82](#) CMOS processing per se [H01L 21/82](#))}
- G01N 27/416 . . Systems (-[G01N 27/27](#) takes precedence { ; for testing batteries [G01R 31/36](#)
})
- G01N 27/4162 . . . {investigating the composition of gases, by the influence exerted on
ionic conductivity in a liquid (-conductometry in general [G01N 27/06](#) ;
amperometric gas sensors [G01N 27/404](#)-)}
- G01N 27/4163 . . . {checking the operation of, or calibrating, the measuring
apparatus (-[G01N 27/3274](#) , [G01N 27/4175](#) and [G01N 33/0006](#) take
precedence-)}
- U G01N 27/4166 . . . {measuring a particular property of an electrolyte}
- G01N 27/4167 {pH (-electrodes therefor [G01N 27/302](#) , [G01N 27/36-](#))}
- G01N 27/4168 {Oxidation-reduction potential, e.g. for chlorination of water (-water
analysis [G01N 33/18](#)-)}
- G01N 27/417 . . . using cells {i.e. more than one cell}and probes with solid electrolytes
- G01N 27/447 . . . using electrophoresis{-aspects concerning peptides or proteins [C07K 1/26](#)
; for non-analytical purposes [B01D 57/02](#) ; separating particles by
dielectrophoresis [B03C 5/00-](#)}
- U G01N 27/44756 {Apparatus specially adapted therefor}
- G01N 27/44769 {Continuous electrophoresis, i.e. the sample being continuously
introduced, e.g. free flow electrophoresis [FFE]}}
- G01N 27/44791 {Micro-apparatus (-sample containers with integrated microfluidic
structures [B01L 3/5027](#)-)}
- G01N 27/60 . . by investigating electrostatic variables, e.g. electrographic flaw testing ({
[G01N 27/007](#) takes precedence } ; by investigating capacitance [G01N 27/22-](#))
- G01N 27/62 . . by investigating the ionisation of gases; by investigating electric discharges,
e.g. emission of cathode (-particle spectrometers per se [H01J 49/00-](#))
- G01N 27/622 . . {separating and identifying ionized molecules based on their mobility in a
carrier gas, i.e. ion mobility spectrometry (-mass spectrometry [H01J 49/26-](#))}
- G01N 27/624 . . . {using a non-uniform electric field, i.e. differential mobility spectrometry
[DMS]}or high-field asymmetric-waveform ion-mobility spectrometry
[FAIMS]-}
- G01N 27/64 . . using wave or particle radiation to ionise a gas, e.g. in an ionisation
chamber{-discharge tubes for measuring pressure of introduced gas or for
detecting presence of gas [H01J 41/02-](#)}
- U G01N 27/72 . . by investigating magnetic variables
- G01N 27/74 . . of fluids (-[G01N 24/00](#) takes precedence-)
- G01N 27/745 . . . {for detecting magnetic beads used in biochemical assays (-concerning
the assays [G01N 33/54326](#) ; sensors therefor [G01R 33/1269](#) ; automatic
analysers therefor [G01N 35/0098](#)-)}
- G01N 27/76 . . . by investigating susceptibility{ measuring susceptibility [G01R 33/16](#)-}
- U G01N 27/82 . . for investigating the presence of flaws
- G01N 27/825 . . . {by using magnetic attraction force (-[G01N 27/84](#) takes precedence-)}
- G01N 27/90 . . . using eddy currents{-for measuring thickness [G01B 7/06-](#)}
- G01N 27/9073 {Recording measured data (-in general [G01D-](#))}

- G01N 27/9093
- • • {arrangements for supporting or marking or rejecting, e.g. machines (-sorting individual articles or bulk material fit to be sorted piece-meal, controlled indirectly by devices which detect or measure some feature of the article or material to be sorted [B07C 5/00-](#))}
- G01N 27/92
- by investigating breakdown voltage (-[G01N 27/60](#) , [G01N 27/62](#) take precedence; testing of articles or specimens of solids or fluids for dielectric strength or breakdown voltage [G01R 31/12-](#))
- G01N 29/00**
- Investigating or analysing materials by the use of ultrasonic, sonic or infrasonic waves; Visualisation of the interior of objects by transmitting ultrasonic or sonic waves through the object (-[G01N 3/00](#) to [G01N 27/00](#) take precedence; measuring or indicating of ultrasonic, sonic or infrasonic waves in general [G01H](#); systems using the reflection or reradiation of acoustic waves, e.g. acoustic imaging, [G01S 15/00](#) ; obtaining records by techniques analogous to photography using ultrasonic, sonic or infrasonic waves [G03B 42/06](#) ; { medical diagnosis by ultrasounds [A61B 8/00](#) ; generating or transmitting mechanical or acoustic waves [B06B](#), [G10K](#); seismic or acoustic prospecting or detecting [G01V 1/00](#) })**
- G01N 29/02
- Analysing fluids (-using acoustic emission techniques [G01N 29/14](#) ; { constructional or flow details for analysing fluids [G01N 29/222](#) ; optoacoustic fluid cells [G01N 29/2425](#) })
- G01N 29/022
- • {Fluid sensors based on micro-sensors, e.g. quartz crystal-microbalance (QCM), surface acoustic wave (SAW) devices, tuning forks, cantilevers, flexural plate wave (FPW) devices (micro-devices per se [B81B](#))}
- G01N 29/04
- Analysing solids (-using acoustic emission techniques [G01N 29/14-](#))
- G01N 29/045
- • {by imparting shocks to the workpiece and detecting the vibrations or the acoustic waves caused by the shocks (-measuring resonant frequency [G01H 13/00](#) ; measuring strength properties by application of mechanical stress [G01N 3/00-](#))}
- G01N 29/046
- • • {using the echo of particles imparting on a surface; using acoustic emission of particles (-investigating concentration of particle suspensions [G01N 15/06](#) ; devices for measuring flow of solids in suspension [G01F 1/74-](#))}
- G01N 29/06
- • Visualisation of the interior, e.g. acoustic microscopy((-medical or veterinary diagnosis using sonic waves [A61B 8/00](#) ; representation of acoustic wave distribution [G01H 3/125](#) , [G01H 9/002](#) ; short-range imaging systems using reflection of acoustic waves [G01S 15/8906-](#))}
- G01N 29/0609
- • • {Display arrangements, e.g. colour displays (indicating or recording in connection with measuring in general [G01D](#))}
- U G01N 29/0618
- • • • {synchronised with scanning, e.g. in real-time}
- G01N 29/0627
- • • • • {Cathode-ray tube displays (-in general [G01R 13/20-](#))}
- U G01N 29/0654
- • • {Imaging}
- G01N 29/0663
- • • • {by acoustic holography (-acoustical holography per se [G03H 3/00-](#))}
- G01N 29/0672
- • • • • {by acoustic tomography (-medical tomography [A61B 8/13-](#))}
- U G01N 29/07
- • by measuring propagation velocity or propagation time of acoustic waves
- G01N 29/075
- • • {by measuring or comparing phase angle (-measuring frequencies or phase angles per se [G01R 23/00](#) , [G01R 25/00-](#))}
- G01N 29/12
- • by measuring frequency or resonance of acoustic waves((-measuring frequency or resonant frequency of mechanical vibrations or acoustic waves in general [G01H 1/06](#) , [G01H 3/04](#) , [G01H 13/00](#) ; acoustic resonators [G10K 11/04](#) ; vibration or shock testing of structures [G01M 7/00-](#))}

- G01N 29/14
 - using acoustic emission techniques (echo of particles [G01N 29/046](#) ; measuring mechanical vibrations or acoustic waves in solids in general [G01H 1/00](#))
- U G01N 29/22
 - Details, (e.g. general constructional or apparatus details)
- G01N 29/221
 - • {Arrangements for directing or focusing the acoustical waves (electronic orientation or focusing [G01N 29/262](#) ; sound directing or focusing [G10K 11/26](#) ; mechanical steering of sound transducers or their beams [G10K 11/35](#))}
- G01N 29/222
 - • {Constructional or flow details for analysing fluids (optoacoustic fluid cells [G01N 29/2425](#))}
- G01N 29/223
 - • {Supports, positioning or alignment in fixed situation (mounting transducers per se [G10K 11/004](#))}
- G01N 29/24
 - • Probes (transducers for acoustic waves [B06B](#) , [G10K](#) ; for measuring [G01H](#))}
- G01N 29/2412
 - • • {using the magnetostrictive properties of the material to be examined, e.g. electromagnetic acoustic transducers [EMAT]; (investigating the presence of flaws using eddy currents [G01N 27/90](#) , magnetostrictive transducers [B06B 1/08](#) , measuring magnetostrictive properties [G01R 33/18](#))}
- G01N 29/2418
 - • • {using optoacoustic interaction with the material, e.g. laser radiation, photoacoustics (photoacoustic cells [G01N 21/1702](#) ; measuring characteristics of vibrations by using radiation-sensitive means [G01H 9/00](#) ; acousto-optical conversion techniques for short-range imaging [G01S 15/8965](#) ; sound-producing devices using laser bundle [G10K 15/046](#))}
- G01N 29/2431
 - • • {using other means for acoustic excitation, e.g. heat, microwaves, electron beams (sound producing devices not otherwise provided for [G10K 15/04](#))}
- G01N 29/2456
 - • • {Focusing probes (focusing arrangements [G01N 29/221](#))}
- G01N 29/2487
 - • • {Directing probes, e.g. angle probes (directing arrangements [G01N 29/221](#))}
- G01N 29/26
 - • Arrangements for orientation or scanning (by relative movement of the head and the sensor (mechanical steering of sound transducers or their beams [G10K 11/35](#))}
- G01N 29/262
 - • • {by electronic orientation or focusing, e.g. with phased arrays (phased arrays per se [G10K 11/34](#))}
- G01N 29/28
 - • providing acoustic coupling (e.g. water (impedance matching [G10K 11/02](#))}
- U G01N 29/34
 - Generating the ultrasonic, sonic or infrasonic waves, (e.g. electronic circuits specially adapted therefor)
- G01N 29/348
 - • {with frequency characteristics, e.g. single frequency signals, chirp signals (measuring frequency of mechanical vibrations or acoustic waves in general [G01H 1/06](#) , [G01H 3/04](#) ; measuring frequency or analysing frequency spectra [G01R 23/00](#))}
- U G01N 29/36
 - Detecting the response signal, (e.g. electronic circuits specially adapted therefor)
- G01N 29/40
 - • by amplitude filtering, e.g. by applying a threshold (or by gain control)
- G01N 29/42
 - • by frequency filtering (or by tuning to resonant frequency)
- G01N 29/44
 - Processing the detected response signal, (e.g. electronic circuits specially adapted therefor (digital signal processing per se [G06F 17/00](#))}
- U G01N 29/4409
 - • {by comparison}
- G01N 29/4436
 - • • {with a reference signal (amplitude comparison [G01N 29/48](#))}
- G01N 29/449
 - • {Statistical methods not provided for in [G01N 29/4409](#) , e.g. averaging, smoothing and interpolation}

- G01N 29/46
- • by spectral analysis, e.g. Fourier analysis {or wavelet analysis(-spectral signal processing per se [G06F 17/14](#)-)}

G01N 30/00

Investigating or analysing materials by separation into components using adsorption, absorption or similar phenomena or using ion-exchange, e.g. chromatography (-[G01N 3/00](#) to [G01N 29/00](#) take precedence; separation for the preparation or production of components [B01D 15/00](#), [B01D 53/02](#), [B01D 53/14](#); solid sorbent compositions in general [B01J 20/00](#); ion-exchange in general [B01J 39/00](#) to [B01J 49/00](#)-){or field flow fractionation(-for preparation or production of components [B01D 21/00](#), [B01D 43/00](#), [B01D 45/00](#) or [B03C](#)-)}

NOTE

In this group, the following term is used with the meaning indicated:

- "conditioning" refers to the adjustment or control of environmental parameters, e.g. temperature or pressure.

- U G01N 30/0005
- {Field flow fractionation}
- G01N 2030/007
- • {programming of driving force (-carrier programming [G01N 30/02](#)-)}
- U G01N 30/02
- Column chromatography
- U G01N 30/04
- • Preparation or injection of sample to be analysed
- G01N 30/16
- • • Injection (-[G01N 30/24](#) takes precedence-)
- U G01N 30/26
- • Conditioning of the fluid carrier; Flow patterns
- U G01N 30/28
- • • Control of physical parameters of the fluid carrier
- G01N 30/32
- • • • of pressure or speed (-[G01N 30/36](#) takes precedence-)
- G01N 30/34
- • • • of fluid composition, e.g. gradient (-[G01N 30/36](#) takes precedence-)
- U G01N 30/38
- • • Flow patterns
- G01N 30/46
- • • • using more than one column{(-[G01N 30/44](#) takes precedence-)}
- U G01N 30/461
- • • • • {with serial coupling of separation columns}
- G01N 30/462
- • • • • • {with different eluents or with eluents in different states (-[G01N 30/463](#) takes precedence-)}
- U G01N 30/62
- • Detectors specially adapted therefor
- G01N 30/72
- • • Mass spectrometers{(-mass spectrometers per se [H01J 49/00](#)-)}
- G01N 30/7206
- • • • {interfaced to gas chromatograph (-interfaces in general for introducing or extracting samples to be analysed with specially adapted mass spectrometer, see [H01J 49/04](#)-)}
- G01N 30/722
- • • • • {through a gas permeable barrier (*membranes, porous layers*)}(~~membranes, porous layers~~)
- G01N 30/7233
- • • • • {interfaced to liquid or superfluid chromatograph (-interfaces in general for introducing or extracting samples to be analysed with specially adapted mass spectrometer, see [H01J 49/04](#)-)}
- G01N 30/724
- • • • • {Nebulising, aerosol formation or ionisation (-spraying or atomising in general [B05B](#)-)}
- G01N 30/74
- • • Optical detectors{ measurement of intensity, velocity, spectral content, polarisation, or phase of infra-red, visible or ultra-violet light [G01J](#)-}
- G01N 30/76
- • • Acoustical detectors{ measurement of mechanical vibrations or ultrasonic, sonic or infrasonic waves [G01H](#)-}
- U G01N 30/86
- • Signal analysis
- G01N 30/8675
- • • {Evaluation, i.e. decoding of the signal into analytical information (-for analysis of specific compounds see also [G01N 30/88](#) and subgroups of [G01N 33/00](#); chemical libraries per se [C40B](#)-)}

- G01N 30/88
- • Integrated analysis systems specially adapted therefor, not covered by a single one of the groups [G01N 30/04](#) to [G01N 30/86](#) (signal analysis systems per se [G06F](#), [G06G](#))
- G01N 30/96
- using ion-exchange (~~-[G01N 30/02](#) , [G01N 30/90](#) take precedence-~~)
- G01N 31/00**
- Investigating or analysing non-biological materials by the use of the chemical methods specified in the subgroup (-testing the effectiveness or completeness of sterilisation procedures without using enzymes or microorganisms [A61L 2/28](#) ; measuring or testing processes involving enzymes or micro-organisms [C12Q 1/00](#)); Apparatus specially adapted for such methods**
- G01N 31/005
- {investigating the presence of an element by oxidation (~~-[G01N 31/12](#) takes precedence-~~)}
- G01N 31/007
- • {by measuring the quantity of water resulting therefrom (~~-[G01N 31/12](#) takes precedence-~~)}
- NOTE
- The observation of the progress of the reaction specified below by any of the methods specified in groups [G01N 3/00](#) to [G01N 3/00](#) to [G01N 29/00](#) , if this is of major importance, is dealt with in the group concerned.
- G01N 31/02
- using precipitation{ measuring deposition or liberation of materials from an electrolyte [G01N 27/42](#)-}
- G01N 31/12
- using combustion (~~-[G01N 25/20](#) takes precedence-~~)
- U G01N 31/16
- using titration
- G01N 31/18
- • Burettes specially adapted for titration (~~-burettes in general [B01L 3/02](#)-~~)
- G01N 31/22
- using chemical indicators (~~-[G01N 31/02](#) takes precedence-~~)
- G01N 31/223
- • {for investigating presence of specific gases or aerosols (~~-[G01N 31/221](#) , [G01N 31/222](#) take precedence; actuation of fire alarm by presence of smoke or gases [G08B 17/10](#)-)}~~
- U G01N 33/00**
- Investigating or analysing materials by specific methods not covered by the preceding groups**
- G01N 33/0004
- {Gaseous mixtures, e.g. polluted air (~~-gaseous biological material [G01N 33/497](#) ; exhaust gas of internal combustion engines [G01M 15/102](#)-)}~~
- G01N 33/0009
- • {General constructional details of gas analysers, e.g. portable test equipment (~~-[G01N 1/22](#) takes precedence-~~)}
- G01N 33/0011
- • • {Sample conditioning (~~-in general [G01N 1/28](#)-)}~~
- G01N 33/0013
- • • • {by a chemical reaction (~~-[G01N 33/0024](#) takes precedence-~~)}
- G01N 33/0014
- • • • {by eliminating a gas (~~-[G01N 33/0013](#) and [G01N 33/0024](#) take precedence-~~)}
- G01N 33/0026
- • • {use of an alternating circulation of another gas (~~-calibrating gas analysers [G01N 33/0006](#)-)}~~
- U G01N 33/0027
- • • {concerning the detector}
- G01N 33/0031
- • • • {comprising two or more sensors, e.g. a sensor array (~~-electrochemical electrode arrays [G01N 27/27](#)-)}~~
- G01N 33/0036
- • • • {Specially adapted to detect a particular component (~~-all the other sub-groups of [G01N 33/0004](#) take precedence-~~)}
- G01N 33/0057
- • • • • {for warfare agents or explosives (~~-properties of explosives [G01N 33/227](#)-)}~~
- U G01N 33/0062
- • • {concerning the measuring method, e.g. intermittent, or the display, e.g. digital}

- G01N 33/0063
 - • • {using a threshold to release an alarm or displaying means (-alarm arrangements [G08B](#) , e.g. fire alarm actuated by the presence of smoke or gases [G08B 17/10](#) , for other abnormal conditions [G08B 21/00](#)-)}
- G01N 33/007
 - • • {Arrangements to check the analyser (-calibrating [G01N 33/0006](#)-)}
- U G01N 33/0073
 - • • {Control unit therefor}
- G01N 33/0075
 - • • • {for multiple spatially distributed sensors, e.g. for environmental monitoring (transmission systems for measured values [G08C](#))}
- U G01N 2033/0078
 - {testing material properties on manufactured objects}
- G01N 2033/008
 - • {sport articles ([balls, skis, rackets](#))}(~~balls, skis, rackets~~)
- G01N 33/0098
 - {Plants or trees (-wood [G01N 33/46](#)-)}
- G01N 33/15
 - Medicinal preparations; {Physical properties thereof, e.g. dissolubility(-drug screening with animal cells [G01N 33/5008](#) , drug screening with microorganisms [C12Q 1/025](#)-)}
- U G01N 33/18
 - Water{(treatment of water [C02F](#))}
- G01N 33/1806
 - • {biological or chemical oxygen demand ([BOD or COD](#))}(~~BOD or COD~~)
- G01N 33/1813
 - • {specific cations in water, e.g. heavy metals (-electrochemical analysis [G01N 27/26](#); detection of ions by colorimetry [G01N 31/22](#)-)}
- G01N 33/182
 - • {specific anions in water (-electrochemical analysis [G01N 27/26](#) ; detection of ions by colorimetry [G01N 31/22](#)-)}
- U G01N 33/1826
 - • {organic contamination in water}
- G01N 33/1833
 - • • {Oil in water (-water in oil [G01N 33/2847](#)-)}
- U G01N 33/186
 - • {using one or more living organisms, e.g. a fish}
- G01N 33/1866
 - • • {using micro-organisms (-[G01N 33/1806](#) takes precedence-)}
- G01N 33/188
 - • {Determining the state of nitrification (-biological treatment of water by aerobic or anaerobic processes for denitrification of water [C02F 3/305](#)-)}
- G01N 33/22
 - Fuels, explosives{(liquid hydrocarbons [G01N 33/28](#)-)}
- G01N 33/227
 - • {Explosives, e.g. combustive properties thereof (-detecting explosives in air [G01N 33/0057](#)-)}
- G01N 33/24
 - earth materials (-[G01N 33/42](#) takes precedence; { testing the nature of borehole walls, formation testing [E21B 49/00](#) ; investigation of foundation soil in situ [E02D 1/00](#) ; geophysics, e.g. prospecting [G01V](#) })
- G01N 33/241
 - • {for hydrocarbon content (-drilling mud [G01N 33/2823](#) ; drilling per se [E21B](#) ; prospecting [G01V](#)-)}
- G01N 33/246
 - • {for water content (-for control of watering [A01G 25/167](#)-)}
- G01N 33/26
 - oils; viscous liquids; paints; inks (-[G01N 33/22](#) takes precedence-)
- G01N 33/28
 - • Oils, {i.e. hydrocarbon liquids (-gaseous fuels [G01N 33/225](#)-)} (-edible oils or edible fats [G01N 33/03](#)-)
- G01N 33/2805
 - • • {investigating the resistance to heat or oxidation (-to the weather, to corrosion, or to light [G01N 17/00](#)-)}
- G01N 33/2817
 - • • {using a test engine (-testing of engines [G01M 15/00](#)-)}
- G01N 33/2823
 - • • {raw oil, drilling fluid or polyphasic mixtures (-hydrocarbon content of earth materials [G01N 33/241](#) ; prospecting [G01V](#) ; drilling per se [E21B](#)-)}
- U G01N 33/2835
 - • • {specific substances contained in the oil or fuel}
- G01N 33/2847
 - • • • {Water in oil (-basic sediment and water [G01N 33/2823](#) ; oil in water [G01N 33/1833](#)-)}
- G01N 33/2882
 - • • • {Markers (-marking of fuels [C10L 1/003](#)-)}
- G01N 33/2888
 - • • {Lubricating oil characteristics, e.g. deterioration (-lubricating properties [G01N 33/30](#)-)}

- G01N 33/32
 - • paints; inks{ investigating resistance to the weather, to corrosion, to light [G01N 17/00](#)-}
- U G01N 33/36
 - textiles
- G01N 33/365
 - • {filiform textiles, e.g. yarns (-for measuring diameter [G01B](#)-)}
- G01N 33/367
 - • {Fabric or woven textiles (-optical analysis of moving sheets [G01N 21/86](#)-)}
- G01N 33/42
 - road-making materials (-[G01N 33/38](#) takes precedence-)
- G01N 33/48
 - biological material, e.g. blood, urine (-[G01N 33/02](#) to [G01N 33/14](#) , [G01N 33/26](#) , [G01N 33/44](#) , [G01N 33/46](#) take precedence; determining the germinating capacity of seeds [A01C 1/02](#)-); Haemocytometers (-counting blood corpuscles distributed over a surface by scanning the surface [G06M 11/02](#)-)
- U G01N 33/483
 - • Physical analysis of biological material
- G01N 33/4833
 - • • {of solid biological material, e.g. tissue samples, cell cultures (-tissue in vivo [A61B 5/00](#); cell suspensions [G01N 33/48735](#)-)}
- U G01N 33/487
 - • • of liquid biological material
- G01N 33/48707
 - • • • {by electrical means (-[G01N 33/49](#) , [G01N 33/493](#) take precedence-)}
- G01N 33/48714
 - • • • • {for determining substances foreign to the organism, e.g. drugs or heavy metals (-drugs by chemical analysis [G01N 33/94](#)-)}
- G01N 33/48721
 - • • • • {Investigating individual macromolecules, e.g. by translocation through nanopores (-~~Coulter counters in general~~ [G01N 15/12](#) ; ~~Coulter counters in general~~ [G01N 15/12](#) ; fabrication methods for nano-scale apertures [B81B 1/00](#) ; sequencing of nucleic acids [C12Q 1/68](#)-)}
- G01N 33/48728
 - • • • • {Investigating individual cells, e.g. by patch clamp, voltage clamp (-investigating individual particles in general [G01N 15/10](#)-)}
- G01N 33/48735
 - • • • • {Investigating suspensions of cells, e.g. measuring microbe concentration (-by chemical means [C12Q 1/04](#) ; colony counters [C12M 1/34](#) ; concentration of particle suspensions in general [G01N 15/06](#)-)}
- G01N 33/48742
 - • • • {Determining urea by measuring the volume of a gas (-in general [G01N 7/14](#) to [G01N 7/18](#)-)}
- G01N 33/4875
 - • • • {Details of handling test elements, e.g. dispensing or storage, not specific to a particular test method (-test-elements per se [B01L](#), automatic analysers [G01N 35/00](#) , in-vivo analysis on the human body for medical diagnosis [A61B](#)-)}
- U G01N 33/48785
 - • • • {Electrical and electronic details of measuring devices for physical analysis of liquid biological material not specific to a particular test method, e.g. user interface or power supply}
- G01N 33/48792
 - • • • • {Data management, e.g. communication with processing unit (-for in vivo diagnostics [A61B 5/0002](#) ; medical informatics [G06F 19/30](#) ; transmission systems for measured values [G08C](#)-)}
- G01N 33/49
 - • • • • Blood{(-taking blood samples [A61B 5/15](#) ; chemical methods for determining blood cell populations [G01N 33/5094](#) ; chemical analysis of blood groups or blood types [G01N 33/80](#)-)}
- G01N 33/4905
 - • • • • {Determining clotting time of blood (-by chemical methods [G01N 33/86](#) , [C12Q 1/54](#)-)}
- G01N 33/491
 - • • • • {by separating the blood components (-[G01N 15/05](#) takes precedence; test tubes per se [B01L 3/14](#)-)}
- G01N 33/4915
 - • • • • {using flow cells (-flow cytometry [G01N 15/14](#)-)}
- G01N 33/4925
 - • • • • {-measuring blood gas content, e.g. O₂, [C02](#) , HCO₃⁻}
- G01N 33/497
 - • • of gaseous biological material, e.g. breath{(-for evaluating respiratory organs [A61B 5/08](#)-)}
- G01N 33/4972
 - • • • {Determining alcohol content (-for vehicle safety devices [B60K 28/06](#)-)}

- G01N 33/50
- • Chemical analysis of biological material, e.g. blood, urine; Testing involving biospecific ligand binding methods; Immunological testing (-measuring or testing processes involving enzymes or micro-organisms, compositions or test papers therefor; processes for forming such compositions, condition responsive control in microbiological or enzymological processes [C12Q-](#))

NOTES

The expression "involving", when used in relation to a material includes the testing for the material as well as employing the material as a determinant or reactant in a test for a different material.

In groups [G01N 33/52](#) to [G01N 33/96](#), in the absence of an indication to the contrary, an invention is also classified in the last appropriate place.

Documents relating to new peptides or new DNA or its corresponding mRNA, encoding for the peptides, and their use in measuring or testing processes are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in diagnostics. However, if the investigating or analysing aspects are of interest, the documents are classified in this group

- G01N 33/5005
- • • {involving human or animal cells (-immunoassay [G01N 33/56966](#); immunoassays of protozoa [G01N 33/56905](#); protozoa in screening assays [C12Q 1/025](#))}
- G01N 33/5094
- • • • {for blood cell populations (-red blood cells [G01N 33/80-](#))}
- G01N 33/5097
- • • {involving plant cells (-immunoassays of plant cells [G01N 33/56961](#); unicellular algae, photoplankton and photosynthetic bacteria in screening assays [C12Q 1/025-](#))}
- G01N 33/52
- • • Use of compounds or compositions for colorimetric, spectrophotometric or fluorometric investigation, e.g. use of reagent paper {and including single- and multilayer analytical elements(-immunological elements [G01N 33/54386](#); involving labelled immunochemicals [G01N 33/58](#); for haemoglobin or occult blood [G01N 33/72-](#))}
- G01N 33/53
- • • Immunoassay; Biospecific binding assay (-preparations containing antigens or antibodies for therapeutic purposes [A61K 39/00](#); haptens in general, see the relevant places in class [C07](#); proteins in general [C07K-](#))
- U G01N 33/5302
- • • • {Apparatus specially adapted for immunological test procedures}
- G01N 33/5304
- • • • • {Reaction vessels, e.g. agglutination plates (-for solid-phase systems [G01N 33/543-](#))}
- U G01N 33/531
- • • • • Production of immunochemical test materials
- U G01N 33/532
- • • • • Production of labelled immunochemicals
- G01N 33/535
- • • • • • with enzyme label {or co-enzymes, co-factors, enzyme inhibitors or enzyme substrates}
- U G01N 33/536
- • • • • with immune complex formed in liquid phase
- U G01N 33/537
- • • • • with separation of immune complex from unbound antigen or antibody
- G01N 33/538
- • • • • • by sorbent column, particles or resin strip {i.e. sorbent materials}
- G01N 33/539
- • • • • • involving precipitating reagent {e.g. ammonium sulfate}
- G01N 33/541
- • • • • • Double or second antibody {i.e. precipitating antibody}
- U G01N 33/543
- • • • • with an insoluble carrier for immobilising immunochemicals
- G01N 33/54353
- • • • • • {with ligand attached to the carrier via a chemical coupling agent (-coatings [G01N 33/54393-](#))}
- G01N 33/5436
- • • • • • {with ligand physically entrapped within the solid phase (-liposomes [G01N 33/5432](#); immunological test elements [G01N 33/54386-](#))}
- U G01N 33/544
- • • • • the carrier being organic

- U G01N 33/545 Synthetic resin
- G01N 33/546 as water suspendable particles{ not used, see [G01N 33/54313](#)}
- G01N 33/547 with antigen or antibody attached to the carrier via a bridging agent{ not used, see [G01N 33/54353](#)}
- G01N 33/549 with antigen or antibody entrapped within the carrier{ not used, see [G01N 33/5436](#)}
- G01N 33/563 involving antibody fragments{ not used, see [G01N 33/6857](#)}
- G01N 33/564 for pre-existing immune complex or autoimmune disease {i.e. systemic lupus erythematosus, rheumatoid arthritis, multiple sclerosis, rheumatoid factors or complement components C1-C9}
- G01N 33/566 using specific carrier or receptor proteins as ligand binding reagents {where possible specific carrier or receptor proteins are classified with their target compounds}
- U G01N 33/569 for micro-organisms, e.g. protozoa, bacteria, viruses
- G01N 33/571 for venereal disease, e.g. syphilis, gonorrhoea{(herpes [G01N 33/56994](#) ; chlamydia [G01N 33/56927](#)-)}
- G01N 33/577 involving monoclonal antibodies{ binding reaction mechanisms characterised by the use of monoclonal antibodies; monoclonal antibodies per se are classified with their corresponding antigens; [G01N 33/53](#) to [G01N 33/576](#) take precedence-}
- G01N 33/58 involving labelled substances {(-[G01N 33/53](#) takes precedence; for testing in vivo [A61K 49/00](#)-)}
- G01N 33/60 involving radioactive labelled substances {(-tracers [G21H 5/02](#)-)}
- G01N 33/68 involving proteins, peptides or amino acids{ involving lipoproteins [G01N 33/92](#)}
- G01N 33/72 involving blood pigments, e.g. haemoglobin, bilirubin {or other porphyrins; involving occult blood}
- G01N 33/74 involving hormones {or other non-cytokine intercellular protein regulatory factors such as growth factors, including receptors to hormones and growth factors}
- G01N 33/76 Human chorionic gonadotropin {including luteinising hormone, follicle stimulating hormone, thyroid stimulating hormone or their receptors}
- G01N 33/80 involving blood groups or blood types {or red blood cells(-white blood cells [G01N 33/56972](#)-)}
- G01N 33/82 involving vitamins {or their receptors}
- G01N 33/86 involving blood coagulating time {or factors, or their receptors}
- G01N 33/88 involving prostaglandins {or their receptors}
- G01N 33/92 involving lipids, e.g. cholesterol,{lipoproteins, or their receptors(-steroid hormones [G01N 33/743](#)-)}
- G01N 33/94 involving narcotics {or drugs or pharmaceuticals, neurotransmitters or associated receptors}
- G01N 33/948 {Sedatives, e.g. cannabinoids, barbiturates}(-opiates [G01N 33/9486](#)-)}
- G01N 35/00** **Automatic analysis not limited to methods or materials provided for in any single one of groups [G01N 1/00](#) to [G01N 33/00](#); Handling materials therefor**
- G01N 35/00029 {provided with flat sample substrates, e.g. slides {(-[G01N 35/028](#) takes precedence-)}
- U G01N 35/00584 {Control arrangements for automatic analysers}
- U G01N 35/00722 {Communications; Identification}
- U G01N 2035/00891 {Displaying information to the operator}

- G01N 2035/0091 . . . {GUI [*graphical user interfaces*]}(~~graphical user interfaces~~)
- U G01N 35/0092 . . {Scheduling}
- G01N 35/0095 . . . {introducing urgent samples with priority, e.g. Short Turn Around Time Samples [~~STATS~~]}
- G01N 35/0098 . {involving analyte bound to insoluble magnetic carrier, e.g. using magnetic separation (-magnetic particles used in immunoassays [G01N 33/54326](#) ; magnetic separation in general [B03C](#)-)}
- G01N 35/0099 . [comprising robots or similar manipulators (-robots per se [B25J](#)-)]
- G01N 35/02 . using a plurality of sample containers moved by a conveyer system past one or more treatment or analysis stations{(-[G01N 35/0098](#) and [G01N 35/0099](#) take precedence-)}
- U G01N 35/021 . . {having a flexible chain, e.g. "cartridge belt", conveyer for reaction cells or cuvettes}
- G01N 2035/023 . . . {-forming cuvettes *in situ*, e.g. from plastic strip-}
- G01N 35/04 . . Details of the conveyer system{(-[G01N 35/021](#) to [G01N 35/028](#) take precedence-)}
- G01N 35/10 . Devices for transferring samples {or any liquids}to, in, or from, the analysis apparatus, e.g. suction devices, injection devices{(-[G01N 35/0099](#) takes precedence-)}
- G01N 35/1081 . . {characterised by the means for relatively moving the transfer device and the containers in an horizontal plane (-[G01N 35/1011](#) takes precedence-)}
- G01N 35/1095 . . {for supplying the samples to flow-through analysers (-for a specific analyser see relevant groups, e.g. under [G01N 15/00](#) , [G01N 21/00](#) , [G01N 27/00](#) , [G01N 30/00](#) , [H01J 49/00](#)-)}
- G01N 35/1097 . . . {characterised by the valves (valves in general [F16K](#))}
- G01N 2201/00** **Features of devices classified in [G01N 21/00](#)**
- U G01N 2201/06 . Illumination; Optics
- U G01N 2201/061 . . Sources
- G01N 2201/06193 . . . Secondary *in-situ* sources, e.g. fluorescent particles
- U G01N 2201/069 . . Supply of sources
- G01N 2201/0691 . . . Modulated (*not pulsed supply*)(~~not pulsed supply~~)
- U G01N 2223/00** **Investigating materials by wave or particle radiation**
- U G01N 2223/03 . by transmission
- U G01N 2223/04 . . and measuring absorption
- G01N 2223/043 . . . gamma ray resonance absorption (*Mossbauer effect*)(~~Mossbauer effect~~)
- G01N 2223/045 . combination of at least 2 measurements (*transmission and scatter*)(~~transmission and scatter~~)
- U G01N 2223/07 . secondary emission
- G01N 2223/085 . . photo-electron spectrum (*ESCA, XPS*)(~~ESCA, XPS~~)
- U G01N 2223/40 . Imaging
- G01N 2223/421 . . digitised image, analysed in real time (*recognition algorithms*)(~~recognition algorithms~~)
- G01N 2223/424 . . energy subtraction image processing (*dual energy processing*)(~~dual energy processing~~)
- G01N 2223/425 . . ~~temporal~~(*time difference*)*temporal (time difference)* subtraction processing
- G01N 2223/427 . . stepped imaging (*selected area of sample is changed*)(~~selected area of sample is changed~~)
- U G01N 2223/60 . Specific applications or type of materials

- G01N 2223/633 . . thickness, density, surface weight (*unit area*)(~~unit area~~)
- G01N 2291/00 Indexing codes associated with group [G01N 29/00](#)**
- U G01N 2333/00 Assays involving biological materials from specific organisms or of a specific nature**
- NOTE**
In groups [G01N 2333/47](#) to [G01N 2333/994](#) indexing codes are assigned according to the chemical nature of the materials irrespective of the source organism.
- U G01N 2333/005 . from viruses
- U G01N 2333/08 . . RNA viruses
- U G01N 2333/18 . . . Togaviridae; Flaviviridae
- G01N 2333/181 Alphaviruses or Group A arboviruses, e.g. sindbis, VEE, EEE, WEE or semliki forest virus (-rubella virus [G01N 2333/19](#)-)
- G01N 2333/183 Flaviviridae, e.g. pestivirus, mucosal disease virus, bovine viral diarrhoea virus, classical swine fever virus (*hog cholera virus*) or *border disease virus*(~~hog cholera virus~~or ~~border disease virus~~)
- U G01N 2333/195 . from bacteria
- NOTE**
In groups [G01N 2333/20](#) to [G01N 2333/365](#) , where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets.
- U G01N 2333/315 . . from Streptococcus (G), e.g. Enterococci
- G01N 2333/3156 . . . from Streptococcus pneumoniae (*Pneumococcus*)(~~Pneumococcus~~)(-Streptokinase [G01N 2333/3153](#)-)
- U G01N 2333/435 . from animals; from humans
- U G01N 2333/46 . . from vertebrates
- U G01N 2333/4609 . . . from reptiles
- U G01N 2333/4613 Snake venom
- U G01N 2333/462 from Agkistrodon sp., e.g. acutase, ACTE
- G01N 2333/4623 from Agkistrodon rhodostama (*Malayan pit viper*)(~~Malayan pit viper~~); Arvin (R); Batroboxin; Ancrod
- G01N 2333/4626 from Agkistrodon contortrix contortrix (*copperhead snake*)(~~copperhead snake~~); Protac (R)
- G01N 2333/463 from Crocodylus porosus (*Eastern Diamondback rattlesnake*)(~~Eastern Diamondback rattlesnake~~); Crotoxinase
- G01N 2333/4646 from Oxyuran(eo)us scutellatus (*Taipan snake of Elapidae family*)(~~Taipan snake of Elapidae family~~)
- G01N 2333/575 . . Hormones (-derived from pro-opiomelanocortin, pro-enkephalin or prodynorphin [G01N 2333/665](#) , corticotropin [G01N 2333/695](#)-)
- G01N 2333/58 . . . Atrial natriuretic factor complex; Atriopeptin; Atrial natriuretic peptide (ANP); Brain natriuretic peptide (*BNP, proBNP*)(~~BNP, proBNP~~); Cardionatrin; Cardiodilatin
- U G01N 2333/705 . . Assays involving receptors, cell surface antigens or cell surface determinants
- G01N 2333/70575 . . . NGF/TNF-superfamily, e.g. CD70, CD95L, CD153 or CD154 (-NGF [G01N 2333/48](#) , TNF [G01N 2333/525](#)-)
- G01N 2333/70578 . . . NGF-receptor/TNF-receptor superfamily, e.g. CD27, CD30 CD40 or CD95 (-NGF-receptor [G01N 2333/71](#) , TNF-receptor [G01N 2333/7151](#)-)

- G01N 2333/70596 . . . Molecules with a "CD"-designation not provided for elsewhere in [G01N 2333/705](#)
- G01N 2333/72 . . . for hormones (-for neuromediators [G01N 2333/70571-](#))
- U G01N 2333/745 . . Assays involving non-enzymic blood coagulation factors
- G01N 2333/7454 . . . Tissue factor (*tissue thromboplastin, Factor III*)(~~tissue thromboplastin, Factor III~~)
- U G01N 2333/81 . Protease inhibitors
- U G01N 2333/8107 . . Endopeptidase (E.C. 3.4.21-99) inhibitors
- U G01N 2333/811 . . . Serine protease (E.C. 3.4.21) inhibitors
- U G01N 2333/8114 Kunitz type inhibitors
- G01N 2333/8117 Bovine/basic pancreatic trypsin inhibitor (*BPTI, aprotinin*)(~~BPTI, aprotinin~~)
- U G01N 2333/90 . Enzymes; Proenzymes

NOTE

Enzymes are generally categorised below according to the "Nomenclature and Classification of Enzymes" of the International Commission on Enzymes. Where appropriate, this designation appears in the groups below in parenthesis.

- U G01N 2333/914 . . Hydrolases (3)
- U G01N 2333/948 . . . acting on peptide bonds (3.4)
- U G01N 2333/95 Proteinases, i.e. endopeptidases (3.4.21-3.4.99)
- U G01N 2333/964 derived from animal tissue
- U G01N 2333/96402 from non-mammals
- G01N 2333/96405 in general (not used)
- G01N 2333/96408 with EC number (not used)
- U G01N 2333/96425 from mammals
- G01N 2333/96427 in general (not used)
- G01N 2333/9643 with EC number (not used)
- U G01N 2333/96433 Serine endopeptidases (3.4.21)
- G01N 2333/96441 with definite EC number (not used)
- U G01N 2333/96472 Aspartic endopeptidases (3.4.23)
- G01N 2333/96475 with definite EC number (not used)
- U G01N 2333/96486 Metalloendopeptidases (3.4.24)
- G01N 2333/96491 with definite EC number (not used)
- U G01N 2400/00 Assays, e.g. immunoassays or enzyme assays, involving carbohydrates**
- G01N 2400/02 . involving antibodies to sugar part of glycoproteins (-lectins from plants [G01N 2333/42](#) , lectins from mammals [G01N 2333/4724-](#))
- U G01N 2400/10 . Polysaccharides, i.e. having more than five saccharide radicals attached to each other by glycosidic linkages; Derivatives thereof, e.g. ethers, esters
- G01N 2400/38 . . Heteroglycans, i.e. polysaccharides having more than one sugar residue in the main chain in either alternating or less regular sequence, e.g. gluco- or galactomannans, e.g. Konjac gum, Locust bean gum, Guar gum (-proteoglycans [G01N 2333/4722-](#))
- G01N 2405/00 Assays, e.g. immunoassays or enzyme assays, involving lipids (-lipopolysaccharides [G01N 2400/50-](#))**
- U G01N 2496/00 Reference solutions for assays of biological material**

G01N 2496/25

- containing added polymers to stabilise biological material against degradation or maintain viscosity or density, e.g. gelatin, polyacrylamides, polyvinyl alcohol (-casein [G01N 2333/4731](#), albumins [G01N 2333/76](#), polysaccharides [G01N 2400/10](#)-)

G01N 2496/45

- containing protease inhibitors, e.g. sulfonylfluorides, chloromethylketones, organophosphates (-peptide-based protease inhibitors [G01N 2333/81](#)-)

U G01N 2500/00 Screening for compounds of potential therapeutic value

G01N 2500/04

- Screening involving studying the effect of compounds C directly on molecule A (e.g. C are potential ligands for a receptor A, or potential substrates for an enzyme A) (e.g. C are potential ligands (agonists or antagonists) for a receptor A, or potential substrates for an enzyme A)

U G01N 2800/00 Detection or diagnosis of diseases

NOTE

1. The indexing codes [G01N 2800/02](#) - [G01N 2800/44](#) are based on The Merck Manual of Diagnosis and Therapy (17th. Edition, Mark Beers and Robert Berkow). 2. For diseases caused by micro-organism where the microorganism is detected, which subject matter is classified in [G01N 33/569](#) and subgroups, [G01N 33/571](#) or [G01N 33/576](#), the present indexing scheme is not used. 3. For cancers, which subject matter is classified in [G01N 33/574](#) and subgroups, the present indexing scheme is not used. 4. When indexing in the following scheme, the organ takes precedence, e.g. inflammation of the skin is indexed with dermatological disorders and not with immunology or allergic disorders, asthma with pulmonary disorders and not with immunology or allergic disorders. Exception is made for thrombosis which is indexed with haematological disorders.

G01N 2800/24

- Immunology or allergic disorders (-SLE [G01N 2800/104](#)-)

G01N 2800/26

- Infectious diseases, e.g. generalised sepsis

NOTE

Indexing code [G01N 2800/26](#) is not used for documents already classified in one or more of groups [G01N 33/569](#) and subgroups, [G01N 33/571](#) or [G01N 33/576](#) and subgroups

G01N 2800/70

- Mechanisms involved in disease identification (-[G01N 2800/02](#) - [G01N 2800/44](#) take precedence-)

Project: N/A (G01P)

U G01P 1/00 Details of instruments

G01P 1/06

- Indicating or recording devices, e.g. for remote indication {(indicating or recording in general [G01D](#); registering or indicating working conditions of vehicles [G07C 5/00](#))}

WARNING

This group is no longer used for the classification of new documents from April 1, 2005. The backlog of this group is being continuously reclassified to [G01P 1/07](#), and [G01P 1/12](#) and s.gr.

U G01P 13/00 Indicating or recording presence, absence, or direction, of movement (electric switches [H01H](#); counting moving objects [G06M 7/00](#))

G01P 13/008

- {-by using a window mounted in the fluid carrying tube [G01P 13/0013](#), [G01P 13/0026](#), [G01P 13/004](#) take precedence}

Project: N/A (G01Q)

- U G01Q 10/00 Scanning or positioning arrangements, i.e. arrangements for actively controlling the movement or position of the probe**
- U G01Q 10/04
G01Q 10/045
- Fine scanning or positioning
 - · {Self-actuating probes, i.e. wherein the actuating means for driving are part of the probe itself, e.g. piezoelectric means on a cantilever probe}
- U G01Q 10/06
G01Q 10/065
- · Circuits or algorithms therefor
 - · · {Feedback mechanisms, i.e. wherein the signal for driving the probe is modified by a signal coming from the probe itself}
- U G01Q 30/00 Auxiliary means serving to assist or improve the scanning probe techniques or apparatus, e.g. display or data processing devices**
- U G01Q 30/02
G01Q 30/025
- Non-SPM analysing devices, e.g. SEM [Scanning Electron Microscope], spectrometer or optical microscope
 - · {Optical microscopes coupled with SPM}
- U G01Q 60/00 Particular type of SPM [Scanning Probe Microscopy] or microscopes; Essential components thereof**
- U G01Q 60/24
U G01Q 60/36
G01Q 60/363
G01Q 60/366
- AFM [Atomic Force Microscopy] or apparatus therefor, e.g. AFM probes
 - · DC mode
 - · · {Contact-mode AFM}
 - · · {Nanoindenters, i.e. wherein the indenting force is measured}

Project: N/A (G01R)**G01R**

MEASURING ELECTRIC VARIABLES; MEASURING MAGNETIC VARIABLES (-measuring physical variables of any kind by conversion into electric variables, see Note (4) following the title of class [G01](#); measuring diffusion of ions in an electric field, e.g. electrophoresis, electro-osmosis [G01N](#); investigating non-electric or non-magnetic properties of materials by using electric or magnetic methods [G01N](#); indicating correct tuning of resonant circuits [H03J 3/12](#) ; monitoring electronic pulse counters [H03K 21/40](#) ; monitoring operation of communication systems [H04](#)-)

NOTES

This subclass covers:

- measuring all kinds of electric or magnetic variables directly or by derivation from other electric or magnetic variables;
- measuring all kinds of electric or magnetic properties of materials;
- testing electric or magnetic devices, apparatus or networks, (e.g. discharge tubes, amplifiers) or measuring their characteristics;
- indicating presence or sign of current or voltage;
- NMR, EPR or other spin-effect apparatus, not specially adapted for a particular application;
- equipment for generating signals to be used for carrying out such tests and measurements.

In this subclass, the following terms or expressions are used with the meanings indicated :

- "measuring" includes investigating;
- "instruments" or "measuring instruments" means electro-mechanical measuring mechanisms;
- "arrangements for measuring" means apparatus, circuits, or methods for measuring;

Attention is drawn to the Notes following the title of class [G01](#).

In this subclass, group [G01R 17/00](#) takes precedence over groups [G01R 19/00](#) to [G01R 31/00](#) .

G01R 1/00	Details of instruments or arrangements of the types included in groups G01R 5/00 to G01R 13/00 and G01R 31/00 (constructional details particular to{electromechanical} arrangements for measuring the electric consumption G01R 11/02-)
G01R 1/02	• General constructional details (-details of a kind applicable to measuring arrangements not specially adapted for a specific variable G01D 7/00 -)
G01R 1/025	• • {concerning dedicated user interfaces, e.g. GUI, or dedicated keyboards (- G01R 31/31912 takes precedence-)}
G01R 1/04	• • Housings; Supporting members; Arrangements of terminals ("burn-in" aspects G01R 31/286 ; terminals H01R ; terminal strips or boards H02B ; housings for electrical apparatus H05K -)
G01R 1/0408	• • • {Test fixtures or contact fields; Connectors or connecting adaptors; Test clips; Test sockets (- G01R 1/067 takes precedence; mass production testing systems G01R 31/01 ; testing of connections G01R 31/04 ; for testing printed circuit boards G01R 31/2808 -)}
G01R 1/0416	• • • • {Connectors, terminals (- G01R 1/0425 and G01R 1/0433 take precedence; with measurement function for battery poles G01R 31/3696 ; in general H01R -)}
U G01R 1/0433	• • • • {Sockets for IC`s or transistors}
G01R 1/0483	• • • • • {Sockets for un-leaded IC`s having matrix type contact fields, e.g. BGA or PGA devices; Sockets for unpackaged, naked chips (-for IC`s with connecting points around the edges only G01R 1/0433 -)}
G01R 1/06	• • Measuring leads; Measuring probes (- G01R 19/145 , G01R 19/165 take precedence; end pieces for leads H01R 11/00 -)
G01R 1/067	• • • Measuring probes(-plugs, sockets or clips G01R 1/0408 ; testing of connections G01R 31/04 ; contacting IC`s for test purposes when probe design is not the essential feature G01R 31/2886 ; using radiation beam as probe G01R 31/302 ; end pieces for wires terminating in a probe H01R 11/18 -)}
G01R 1/06705	• • • • {Apparatus for holding or moving single probes (-for moving multiple probe heads or ICs under test G01R 31/2886 -)}
U G01R 1/06711	• • • • {Probe needles; Cantilever beams; "Bump" contacts; Replaceable probe pins}
G01R 1/06733	• • • • • {Geometry aspects (- G01R 1/06727 takes precedence-)}
G01R 1/06788	• • • • {Hand-held or hand-manipulated probes, e.g. for oscilloscopes or for portable test instruments (-end pieces terminating in a probe H01R 11/18 -)}
G01R 1/07	• • • • Non-contact-making probes((-wireless interface with the DUT G01R 31/3025 -)}
G01R 1/073	• • • • Multiple probes((- G01R 1/06783 , G01R 1/06794 , G01R 1/071 , G01R 1/072 take precedence-)}
U G01R 1/07307	• • • • • {with individual probe elements, e.g. needles, cantilever beams or bump contacts, fixed in relation to each other, e.g. bed of nails fixture or probe card}
G01R 1/07314	• • • • • • {the body of the probe being perpendicular to test object, e.g. bed of nails or probe with bump contacts on a rigid support (-on an elastic support, e.g. a film, G01R 1/0735 -)}
U G01R 1/07364	• • • • • • {with provisions for altering position, number or connection of probe tips; Adapting to differences in pitch}
G01R 1/07378	• • • • • • • {using an intermediate adapter, e.g. space transformers (- G01R 1/07371 takes precedence-)}
G01R 1/10	• • Arrangements of bearings (-bearings in general F16C -)

- G01R 1/16
 - Magnets (in general [H01F](#)-)
- G01R 1/18
 - Screening arrangements against electric or magnetic fields, e.g. against earth's field (measuring shielding efficiency [H05K 9/0069](#)-)}
- G01R 1/20
 - Modifications of basic electric elements for use in electric measuring instruments; Structural combinations of such elements with such instruments (instrument transformers per se [H01F 38/20](#)-)
- G01R 1/203
 - {Resistors used for electric measuring e.g. decade resistors standards, resistors for comparators, series resistors, shunts (resistors in general [H01C](#) ; microwave or radiowave terminations [H01P 1/26](#) ; coupling devices [H01R](#)-)}
- G01R 1/206
 - {Switches for connection of measuring instruments or electric motors to measuring loads (switches in general [H01H](#))}
- G01R 1/22
 - Tong testers acting as secondary windings of current transformers (voltage or current isolation using transformers [G01R 15/18](#)-)
- G01R 1/36
 - Overload protection arrangements or circuits for electric measuring instruments (in general [H02H](#)-)
- G01R 1/38
 - Arrangements for altering the indicating characteristic, e.g. by modifying the air gap (circuits [G01R 15/005](#)-)}
- G01R 1/44
 - Modifications of instruments for temperature compensation (When measuring current or voltage [G01R 19/32](#)-)}
- G01R 3/00** **Apparatus or processes specially adapted for the manufacture {or maintenance} of measuring instruments, {e.g. of probe tips}**
- G01R 5/00** **Instruments for converting a single current or a single voltage into a mechanical displacement (vibration galvanometers [G01R 9/02](#)-)**
- G01R 5/22
 - Thermoelectric instruments (measuring effective values of currents or voltages using thermoconverters [G01R 19/03](#)-)
- G01R 5/28
 - Electrostatic instruments (combined with radiation detector [G01T](#); { electrometers without passively moving electrodes [G01R 15/165](#); measuring electrostatic fields [G01R 29/12](#) ; measuring charge [G01R 29/24](#) })
- G01R 7/00** **Instruments capable of converting two or more currents or voltages into a single mechanical displacement (-[G01R 9/00](#) takes precedence-)**
- G01R 7/04
 - for forming a quotient (for measuring resistance [G01R 27/08](#)-)
- G01R 11/00** **Electromechanical arrangements for measuring time integral of electric power {i.e. electric energy} or current, e.g. of consumption (other arrangements for measuring time integral of electric power or current [G01R 22/00](#) ; Boards, panels, desks for energy meters, [H02B 1/03](#) } ; monitoring electric consumption of electrically-propelled vehicles [B60L 3/00](#)-)**
- NOTE
For the definition of "arrangement" see Note (2) under [G01R](#)
- G01R 11/02
 - Constructional details (applicable to electric measuring instruments in general [G01R 1/00](#)-)
- G01R 11/12
 - Arrangements of bearings (bearings in general [F16C](#)-)
- G01R 11/24
 - Arrangements for avoiding or indicating fraudulent use (measures against unauthorised operation of bolts, nuts or pins [F16B 41/005](#) ; security seals [G09F 3/03](#) ; preventing of tampering with detection circuits in signaling or alarm circuits [G08B 29/046](#)-)}

- G01R 11/25
- Arrangements for indicating or signalling faults (-seals [G09F 3/03](#) ; preventing tampering with detection circuits in signalling or alarm circuits [G08B 29/046](#)-)
- NOTE
Groups [G01R 11/48](#) to [G01R 11/66](#) take precedence over groups [G01R 11/30](#) to [G01R 11/46](#) .
- G01R 11/36
- Induction meters, e.g. Ferraris meters (-~~Ferraris instruments G01R 5/20 Ferraris instruments G01R 5/20~~)
- G01R 11/56
- Special tariff meters (-tariff metering in general [G01D 4/00](#)-)
- G01R 11/57
- Multi-rate meters (-[G01R 11/63](#) takes precedence-)
- G01R 13/00**
- Arrangements for displaying electric variables or waveforms (-display by mechanical displacement only [G01R 5/00](#) , [G01R 7/00](#) , [G01R 9/00](#) ; recording frequency spectrum [G01R 23/18](#)-)**
- G01R 13/02
- for displaying measured electric variables in digital form ({ using LCD`s or LED`s [G01R 13/40](#) } ; counters [G06M](#) ; analogue/digital conversion in general [H03M 1/00](#)-)
- U G01R 13/04
- for producing permanent records
- G01R 13/12
- Chemical recording, e.g. clydonographs (-[G01R 13/14](#) takes precedence-)
- G01R 13/20
- Cathode-ray oscilloscopes; {Oscilloscopes using other screens than CRT`s, e.g. LCD`s; (-control arrangements or circuits for cathode-ray tube indicators [G09G 1/00](#) ; cathode ray tubes [H01J 31/00](#)-)}
- G01R 13/202
- {Non-electric appliances, e.g. scales, masks (-luminescent screens for CRT provided with permanent marks or references [H01J 29/34](#) ; optical or photographic arrangements combined with CRT vessels [H01J 29/89](#)-)}
- G01R 13/204
- {Using means for generating permanent registrations, e.g. photographs (-optical or photographic arrangements combined with CRT vessel [H01J 29/89](#)-)}
- G01R 13/206
- {Arrangements for obtaining a 3- dimensional representation (-stereoscopic T.V. [H04N 13/00](#)-)}
- G01R 13/22
- Circuits therefor (-circuits for generating pulses, e.g. saw-tooth waveforms [H03K 3/00](#)-)
- G01R 13/26
- Circuits for controlling the intensity of the electron beam {or the colour of the display}(-brilliance control [H01J 29/98](#)-)
- G01R 13/28
- Circuits for simultaneous or sequential presentation of more than one variable (-electronic switches [H03K 17/00](#)-)
- G01R 13/34
- Circuits for representing a single waveform by sampling, e.g. for very high frequencies (-sample and hold arrangements [G11C 27/02](#)-)
- G01R 13/342
- {for displaying periodic H.F. signals (-[G01R 13/345](#) takes precedence-)}
- G01R 13/345
- {for displaying sampled signals by using digital processors by intermediate A.D. and D.A. convertors (*control circuits for CRT indicators*);(~~control circuits for CRT indicators~~)}
- G01R 13/36
- using length of glow discharge, e.g. glowlight oscilloscopes (-discharge tubes [H01J](#)-)
- G01R 13/38
- using the steady or oscillatory displacement of a light beam by an electromechanical measuring system (-such measuring systems per se [G01R 5/00](#) , [G01R 7/00](#) , [G01R 9/00](#)-)
- G01R 13/40
- using modulation of a light beam otherwise than by mechanical displacement, e.g. by Kerr effect(-visual indication of correct tuning [H03J 3/14](#)-)}
- U G01R 13/401
- {for continuous analogue, or simulated analogue, display}
- G01R 13/402
- {using active, i.e. light-emitting display devices, e.g. electroluminescent display (-[G01R 13/36](#) and [G01R 13/42](#) take precedence-)}

- G01R 13/404
 - • {for discontinuous display, i.e. display of discrete values (-analogue/digital conversion [H03M 1/00](#)-)}
- U G01R 13/405
 - • • {using a plurality of active, i.e. light emitting, e.g. electro-luminescent elements, i.e. bar graphs}
- G01R 13/406
 - • • • {representing measured value by a dot or a single line (-[G01R 13/408](#) takes precedence-)}
- G01R 13/407
 - • • {using a plurality of passive display elements, e.g. liquid crystal or Kerr-effect display elements (-[G01R 13/408](#) takes precedence-)}
- G01R 15/00**

Details of measuring arrangements of the types provided for in groups [G01R 17/00](#) to [G01R 29/00](#) and [G01R 33/00](#) to [G01R 35/00](#) (-details of instruments [G01R 1/00](#) ; overload protection arrangements [G01R 1/36](#)-)
- U G01R 15/04
 - Voltage dividers
- G01R 15/06
 - • having reactive components, e.g. capacitive transformer{(-when the HV capacitor/sensor as such is the essential [G01R 15/16](#)-)}
- G01R 15/14
 - Adaptations providing voltage or current isolation, e.g. for high-voltage or high-current networks (-instrument transformers [H01F 38/20](#) ; voltage dividers [G01R 15/04](#) ; { means for converting the output of a sensing member to another variable [G01D 5/00](#) ; visible signalling arrangements or devices [G08B 5/00](#) ; transmission systems for measured values [G08C 17/00](#) , [G08C 23/00](#) })
- G01R 15/142
 - • {-Arrangements for simultaneous measurements of several parameters employing techniques covered by groups [G01R 15/14](#) to [G01R 15/26](#)-}
- G01R 15/144
 - • {-Measuring arrangements for voltage not covered by other subgroups of [G01R 15/14](#)-}
- G01R 15/146
 - • {-Measuring arrangements for current not covered by other subgroups of [G01R 15/14](#), e.g. using current dividers, shunts, or measuring a voltage drop(-if no voltage isolation is involved [G01R 1/203](#) or [G01R 19/0092](#)-)}
- G01R 15/148
 - • • {involving the measuring of a magnetic field or electric field (-[G01R 15/18](#) , [G01R 15/20](#) , [G01R 15/24](#) , [G01R 15/26](#) take precedence-)}

WARNING
Not complete pending reorganization; see also [G01R 15/20](#)
- G01R 15/16
 - • using capacitive devices{(-circuits constituting a voltage divider [G01R 15/06](#)-)}
- G01R 15/165
 - • • {measuring electrostatic potential, e.g. with electrostatic voltmeters or electrometers, when the design of the sensor is essential (-electrometers with passively moving electrodes [G01R 5/28](#) ; measuring electrostatic fields [G01R 29/12](#) ; measuring charge [G01R 29/24](#) ; measuring in circuits with high internal resistance [G01R 19/0023](#)-)}
- U G01R 15/18
 - • using inductive devices, e.g. transformers
- U G01R 15/183
 - • • {using transformers with a magnetic core}
- G01R 15/185
 - • • • {with compensation or feedback windings or interacting coils, e.g. 0-flux sensors (-using galvano-magnetic field sensors [G01R 15/20](#) ; conversion of DC into AC using transducers [G01R 19/20](#)-)}
- G01R 15/186
 - • • {using current transformers with a core consisting of two or more parts, e.g. clamp-on type (-[G01R 15/142](#) to [G01R 15/16](#) take precedence; tong testers [G01R 1/22](#)-)}
- G01R 15/188
 - • • {comprising rotatable parts, e.g. moving coils (-galvanometers [G01R 5/02](#) , [G01R 5/14](#)-)}

- G01R 15/20
- using galvano-magnetic devices, e.g. Hall-effect devices, {i.e. measuring a magnetic field via the interaction between a current and a magnetic field, e.g. magneto resistive or Hall effect devices (~~electromechanical such devices, [G01R 5/00](#) , [G01R 7/00](#) , [G01R 9/00](#) ; measuring magnetic fields [G01R 33/02](#)-)}~~
- G01R 15/202
- • {using Hall-effect devices (~~Hall elements in arrangements for measuring electrical power [G01R 21/08](#)~~ *Hall elements in arrangements for measuring electrical power [G01R 21/08](#)*)}
- G01R 15/22
- using light-emitting devices, e.g. LED, optocouplers ({~~[G01R 31/31901](#) takes precedence~~-)}
- U G01R 15/24
- using light-modulating devices
- G01R 15/241
- • {using electro-optical modulators, e.g. electro-absorption ({~~probes containing electro-optic elements [G01R 1/071](#)~~-)}
- U G01R 17/00**
- Measuring arrangements involving comparison with a reference value, e.g. bridge**
- G01R 17/10
- ac or dc measuring bridges (~~automatic comparison or re-balancing arrangements [G01R 17/02](#)~~-)
- G01R 17/14
- with indication of measured value by calibrated null indicator, e.g. percent bridge, tolerance bridge ({~~[G01R 17/12](#) , [G01R 17/16](#) take precedence~~-)}
- G01R 17/20
- ac or dc potentiometric measuring arrangements (~~automatic comparison or re-balancing arrangements [G01R 17/02](#)~~-)
- G01R 19/00**
- Arrangements for measuring currents or voltages or for indicating presence or sign thereof (~~[G01R 5/00](#) takes precedence; { voltage measurements using secondary electron emission when testing electronic circuits [G01R 31/305](#) } ; for measuring bio-electric currents or voltages [A61B 5/04](#)~~-)**
- NOTE
- Within groups [G01R 19/02](#) to [G01R 19/32](#) , group [G01R 19/28](#) takes precedence. Groups [G01R 19/18](#) to [G01R 19/257](#) take precedence over groups [G01R 19/02](#) to [G01R 19/17](#) and [G01R 19/30](#) .
- G01R 19/0007
- {Frequency selective voltage or current level measuring (~~measuring frequency [G01R 23/00](#) ; testing attenuation in line transmission systems [H04B 3/48](#) ; monitoring testing in transmission systems [H04B 17/00](#)~~-)}
- G01R 19/0023
- {Measuring currents or voltages from sources with high internal resistance by means of measuring circuits with high input impedance, e.g. OP-amplifiers (~~Electrostatic instruments [G01R 5/28](#) ; *Electrostatic instruments [G01R 5/28](#) ; measuring electrostatic potential [G01R 15/165](#) ; measuring electrostatic fields [G01R 29/12](#) ; amplifiers per se [H03F](#)*~~-)}
- G01R 19/0038
- {Circuits for comparing several input signals and for indicating the result of this comparison e.g. equal, different, greater, smaller (*comparing pulses or pulse trains according to amplitude*) (~~comparing pulses or pulse trains according to amplitude~~)}
- G01R 19/0046
- {characterised by a specific application or detail not covered by any other subgroup of [G01R 19/00](#) (contains no documents)}
- G01R 19/0053
- {Noise discrimination; Analog sampling; Measuring transients (~~measuring characteristics of individual pulses [G01R 29/02](#) ; digital sampling [G01R 19/2509](#) ; measuring noise figure [G01R 29/26](#)~~-)}
- G01R 19/0084
- {measuring voltage only ({~~all subgroups of [G01R 19/00](#) take precedence~~-)}
- G01R 19/0092
- {measuring current only ({~~all subgroups of [G01R 19/00](#) take precedence~~-)}
- U G01R 19/02
- Measuring effective values, i.e. root-mean-square values

- G01R 19/03
 - using thermoconverters{ using ac-dc conversion by means of thermocouples or other heat sensitive elements [G01R 19/225](#)-}
- G01R 19/04
 - Measuring peak values {or amplitude or envelope}of ac or of pulses
- G01R 19/12
 - Measuring rate of change{{-emergency protective circuit arrangements responsive to the rate of change of electrical quantities [H02H 3/44](#)-}}
- G01R 19/145
 - Indicating the presence of current or voltage{ measuring probes in general [G01R 1/06](#) ; indicating continuity or short circuits in electric apparatus or lines or components [G01R 31/024](#)-}
- G01R 19/15
 - • Indicating the presence of current{ see provisionally also [G01R 19/145](#)-}
- G01R 19/155
 - • Indicating the presence of voltage{ see provisionally also [G01R 19/145](#)-}
- G01R 19/165
 - Indicating that current or voltage is either above or below a predetermined value or within or outside a predetermined range of values (-circuits with regenerative action, e.g. Schmitt trigger [H03K 3/00](#) ; threshold switches [H03K 17/00](#)-)
- G01R 19/16504
 - • {characterised by the components employed (contains no documents)}
- G01R 19/16509
 - • • {using electromagnetic relays, e.g. reed relay (-magnetically driven reeds [G01R 9/06](#)-)}
- G01R 19/16528
 - • {using digital techniques or performing arithmetic operations (-using digital techniques to measure a voltage or a current, see [G01R 19/25](#)-)}
- G01R 19/16533
 - • {characterised by the application (contains no documents)}
- G01R 19/16538
 - • • {in AC or DC supplies (-[G01R 19/16519](#) and [G01R 19/16528](#) take precedence-)}
- G01R 19/16542
 - • • • {for batteries (-charge condition monitoring in [G01R 31/36](#)-)}
- G01R 19/16547
 - • • • {voltage or current in AC supplies (-switching for protection [H02H](#) ; circuits for emergency power supply [H02J 9/00](#)-)}
- G01R 19/16557
 - • • {Logic probes, i.e. circuits indicating logic state (*high, low, 0*) (*high, low, \ominus*); (-modifications of electronic switches or gates for indicating state of switch [H03K 17/18](#)-)}
- G01R 19/16561
 - • • {in hand-held circuit testers (-see also [G01R 19/155](#)-)}
- G01R 19/16566
 - • {-Circuits and arrangements for comparing voltage or current with one or several thresholds and for indicating the result not covered by subgroups [G01R 19/16504](#) , [G01R 19/16528](#) , [G01R 19/16533](#)- (contains no documents)}
- G01R 19/16571
 - • • {comparing AC or DC current with one threshold, e.g. load current, over-current, surge current or fault current} (-[G01R 19/16514](#) , [G01R 19/16519](#) , [G01R 19/16528](#) , [G01R 19/16533](#) , [G01R 19/1659](#) take precedence; measuring currents by using elements sensitive to the magnetic field generated [G01R 15/14](#) ; measuring earth resistance [G01R 27/18](#) ; testing for leakage or short circuits in electrical apparatus [G01R 31/025](#)-)
- G01R 19/16576
 - • • {comparing DC or AC voltage with one threshold (-[G01R 19/16514](#) , [G01R 19/16519](#) , [G01R 19/16528](#) , [G01R 19/16533](#) and [G01R 19/1659](#) take precedence-)}
- G01R 19/16585
 - • • {for individual pulses, ripple or noise and other applications where timing or duration is of importance (-[G01R 19/16519](#) , [G01R 19/16538](#) and [G01R 19/16595](#) take precedence; for pulse duration and rise time, see [G01R 29/02](#) and subgroups-)}
- G01R 19/1659
 - • • {to indicate that the value is within or outside a predetermined range of values (window)-([G01R 19/16514](#) , [G01R 19/16519](#) , [G01R 19/16528](#) and [G01R 19/16533](#) take precedence-)}
- G01R 19/16595
 - • • • {with multi level indication (-[G01R 19/16519](#) and [G01R 19/16533](#) take precedence-)}

- G01R 19/18
 - using conversion of dc into ac, e.g. with choppers{ DC amplifiers with modulators at input and demodulator at output [H03F 3/38](#)-}
- G01R 19/20
 - • using transducers {i.e. a magnetic core transducer the saturation of which is cyclically reversed by an AC source on the secondary side(-other DC current transducers, e.g. using the 0-flux principle, [G01R 15/185](#) ; magnetic amplifiers [H03F 9/00](#)-)}
- G01R 19/25
 - using digital measurement techniques (-arrangements for displaying measured electric variables in digital form [G01R 13/02](#)-){ Analogue/digital conversion [H03M](#)-}
- G01R 19/2503
 - {for measuring voltage only, e.g. digital volt meters (DVM`s)(-[G01R 19/2506](#) to [G01R 19/257](#) take precedence-)}
- G01R 19/2506
 - {Arrangements for conditioning or analysing measured signals, e.g. for indicating peak values (-[G01R 19/003](#) takes precedence-); Details concerning sampling, digitizing or waveform capturing(-displaying waveforms [G01R 13/00](#) ; analog sampling [G01R 19/0053](#)-)}
- G01R 19/30
 - Measuring the maximum or the minimum value of current or voltage reached in a time interval (-[G01R 19/04](#) takes precedence; modifications of instruments to indicate the maximum or the minimum value reached in a time interval [G01R 1/40](#) ; { using digital methods [G01R 19/2506](#) })
- G01R 19/32
 - Compensating for temperature change ({ [G01R 19/02](#) to [G01R 19/30](#) take precedence } ; modifications of instruments for temperature compensation [G01R 1/44](#)-)
- G01R 21/00**

Arrangements for measuring electric power or power factor (-[G01R 7/12](#) takes precedence-)
- G01R 21/001
 - {Measuring real or reactive component; Measuring apparent energy (-[G01R 21/01](#) , [G01R 21/02](#) , [G01R 21/08](#) , [G01R 21/10](#) and [G01R 21/127](#) take precedence-)}
- G01R 21/007
 - {Adapted for special tariff measuring (-[G01R 21/01](#) , [G01R 21/02](#) , [G01R 21/08](#) , [G01R 21/10](#) , [G01R 21/1278](#) and [G01R 21/1333](#) take precedence-)}
- G01R 21/01
 - in circuits having distributed constants (-[G01R 21/04](#) , [G01R 21/07](#) , [G01R 21/09](#) , [G01R 21/12](#) take precedence-)
- G01R 21/02
 - by thermal methods {e.g. calorimetric}
- G01R 21/06
 - by measuring current and voltage (-[G01R 21/08](#) to [G01R 21/133](#) take precedence-)
- G01R 21/07
 - • in circuits having distributed constants (-[G01R 21/09](#) takes precedence-)
- G01R 21/08
 - by using galvanomagnetic effect devices, e.g. Hall effect devices (-such devices per se [H01L](#) ; { for current measurements only, see [G01R 15/20](#) })
- G01R 21/10
 - by using square-law characteristics of circuit elements, e.g. diodes, to measure power absorbed by loads of known impedance (-[G01R 21/02](#) takes precedence-)
- G01R 21/127
 - by using pulse modulation (-[G01R 21/133](#) takes precedence; { digital multiplication via delta sigma modulation [G06F 7/60](#) })
- G01R 22/00**

Arrangements for measuring time integral of electric power or current, e.g. by electricity meters (-electromechanical arrangements therefor [G01R 11/00](#) ; monitoring electric consumption of electrically-propelled vehicles [B60L 3/00](#) ; coin freed devices [G07F 15/00](#))]

NOTE

An arrangement for measuring time integral of electric power is classified in group [G01R 21/00](#) if the essential characteristic is the measuring of electric power.

	G01R 23/00	Arrangements for measuring frequencies; Arrangements for analysing frequency spectra (-frequency discriminators H03D ; { high frequency probes G01R 1/06772 })
	G01R 23/02	• Arrangements for measuring frequency, e.g. pulse repetition rate((-using vibrating reeds G01R 9/04 -))Arrangements for measuring period of current or voltage (-measuring short-time intervals G04F -)
U	G01R 23/06	• • by converting frequency into an amplitude of current or voltage
	G01R 23/09	• • • using analogue integrators, e.g. capacitors establishing a mean value by balance of input signals and defined discharge signals or leakage (-radiation-measuring instruments in which pulses generated by a radiation detector are integrated G01T 1/15 -)
	G01R 23/14	• • by heterodyning; by beat-frequency comparison (-generation of oscillations by beating unmodulated signals of different frequencies H03B 21/00 -)
	G01R 23/15	• • Indicating that frequency of pulses is either above or below a predetermined value or within or outside a predetermined range of values, by making use of non-linear or digital elements{(indicating that pulse width is above or below a certain limit)}(indicating that pulse width is above or below a certain limit)
	G01R 23/155	• • • {giving an indication of the number of times this occurs, i.e. multi-channel analysers (for pulse characteristics)}(for pulse characteristics)
	G01R 23/16	• Spectrum analysis; Fourier analysis((-computing with Fourier series or Walsh functions G06F 17/14 , G06G 7/19 ; spectral data processing-))
	G01R 23/17	• • with optical {or acoustical}auxiliary devices
	G01R 23/173	• • Wobblating devices similar to swept panoramic receivers (-panoramic receivers per se H03J 7/32 -)
	G01R 23/20	• • Measurement of non-linear distortion,{e.g. harmonics or noise, (- G01R 31/31708 takes precedence; noise figure G01R 29/26 -)}
	G01R 25/00	Arrangements for measuring phase angle between a voltage and a current, or between voltages or currents (-measuring power factor G01R 21/00 ; measuring position of individual pulses in a pulse train G01R 29/02 ; phase discriminators H03D)
	G01R 25/08	• by counting of standard pulses (-measuring time intervals G04F -)
	G01R 27/00	Arrangements for measuring resistance, reactance, impedance, or electric characteristics derived therefrom((-measuring super-conductive properties G01R 33/1238-))
	G01R 27/02	• Measuring real or complex resistance, reactance, impedance, or other two-pole characteristics derived therefrom, e.g. time constant (-by measuring phase angle only G01R 25/00 -)
		<u>NOTE</u> Groups G01R 27/02 to G01R 27/22 cover variables that directly or indirectly can be measured over two poles of a component or a Thevenin two-pole equivalent. Subgroup G01R 27/26 also covers other techniques, e.g. using electro magnetic waves or network analyzers
	G01R 27/14	• • Measuring resistance by measuring current or voltage obtained from a reference source (- G01R 27/16 , G01R 27/20 , G01R 27/22 take precedence-)
	G01R 27/22	• • Measuring resistance of fluids (-measuring vessels, electrodes therefor G01N 27/07 -)
U	G01R 27/26	• • Measuring inductance or capacitance; Measuring quality factor, e.g. by using the resonance method; Measuring loss factor; Measuring dielectric constants; {Measuring impedance or related variables}

- G01R 27/2605 . . . {Measuring capacitance (-capacitive sensors [G01D 5/24](#)-)}
- G01R 27/2617 . . . {Measuring dielectric properties, e.g. constants (-testing dielectric strength [G01R 31/12](#) ; detecting insulation faults [G01R 31/025](#) ; [G01R 27/2688](#) takes precedence-)}
- G01R 27/2623 {Measuring-systems or electronic circuits (-[G01R 27/2635](#) , [G01R 27/2682](#) take precedence-)}
- G01R 27/2629 {Bridge circuits (-bridges for measuring loss angle [G01R 27/2694](#)-)}
- U G01R 27/2635 {Sample holders, electrodes or excitation arrangements, e.g. sensors or measuring cells}
- G01R 27/2658 {Cavities, resonators, free space arrangements, reflexion or interference arrangements (-[G01R 27/2647](#) takes precedence; optical methods [G01R 27/2682](#)-)}
- G01R 27/2688 . . . {Measuring quality factor or dielectric loss, e.g. loss angle, or power factor (-power factor related to power measurements [G01R 21/006](#) ; testing capacitors [G01R 31/016](#)-)}
- G01R 27/28 . . . {Measuring attenuation, gain, phase shift or derived characteristics of electric four pole networks, i.e. two-port networks {using network analysers}Measuring transient response (-in line transmission systems [H04B 3/46](#)-)}
- G01R 29/00** **Arrangements for measuring or indicating electric quantities not covered by groups [G01R 19/00](#) to [G01R 27/00](#)**
- G01R 29/02 . . . {Measuring characteristics of individual pulses, e.g. deviation from pulse flatness, rise time, duration (-of amplitude [G01R 19/00](#) ; of repetition rate [G01R 23/00](#) ; of phase difference of two cyclic pulse trains [G01R 25/00](#) ; monitoring pattern of pulse trains [H03K 5/19](#)-)}
- U G01R 29/027 . . . {Indicating that a pulse characteristic is either above or below a predetermined value or within or beyond a predetermined range of values}
- G01R 29/0273 . . . {the pulse characteristic being duration i.e. width (*indicating that frequency of pulses is above or below a certain limit*)} (*indicating that frequency of pulses is above or below a certain limit*)}
- G01R 29/0276 . . . {the pulse characteristic being rise time (measuring rate of change [G01R 19/12](#))}
- G01R 29/033 . . . {giving an indication of the number of times this occurs, {i.e. multi-channel analysers (*the characteristic being frequency*)} (*the characteristic being frequency*)}

Project: RP0113 (G01R)

- G01R 29/08 . . . {Measuring electromagnetic field characteristics { measuring electrostatic fields [G01R 29/12](#) ; for determining a voltage [G01R 15/14](#) ; measuring magnetic fields [G01R 33/00](#) ; *Receiver* *Measuring or estimating received* signal strength *indication (RSSI) H04B 17/0042 H04B 17/318*}

Project: N/A (G01R)

- G01R 29/0807 . . . {characterised by the application (not used, see subgroups)}
- G01R 29/0814 {Field measurements related to measuring influence on or from apparatus, components or humans (-EMC, EMI and similar testing in general [G01R 31/001](#)-), e.g. in ESD, EMI, EMC, EMP testing, measuring radiation leakage; detecting presence of micro- or radiowave emitters; dosimetry; testing shielding; measurements related to lightning}
- G01R 29/0821 {rooms and test sites therefor, e.g. anechoic chambers, open field sites or TEM cells (-for testing antennas [G01R 29/105](#)-)}
- G01R 29/085 {for detecting presence or location of electric lines or cables (-fault detection [G01R 31/02](#) ; fault location [G01R 31/08](#)-)}

- G01R 29/0857
 - • • {Dosimetry, i.e. measuring the time integral of radiation intensity; Level warning devices for personal safety use (-Nuclear radiation dosimetry [G01T-](#))}
- G01R 29/0864
 - {characterised by constructional or functional features (not used, see subgroups)}
- G01R 29/0871
 - • • {Complete apparatus or systems; circuits, e.g. receivers or amplifiers (-[G01R 29/0878](#) , [G01R 29/0892](#) take precedence; dosimeters, warning devices [G01R 29/0857-](#))}
- G01R 29/0878
 - • • {Sensors; antennas; probes; detectors (-Wave guide measuring sections [G01R 1/24-](#))}
- U G01R 29/10
 - • Radiation diagrams of aerials;{Antenna testing in general}
- G01R 29/105
 - • • {using anechoic chambers; Chambers or open field sites used therefor (-test sites used for measuring on other objects than aerials [G01R 29/0828](#) ; wave absorbing devices [H01Q 17/00-](#))}
- G01R 29/12
 - Measuring electrostatic fields {or voltage-potential}
- G01R 29/20
 - Measuring number of turns; Measuring transformation ratio or coupling factor of windings ({testing or} calibrating instrument transformers [G01R 35/02-](#))
- G01R 29/24
 - Arrangements for measuring quantities of charge (-electrostatic instruments [G01R 5/28](#) ; indicating presence of current [G01R 19/15](#) ; electrolytic meters, calorimetric meters, for measuring time integral of electric current [G01R 22/02](#) , [G01R 22/04-](#))
- G01R 29/26
 - Measuring noise figure; Measuring signal-to-noise ratio {Measuring jitter, i.e. phase noise,(-distortion [G01R 23/20](#) ; noise measuring in individual transistors [G01R 31/2616](#) , [G01R 31/2626-](#))}
- G01R 31/00**

Arrangements for testing electric properties; Arrangements for locating electric faults; Arrangements for electrical testing characterised by what is being tested not provided for elsewhere (-measuring leads, measuring probes [G01R 1/06](#) ; { measuring superconductive properties [G01R 33/1238](#) ; data processing equipment for testing or function monitoring [G06F15/20B](#) } ; indicating electrical condition of switchgear or protective devices [H01H 71/04](#) , [H01H 73/12](#) , [H02B 11/10](#) , [H02H 3/04](#) ; testing or measuring semiconductors or solid state devices during manufacture [H01L 22/00](#) ; testing substation equipment, e.g. mobile phones [H04M 1/24](#) ; testing or monitoring of control systems [G05B 23/02](#) ; { testing or monitoring transmitters or receivers [H04B 17/00](#) })
- G01R 31/001
 - {Measuring interference from external sources to, or emission from, the device under test, e.g. EMC, EMI, EMP or ESD testing (-measuring electromagnetic fields [G01R 29/08](#) ; circuits for generating HV pulses in dielectric strength testing [G01R 31/14-](#))}
- G01R 31/003
 - {Environmental or reliability tests (-of individual semiconductors [G01R 31/2642](#) ; of PCB's [G01R 31/2817](#) ; of IC's [G01R 31/2855](#) ; of other circuits [G01R 31/2849-](#))}
- U G01R 31/005
 - {Testing of electric installations on transport means}
- G01R 31/006
 - • {on road vehicles, e.g. automobiles or trucks (-testing of ignition installations peculiar to internal combustion engines [F02P 17/00-](#))}
- G01R 31/01
 - Subjecting similar articles in turn to test, e.g. "go/no-go" tests in mass production; Testing objects at points as they pass through a testing station (-[G01R 31/18](#) takes precedence; { for testing batteries [G01R 31/36](#) })
- G01R 31/013
 - • {Testing passive components (-relays [G01R 31/3278](#) ; electrical windings, e.g. inductors [G01R 31/06-](#))}
- G01R 31/016
 - • • {Testing of capacitors (-measuring capacitance [G01R 27/2605-](#))}

- G01R 31/02
 - Testing of electric apparatus, lines or components, for short-circuits, discontinuities, leakage {of current}, or incorrect line connection{{(-[G01R 31/001](#) , [G01R 31/005](#) , [G01R 31/01](#) , [G01R 31/08](#) , [G01R 31/12](#) , [G01R 31/24](#) , [G01R 31/26](#) , [G01R 31/28](#) , [G01R 31/327](#) , [G01R 31/34](#) , [G01R 31/36](#) , [G01R 31/40](#) , [G01R 31/44](#) take precedence; measuring electromagnetic field leakage [G01R 29/0821](#) ; testing of sparking plugs [H01T 13/58](#))}}
- G01R 31/021
 - • {Testing of cables or conductors (-testing of electric windings [G01R 31/06](#) ; testing of insulation of cables [G01R 31/1272](#) ; testing LANs [H04L 12/2697](#) ; testing line transmission systems [H04B 3/46](#))}
- G01R 31/024
 - • {Arrangements for indicating continuity or short-circuits in electric apparatus or lines, leakage or ground faults (-in electric windings [G01R 31/06](#) ; measuring resistance to earth [G01R 27/18](#))}
- G01R 31/025
 - • • {Testing short circuits, leakage or ground faults (-detecting failure within the drive train of electrically-propelled vehicles [B60L 3/0023](#))}
- G01R 31/026
 - • • {Testing continuity (-[G01R 31/44](#) takes precedence)}
- G01R 31/027
 - • {Testing of transformers (-testing of electric windings [G01R 31/06](#))}
- G01R 31/04
 - • Testing connections, e.g. of plugs, of non-disconnectable joints{{(-[G01R 31/31717](#) takes precedence; testing of connections in integrated circuits, chip-to-lead connections, bond wires [G01R 31/2853](#))}}
- G01R 31/041
 - • • {Testing of correct wire connections in electrical apparatus and circuits (-details concerning insertion or connection of batteries [H02J 7/0045](#))}
- G01R 31/046
 - • • {of connections between components and printed circuit boards (PCB`s) (-[G01R 31/043](#) takes precedence)}
- G01R 31/06
 - • Testing of electric windings {e.g. of solenoids, inductors}, e.g. for polarity{ [G01R 31/027](#) and [G01R 31/346](#) take precedence }(-measuring number of turns, transformation ratio, or coupling factor [G01R 29/20](#) ; { monitoring or fail-safe circuits for electromagnets [H01F 7/1844](#))}
- G01R 31/07
 - • Testing of fuses (-means for indicating condition of fuse structurally associated with the fuse [H01H 85/30](#))}
- G01R 31/08
 - Locating faults in cables, transmission lines, or networks (emergency protective circuit arrangements [H02H](#)){ installing, maintaining, repairing or dismantling electric cables or lines [H02G 1/00](#) ; testing LAN`s [H04L 12/2697](#) }
- G01R 31/12
 - Testing dielectric strength or breakdown voltage; {Testing or monitoring effectiveness or level of insulation, e.g. of a cable or of an apparatus, for example using partial discharge measurements; Electrostatic testing(-[G01R 31/06](#) , [G01R 31/08](#) and [G01R 31/327](#) take precedence; measuring in plasmas [G01R 19/0061](#) ; Measuring dielectric constants [G01R 27/2617](#) ; ESD, EMC or EMP testing of circuits [G01R 31/002](#))}
- G01R 31/1209
 - • {using acoustic measurements (-acoustic measurements [G01H 3/00](#))}
- G01R 31/1227
 - • {of components, parts or materials (-[G01R 31/1209](#) , [G01R 31/1218](#) , [G01R 31/18](#) take precedence; circuits therefor [G01R 31/14](#) ; testing vessels of electrodes [G01R 31/16](#))}
- G01R 31/1236
 - • • {of surge arresters (-Monitoring overvoltage diverters or arresters [H02H 3/048](#))}
- G01R 31/1254
 - • • {of gas-insulated power appliances or vacuum gaps (-testing switches [G01R 31/327](#) ; detecting electrical or mechanical defects in encased switchgear [H02B 13/065](#))}
- U G01R 31/1263
 - • • {of solid or fluid materials, e.g. insulation films, bulk material; of semiconductors or LV electronic components or parts; of cable, line or wire insulation}
- G01R 31/1272
 - • • • {of cable, line or wire insulation, e.g. using partial discharge measurements (-locating faults in cables [G01R 31/083](#))}

- G01R 31/129
 - • • {of components or parts made of semiconducting materials; of LV components or parts (~~G01R 31/18~~ takes precedence)}
- G01R 31/14
 - • Circuits therefor, {e.g. for generating test voltages, sensing circuits (~~G01R 31/1209~~ to ~~G01R 31/1227~~ take precedence; for testing switches ~~G01R 31/327~~)}
- G01R 31/24
 - Testing of discharge tubes (~~during manufacture H01J 9/42~~)
- U G01R 31/25
 - • Testing of vacuum tubes
- G01R 31/257
 - • • {Testing of beam-tubes, e.g. cathode-ray tubes, image pick-up tubes (~~of channel image intensifier arrays G01R 31/252~~ ; of transit time tubes ~~G01R 31/255~~)}
- U G01R 31/26
 - Testing of individual semiconductor devices (testing or measuring during manufacture or treatment ~~H01L 22/00~~; testing of photovoltaic devices ~~H02S 50/10~~)
- G01R 31/2601
 - • {Apparatus or methods therefor (~~G01R 31/2607~~ , ~~G01R 31/2642~~ take precedence)}
- G01R 31/2607
 - • {Circuits therefor (~~G01R 31/2642~~ takes precedence)}
- U G01R 31/2608
 - • • {for testing bipolar transistors}
- G01R 31/2616
 - • • • {for measuring noise (~~measuring noise factor in general G01R 29/26~~)}
- U G01R 31/2621
 - • • {for testing field effect transistors, i.e. FET's}
- G01R 31/2626
 - • • • {for measuring noise (~~measuring noise factor in general G01R 29/26~~)}
- G01R 31/2637
 - • • {for testing other individual devices (~~G01R 31/2608~~ to ~~G01R 31/2632~~ , ~~G01R 31/27~~ take precedence)}
- G01R 31/2639
 - • • • {for testing field-effect devices, e.g. of MOS-capacitors (~~G01R 31/2621~~ takes precedence)}
- G01R 31/2646
 - • {for measuring noise (~~G01R 31/2616~~ , ~~G01R 31/2626~~ take precedence)}
- G01R 31/2648
 - • {Characterising semiconductor materials (~~testing of materials or semi-finished products G01R 31/2831~~ ; testing during manufacture ~~H01L 22/00~~)}
- G01R 31/265
 - • Contactless testing (~~of circuits, also in wafer-form G01R 31/302~~)
- G01R 31/27
 - • Testing of devices without physical removal from the circuit of which they form part, e.g. compensating for effects surrounding elements (~~testing printed circuit boards G01R 31/2801~~)}
- G01R 31/28
 - Testing of electronic circuits, e.g. by signal tracer ({ EMC, EMP or similar testing of electronic circuits ~~G01R 31/002~~ } ; testing for short-circuits, discontinuities, leakage or incorrect line connection ~~G01R 31/02~~ ; checking computers {or computer components} ~~G06F 11/00~~ ; checking static stores for correct operation ~~G11C 29/00~~ ; { testing receivers or transmitters of transmission systems ~~H04B 17/00~~ })
- G01R 31/2801
 - • {Testing of printed circuits, backplanes, motherboards, hybrid circuits or carriers for multichip packages (MCP) (~~G01R 31/318508~~ takes precedence; contactless testing ~~G01R 31/302~~ ; testing contacts or connections ~~G01R 31/04~~)}
- G01R 31/2803
 - • • {by means of functional tests, e.g. logic-circuit-simulation or algorithms therefor (~~testing electronic digital computers G06F 11/00~~)}
- G01R 31/2806
 - • • {Apparatus therefor, e.g. test stations, drivers, analysers, conveyers (~~G01R 31/2805~~ , ~~G01R 31/281~~ , ~~G01R 31/2818~~ take precedence)}
- G01R 31/2808
 - • • • {Holding, conveying or contacting devices, e.g. test adapters, edge connectors, extender boards (~~probe, multiprobe, probe manipulator or probe fixture G01R 1/067~~)}
- G01R 31/281
 - • • {Specific types of tests or tests for a specific type of fault, e.g. thermal mapping, shorts testing (~~G01R 31/2818~~ takes precedence)}

- G01R 31/2812 . . . {Checking for open circuits or shorts, e.g. solder bridges; Testing conductivity, resistivity or impedance (-of connections [G01R 31/04](#)-)}
- G01R 31/2813 . . . {Checking the presence, location, orientation or value, e.g. resistance, of components or conductors (-orientation of the DUT with respect to the test fixture [G01R 1/06705](#) , [G01R 31/281](#)-)}
- G01R 31/2815 . . . {Functional tests, e.g. boundary scans, using the normal I/O contacts (-contacting devices [G01R 31/2808](#) ; testing digital circuits [G01R 31/317](#) , [G06F 11/00](#)-)}
- G01R 31/2817 . . . {Environmental-, stress-, or burn-in tests (-of IC's [G01R 31/2855](#) ; of individual semiconductors [G01R 31/2642](#) ; of other circuits [G01R 31/2849](#)-)}
- G01R 31/2818 . . . {using test structures on, or modifications of, the card under test, made for the purpose of testing, e.g. additional components or connectors (-[G01R 31/2805](#) takes precedence; printed circuits having e.g. symbols, test patterns or visualisation means [H05K 1/0266](#)-)}
- G01R 31/282 . . . {Testing of electronic circuits specially adapted for particular applications not provided for elsewhere (-[G01R 31/2801](#) and [G01R 31/2851](#) take precedence-)}

NOTE

References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:

- testing of individual LEDs [G01R 31/2635](#)

- testing of lamps [G01R 31/44](#)

- testing of displays and display drivers, e.g. LCDs
[G09G 3/006](#)

- testing of ADCs or DACs [H03M 1/1071](#)

- G01R 31/2822 . . . {of microwave or radiofrequency circuits (-of attenuation, gain, e.g. using network analyzers [G01R 27/28](#)-)}
- G01R 31/2825 . . . {in household appliances or professional audio/video equipment (-testing loudspeakers [H04R 29/00](#) , testing LAN`s [H04L 12/2697](#) ; testing TV systems [H04N 17/00](#)-)}
- G01R 31/2827 . . . {Testing of electronic protection circuits (-testing switches [G01R 31/327](#) ; checking alarm systems [G08B 29/00](#) ; self test of summation current transformers [H02H 3/335](#)-)}
- G01R 31/2831 . . . {Testing of materials or semi-finished products, e.g. semiconductor wafers or substrates (-[G01R 31/318511](#) takes precedence; testing during manufacture [H01L 22/00](#)-)}
- G01R 31/2832 . . . {Specific tests of electronic circuits not provided for elsewhere (-contains no documents; [G01R 31/2801](#) and [G01R 31/316](#) take precedence-)}
- G01R 31/2834 . . . {Automated test systems (ATE); using microprocessors or computers (-[G01R 31/317](#) takes precedence; ATE for detection of defective computer hardware [G06F 11/2736](#)-)}
- G01R 31/2836 . . . {Fault-finding or characterising (-[G01R 31/2822](#) to [G01R 31/2831](#) take precedence-)}
- G01R 31/2837 . . . {Characterising or performance testing, e.g. of frequency response (-transient response [G01R 27/28](#)-)}
- G01R 31/2839 . . . {using signal generators, power supplies or circuit analysers (-[G01R 31/2879](#) takes precedence; multimeters [G01R 15/12](#) , network analysers [G01R 27/28](#)-)}

- G01R 31/2844 . . . {using test interfaces, e.g. adapters, test boxes, switches, PIN drivers (~~G01R 31/2889~~ takes precedence)}
- G01R 31/2849 . . . {Environmental or reliability testing, e.g. burn-in or validation tests (of individual semiconductors [G01R 31/2642](#) ; of printed circuits boards [G01R 31/2817](#) ; of IC's [G01R 31/2855](#))}
- G01R 31/2851 . {Testing of integrated circuits (IC)(~~G01R 31/317~~ takes precedence; testing individual devices [G01R 31/26](#) ; testing printed circuits [G01R 31/2801](#))}
- G01R 31/2853 . . {Electrical testing of internal connections or -isolation, e.g. latch-up or chip-to-lead connections (~~G01R 31/31717~~ takes precedence; test of chip-to-PCB or lead-to-PCB connections [G01R 31/04](#))}
- U G01R 31/2855 . . {Environmental, reliability or burn-in testing}
- U G01R 31/286 . . . {External aspects, e.g. related to chambers, contacting devices or handlers}
- G01R 31/2863 {Contacting devices, e.g. sockets, burn-in boards or mounting fixtures (in general [G01R 1/04](#))}
- G01R 31/2865 {Holding devices, e.g. chucks; Handlers or transport devices (having contacts [G01R 31/2863](#))}
- G01R 31/2884 . . {using dedicated test connectors, test elements or test circuits on the IC under test (~~G01R 31/2855~~ takes precedence)}
- G01R 31/2886 . . {Features relating to contacting the IC under test, e.g. probe heads; chucks (~~G01R 31/2865~~ takes precedence, test connections, e.g. test sockets, or probes per se, [G01R 1/04](#) or [G01R 1/06](#))}
- G01R 31/2887 . . . {involving moving the probe head or the IC under test; docking stations (moving single probes [G01R 1/06705](#) ; moving individual probes in multiple probes [G01R 1/07392](#))}
- G01R 31/2889 . . . {Interfaces, e.g. between probe and tester (~~G01R 31/31905~~ and [G01R 1/07364](#) take precedence)}
- G01R 31/2891 . . . {related to sensing or controlling of force, position, temperature (~~G01R 31/2874~~ takes precedences; sensing of force [G01L](#); sensing of position [G01B](#), [G01D](#); sensing of temperature [G01K](#); controlling in general [G05](#))}
- G01R 31/2893 . . {Handling, conveying or loading, e.g. belts, boats, vacuum fingers (~~G01R 31/2867~~ takes precedence; handling semiconductor devices or wafers during manufacture or treatment [H01L 21/67](#))}
- G01R 31/2894 . . {Aspects of quality control (QC)(~~G01R 31/31718~~ takes precedence; program control for QC [G05B 19/41875](#))}
- G01R 31/2896 . . {Testing of IC packages; Test features related to IC packages (containers per se [H01L 23/02](#) , encapsulations per se [H01L 23/28](#))}
- G01R 31/2898 . . {Sample preparation, e.g. removing encapsulation, etching (sample preparation in general [G01N 1/00](#))}
- G01R 31/30 . . Marginal testing, e.g. varying supply voltage (marginal testing of computers [G06](#))
- U G01R 31/3004 . . {Current or voltage test}
- G01R 31/3008 . . . {Quiescent current [IDDQ] test or leakage current test}
- G01R 31/302 . . Contactless testing (non contact-making probes [G01R 1/07](#))(~~G01R 31/04~~ takes precedence)}
- G01R 31/303 . . . of integrated circuits (~~G01R 31/305~~ to [G01R 31/315](#) take precedence)
- G01R 31/304 . . . of printed or hybrid circuits (~~G01R 31/305~~ to [G01R 31/315](#) take precedence)
- G01R 31/305 . . . using electron beams (investigating or analysing materials by measuring photoelectric effect [G01N 23/227](#))}

- G01R 31/308
 - • • using non-ionising electromagnetic radiation, e.g. optical radiation{(-investigating or analysing materials by the use of optical means [G01N 21/00](#); image analysis [G06T 7/00](#)-)}
- G01R 31/309
 - • • • of printed or hybrid circuits {or circuit substrates}
- G01R 31/311
 - • • • of integrated circuits{(-[G01R 31/31728](#) takes precedence-)}
- G01R 31/316
 - • Testing of analog circuits{(-[G01R 31/2851](#) takes precedence-)}
- G01R 31/3167
 - • Testing of combined analog and digital circuits{(-testing ADC`s [H03M 1/1071](#)-)}
- U G01R 31/317
 - • Testing of digital circuits
 - WARNING**
 - The following subgroups of [G01R 31/317](#) are not complete due to an ongoing reorganisation : [G01R 31/31702](#) , [G01R 31/31708](#) , [G01R 31/31711](#) , [G01R 31/31717](#) , [G01R 31/31718](#) , [G01R 31/31728](#) , [G01R 31/31901](#) . See also [G01R 31/317](#) and its other subgroups
- G01R 31/31703
 - • • {Comparison aspects, e.g. signature analysis, comparators (-concerning scan tests [G01R 31/318566](#) ; concerning testers [G01R 31/3193](#)-)}
- G01R 31/31704
 - • • {Design for test; Design verification (-concerning scan tests [G01R 31/318583](#) ; computer-aided design [G06F 17/50](#)-)}
- G01R 31/31705
 - • • {Debugging aspects, e.g. using test circuits for debugging, using dedicated debugging test circuits (-generation of test sequences therefor [G01R 31/31835](#) , using scan test therefor [G01R 31/318544](#)-)}
- G01R 31/31707
 - • • {Test strategies (-methods for generation of test sequences [G01R 31/318371](#)-)}
- G01R 31/31708
 - • • {Analysis of signal quality (-[G01R 31/31901](#) takes precedence; measuring frequencies or analysing frequency spectra per se [G01R 23/00](#) ; measuring non-linear distortion per se [G01R 23/20](#)-)}
- G01R 31/31709
 - • • • {Jitter measurements; Jitter generators (-measuring jitter, noise figure or signal-to-noise ratio per se [G01R 29/26](#) ; analysis of tester signals [G01R 31/31901](#)-)}
- G01R 31/3171
 - • • • {BER [[Bit Error Rate](#)] test}(Bit Error Rate)test}
- U G01R 31/31712
 - • • {Input or output aspects}
- G01R 31/31713
 - • • • {Input or output interfaces for test, e.g. test pins, buffers (-for scan test [G01R 31/318572](#)-)}
- G01R 31/31717
 - • • • {Interconnect testing (-by scan techniques see [G01R 31/31855](#)-)}
- G01R 31/31718
 - • • {Logistic aspects, e.g. binning, selection, sorting of devices under test, tester/handler interaction networks, Test management software, e.g. software for test statistics or test evaluation, yield analysis (-mechanical aspects [G01R 31/2808](#) , [G01R 31/2851](#)-)}
- G01R 31/31721
 - • • {Power aspects, e.g. power supplies for test circuits, power saving during test (-for scan test [G01R 31/318575](#)-)}
- G01R 31/31722
 - • • {Addressing or selecting of test units, e.g. transmission protocols for selecting test units (-for scan test [G01R 31/318558](#)-)}
- G01R 31/31723
 - • • {Hardware for routing the test signal within the device under test to the circuits to be tested, e.g. multiplexer for multiple core testing, accessing internal nodes (-routing the test signal to or from the device under test [G01R 31/31926](#)-)}
- G01R 31/31724
 - • • {Test controller, e.g. BIST state machine (-for scan test [G01R 31/318555](#)-)}
- G01R 31/31725
 - • • {Timing aspects, e.g. clock distribution, skew, propagation delay (-for tester hardware [G01R 31/31937](#)-)}

- G01R 31/31727 . . . {Clock circuits aspects, e.g. test clock circuit details, timing aspects for signal generation, circuits for testing clocks (-G01R 31/31725 takes precedence; concerning scan test [G01R 31/318552](#) , for tester hardware [G01R 31/31922](#)-)}
- G01R 31/31728 . . . {Optical aspects, e.g. opto-electronics used for testing, optical signal transmission for testing electronic circuits, electro-optic components to be tested in combination with electronic circuits, measuring light emission of digital circuits (-probes having electro-optic elements [G01R 1/071](#) ; electro-optic sampling for oscilloscopes [G01R 13/347](#) ; contactless testing of individual semiconductor devices by optical means [G01R 31/2656](#)-)}
- G01R 31/3181 . . . Functional testing (-G01R 31/3177 takes precedence-)
- U G01R 31/3183 Generation of test inputs, e.g. test vectors, patterns or sequence
- G01R 31/318314 {Tools, e.g. program interfaces, test suite, test bench, simulation hardware, test compiler, test program languages (-simulation software [G01R 31/318357](#) ; emulators [G06F11/26S2](#)-)}
- G01R 31/318335 {Test pattern compression or decompression (-compression or decompression of scan patterns [G01R 31/318547](#) ; compression or decompression hardware [G01R 31/31921](#)-)}
- U G01R 31/318342 {by preliminary fault modelling, e.g. analysis, simulation}
- G01R 31/318357 {Simulation (-computer simulation of digital circuits [G06F 17/5009](#)-)}
- G01R 31/318364 {as a result of hardware simulation, e.g. in an HDL environment (-computer-aided simulation of circuits [G06F 17/5009](#)-)}
- G01R 31/318392 {for sequential circuits (-G01R 31/318544 takes precedence [G01R 31/318544 takes precedence](#)-)}
- U G01R 31/3185 Reconfiguring for testing, e.g. LSSD, partitioning
- U G01R 31/318505 {Test of Modular systems, e.g. Wafers, MCM's}
- G01R 31/318508 {Board Level Test, e.g. P1500 Standard (-features related to boundary scan [G01R 31/318533](#)-)}
- G01R 31/318516 {Test of programmable logic devices [PLDs]}
- G01R 31/318522 {Test of Sequential circuits (-test of microprocessors [G06F 11/2236](#) , test of ALU's [G06F 11/2226](#)-)}
- U G01R 31/318533 {using scanning techniques, e.g. LSSD, Boundary Scan, JTAG}
- G01R 31/318544 {Scanning methods, algorithms and patterns (-G01R 31/3183 takes precedence-)}
- G01R 31/318594 {Timing aspects (-clock circuits [G01R 31/318552](#)-)}
- G01R 31/318597 {JTAG or boundary scan test of memory devices (-other scan testing of memories [G11C 29/32](#)-)}
- G01R 31/319 Tester hardware, i.e. output processing circuit(-logic analyzers [G01R 31/3177](#) , Memory tester hardware [G11C 29/56](#)-)}
- U G01R 31/31917 {Stimuli generation or application of test patterns to the device under test (DUT)}
- G01R 31/31919 {Storing and outputting test patterns (-G01R 31/31924 takes precedence; arithmetic and random test patterns generator-)}
- G01R 31/31922 {Timing generation or clock distribution (-G01R 31/3191 takes precedence-)}
- G01R 31/31928 {Formatter (-driver, receiver details [G01R 31/31924](#)-)}
- U G01R 31/3193 with comparison between actual response and known fault free response(-receiver details [G01R 31/31924](#)-)}
- G01R 31/31937 {Timing aspects, e.g. measuring propagation delay (-G01R 31/3191 and [G01R 31/31922](#) take precedence; marginal testing [G06F 11/24](#)-)}

- G01R 31/327
 - Testing of circuit interrupters, switches or circuit-breakers (-structural association with switches [H01H](#) ; { detecting faults in encased switchgear [H02B 13/065](#) ; monitoring in addition to disconnection by a protective circuit [H02H 3/04](#) })
- G01R 31/3271
 - • {of high voltage or medium voltage devices (-[G01R 31/333](#) takes precedence-)}
- G01R 31/3272
 - • • {Apparatus, systems or circuits therefor (-[G01R 31/3275](#) takes precedence-)}
- G01R 31/3274
 - • • • {Details related to measuring, e.g. sensing, displaying or computing; Measuring of variables related to the contact pieces, e.g. wear, position or resistance (-measuring contact resistance [G01R 27/205](#)-)}
- U G01R 31/3277
 - • {of low voltage devices, e.g. domestic or industrial devices, such as motor protections, relays, rotation switches}
- G01R 31/3278
 - • • {of relays, solenoids or reed switches (-measuring contact resistance [G01R 27/205](#) ; testing electric windings [G01R 31/06](#) ; high voltage magnetic switches [G01R 31/3271](#) , [G01R 31/333](#) ; monitoring of fail safe circuits [H01H 47/002](#)-)}
- G01R 31/333
 - • Testing of the switching capacity of high-voltage circuit-breakers; {Testing of breaking capacity or related variables, e.g. post arc current or transient recovery voltage} (-means for detecting the presence of an arc or discharge in switching devices [H01H 9/50](#) , [H01H 33/26](#)-)}
- G01R 31/36
 - Apparatus for testing electrical condition of accumulators or electric batteries, e.g. capacity or charge condition (-accumulators combined with arrangements for measuring, testing or indicating condition [H01M 10/48](#) ; circuit arrangements for charging, or depolarising batteries or for supplying loads from batteries [H02J 7/00](#) ; { Coulomb meters [G01R 22/00](#) ; indicating the condition of the power supply in clocks or watches [G04C 10/04](#) ; methods for controlling fuel cells [H01M 8/04298](#) })

NOTE

This group covers arrangements for measuring, testing or indicating electrical conditions or variables of accumulators or electric batteries. Accumulators combined with arrangements for measuring, testing or indicating condition, or arrangements for measuring, testing or indicating conditions or variables other than electrical, e.g. level or density of battery electrolyte, are covered by the group [H01M 10/48](#) and subgroups
- G01R 31/3606
 - • {Monitoring, i.e. measuring or determining some variables continuously or repeatedly over time, e.g. current, voltage, temperature, state-of-charge [SoC] or state-of-health [SoH](-[G01R 31/3627](#) , [G01R 31/3644](#) take precedence-)}
- G01R 31/362
 - • • {based on measuring voltage only (-by comparing voltage with a reference value [G01R 19/16542](#)-)}
- G01R 31/3624
 - • • {based on combined voltage and current measurement (-[G01R 31/361](#) takes precedence-)}
- G01R 31/3627
 - • {Testing, i.e. making a one-time determination of some variables, e.g. testing ampere-hour charge capacity (-[G01R 31/3644](#) takes precedence-)}
- G01R 31/3634
 - • • {for determining the ampere-hour charge capacity or state-of-charge (SoC) (-[G01R 31/3631](#) takes precedence-)}
- U G01R 31/3644
 - • {Various constructional arrangements}
- G01R 31/3696
 - • • {Battery pole connectors combined with measurement function (-end pieces for connections to batteries [H01R 11/281](#)-)}
- G01R 31/40
 - Testing power supplies (testing photovoltaic devices [H02S 50/10](#){; comparing current or voltage with a reference level in AC or DC supplies [G01R 19/16538](#)})

- G01R 31/44
- Testing lamps (-discharge lamps [G01R 31/24](#) ; structurally associated with light source circuit arrangements for detecting lamp failure [H05B 37/03](#)-)
- U G01R 33/00 Arrangements or instruments for measuring magnetic variables**
- G01R 33/0005
- {Geometrical arrangement of magnetic sensor elements; Apparatus combining different magnetic sensor types (-[G01R 33/0206](#) takes precedence-)}
- G01R 33/0023
- {Electronic aspects, e.g. circuits for stimulation, evaluation, control; Treating the measured signals; calibration (-[G01R 33/0017](#) takes precedence-)}
- G01R 33/0047
- {Housings or packaging of magnetic sensors (-packaging of semiconductor devices [H01L 23/00](#)-); Holders}
- G01R 33/0052
- {Manufacturing aspects; Manufacturing of single devices, i.e. of semiconductor magnetic sensor chips (-devices based on galvano-magnetic effect or the like [H01L 43/12](#)-)}
- G01R 33/007
- {Environmental aspects, e.g. temperature variations, radiation, stray fields (-[G01R 33/025](#) takes precedence-)}
- G01R 33/02
- Measuring direction or magnitude of magnetic fields or magnetic flux (-[G01R 33/20](#) takes precedence ; measuring direction or magnitude of the earth's field for navigation or surveying [G01C](#) ; for prospecting, for measuring the magnetic field of the earth [G01V 3/00](#)-)
- NOTE**
- Groups [G01R 33/022](#) , [G01R 33/10](#) take precedence over groups [G01R 33/025](#) to [G01R 33/09](#) .
- G01R 33/025
- • Compensating stray fields{(-compensating compasses [G01C 17/38](#)-) (-[G01R 33/0017](#) takes precedence-)}
- U G01R 33/028**
- • Electrodynamic magnetometers
- G01R 33/0286
- • • {comprising micro-electromechanical systems [MEMS]} (MEMS devices in general [B81B](#));
- G01R 33/032
- • using magneto-optic devices, e.g. Faraday, {Cotton-Mouton effect(-magneto-optics in general [G02F 1/09](#)-)}
- G01R 33/035
- • using superconductive devices{(-manufacture of superconducting elements [H01L 39/00](#)-)}
- U G01R 33/0354**
- • • {SQUIDS}
- G01R 33/0358
- • • • {coupling the flux to the SQUID (-gradiometer coils [G01R 33/022](#) ; coils with superconductive winding [H01F 6/06](#)-)}
- G01R 33/038
- • using permanent magnets, e.g. balances, torsion devices{ electro-dynamic magnetometers [G01R 33/028](#)-}
- G01R 33/0385
- • • {in relation with magnetic force measurements (-magnetic force microscopes [G01Q 60/50](#)-)}
- G01R 33/06
- • using galvano-magnetic devices, e.g. Hall effect devices; using magneto-resistive devices{(-manufacture of galvano-magnetic elements [H01L 43/00](#)-)}
- U G01R 33/09**
- • • Magnetoresistive devices
- G01R 33/093
- • • • {using multilayer structures, e.g. giant magnetoresistance sensors (-thin magnetic films [H01F 10/00](#)-)}
- G01R 33/12
- Measuring magnetic properties of articles or specimens of solids or fluids (-involving magnetic resonance [G01R 33/20](#)-){ using magnetic-optic devices [G01R 33/032](#)-}
- G01R 33/1207
- • {Testing individual magnetic storage devices e.g. records carriers or digital storage elements (-functional testing [G06F 11/00](#) , [G06F 11/28](#)-)}
- G01R 33/1215
- • {Measuring magnetisation; Particular magnetometers therefor (-[G01R 33/14](#) takes precedence; electrodynamic magnetometers [G01R 33/028](#)-)}

- G01R 33/1223
 - • {Measuring permeability, i.e. permeameters (-G01R 33/14 takes precedence-)}
- G01R 33/123
 - • {Measuring loss due to hysteresis (-G01R 33/14 takes precedence-)}
- G01R 33/1269
 - • {of molecules labeled with magnetic beads (-magnetic particles for bio assay G01N 33/54326-)}
- G01R 33/1276
 - • {of magnetic particles, e.g. imaging of magnetic nanoparticles (-G01R 33/1269 takes precedence-)}
- G01R 33/1284
 - • {Spin resolved measurements; Influencing spins during measurements, e.g. in spintronics devices (-G01R 33/093 takes precedence; semiconductor devices using spin polarized carriers H01L 29/66984-)}
- G01R 33/14
 - • Measuring or plotting hysteresis curves{ G01R 33/1207 takes precedence-}
- G01R 33/16
 - • Measuring susceptibility{ G01R 33/1238 takes precedence-}
- G01R 33/20
 - involving magnetic resonance (-medical aspects A61B 5/055 ; magnetic resonance gyrometers G01C 19/00 { investigating materials using NMR G01N 24/00 ; prospecting or detecting using NMR G01V 3/00 })
- U G01R 33/24
 - • for measuring direction or magnitude of magnetic fields or magnetic flux
- G01R 33/26
 - • • using optical pumping{ optical pumping in general G01N 24/006-}
- G01R 33/28
 - • Details of apparatus provided for in groups G01R 33/44 to G01R 33/64
- WARNING
- Groups G01R 33/281 - G01R 33/288 are not complete pending reclassification. See also this group
- G01R 33/281
 - • • {Means for the use of in vitro contrast agents (-G01R 33/282 takes precedence; involving use of a contrast agent in MR imaging G01R 33/5601 ; in vivo contrast agents A61K 49/0002-)}
- G01R 33/288
 - • • {Provisions within MR facilities for enhancing safety during MR, e.g. reduction of the specific absorption rate [SAR]}, detection of ferromagnetic objects in the scanner room}}
- U G01R 33/30
 - • • Sample handling arrangements, e.g. sample cells, spinning mechanisms
- G01R 33/307
 - • • • {specially adapted for moving the sample relative to the MR system, e.g. spinning mechanisms, flow cells or means for positioning the sample inside a spectrometer}}
- U G01R 33/32
 - • • Excitation or detection systems, e.g. using radio frequency signals
- U G01R 33/34
 - • • • Constructional details, e.g. resonators,{specially adapted to MR(aerials in general H01Q)}
- G01R 33/345
 - • • • • {of waveguide type (-G01R 33/343 takes precedence-)}
- G01R 33/3453
 - • • • • • {Transverse electromagnetic [TEM]} coils}}
- U G01R 33/36
 - • • • Electrical details, e.g. matching or coupling of the coil to the receiver
- G01R 33/3621
 - • • • • {NMR receivers or demodulators, e.g. preamplifiers, means for frequency modulation of the MR signal using a digital down converter, means for analog to digital conversion [ADC]} or for filtering or processing of the MR signal such as bandpass filtering, resampling, decimation or interpolation}}

- G01R 33/3664 {Switching for purposes other than coil coupling or decoupling, e.g. switching between a phased array mode and a quadrature mode, switching between surface coil modes of different geometrical shapes, switching from a whole body reception coil to a local reception coil or switching for automatic coil selection in moving table MR or for changing the field-of-view ([G01R 33/3671](#) takes precedence)}
- WARNING
Not complete pending reclassification, see also [G01R 33/36](#)
- G01R 33/3671 {involving modulation of the quality factor of the RF coil ([G01R 33/3642](#) takes precedence)}
- U G01R 33/38 . . . Systems for generation, homogenisation or stabilisation of the main or gradient magnetic field
- G01R 33/381 using electromagnets (-electromagnets per se [H01F 7/06](#)-)
- G01R 33/3815 with superconducting coils, e.g. power supply therefor (-superconductive magnets [H01F 6/00](#)-)
- G01R 33/383 using permanent magnets (-permanent magnets per se [H01F 7/02](#)-)
- U G01R 33/385 using gradient magnetic field coils
- G01R 33/3858 {Manufacture and installation of gradient coils, means for providing mechanical support to parts of the gradient-coil assembly (-Manufacture of inductances or coils in general [H01F 41/00](#)-)}
- G01R 33/387 Compensation of inhomogeneities (-screening [G01R 33/42](#)-)
- G01R 33/42 Screening (-screening in general [H05K 9/00](#)-)
- G01R 33/44 . . . using nuclear magnetic resonance [NMR](-[G01R 33/24](#) , [G01R 33/62](#) take precedence-)
- WARNING
Groups **G01R33/44B** - [G01R 33/443](#) are not complete pending reclassification. See also this group
- G01R 33/446 . . . {Multifrequency selective RF pulses, e.g. multinuclear acquisition mode (-spatially selective RF pulses [G01R 33/4833](#)-)}
- WARNING
Not complete pending reclassification, see also [G01R 33/48](#)
- G01R 33/448 . . . {Relaxometry, i.e. quantification of relaxation times or spin density (-[G01R 33/50](#) takes precedence-)}
- WARNING
Not complete pending reclassification, see also [G01R 33/44](#) and **G01R33/44A**
- U G01R 33/48 . . . NMR imaging systems
- G01R 33/4808 {Multimodal MR, e.g. MR combined with positron emission tomography [PET]}, MR combined with ultrasound or MR combined with computed tomography [CT]}
- G01R 33/481 {MR combined with positron emission tomography [PET]} or single photon emission computed tomography [SPECT]}
- WARNING
Not complete pending reclassification, see also [G01R 33/4808](#)

- G01R 33/4812 {MR combined with X-ray or computed tomography [CT]}
- WARNING
Not complete pending reclassification, see also [G01R 33/4808](#)
- G01R 33/4816 {NMR imaging of samples with ultrashort relaxation times such as solid samples, e.g. MRI using ultrashort TE [UTE]}, single point imaging, constant time imaging}
- U G01R 33/483 with selection of signals or spectra from particular regions of the volume, e.g. in vivo spectroscopy
- G01R 33/485 based on chemical shift information {CSI or spectroscopic imaging, e.g. to acquire the spatial distributions of metabolites}
- G01R 33/54 Signal processing systems, e.g. using pulse sequences, {Generation or control of pulse sequences (in general [H03K](#)); Operator Console}
- G01R 33/543 {Control of the operation of the MR system, e.g. setting of acquisition parameters prior to or during MR data acquisition, dynamic shimming, use of one or more scout images for scan plane prescription (-[G01R 33/546](#) takes precedence-)}
- WARNING
Not complete pending reclassification, see also [G01R 33/54](#)
- U G01R 33/56 Image enhancement or correction, e.g. subtraction or averaging techniques, {e.g. improvement of signal-to-noise ratio and resolution (image data processing in general [G06T](#))}
- G01R 33/5605 {by transferring coherence or polarization from a spin species to another, e.g. creating magnetization transfer contrast [MTC]}, polarization transfer using nuclear Overhauser enhancement [NOE]}
- G01R 33/5608 {Data processing and visualization specially adapted for MR, e.g. for feature analysis and pattern recognition on the basis of measured MR data, segmentation of measured MR data, edge contour detection on the basis of measured MR data, for enhancing measured MR data in terms of signal-to-noise ratio by means of noise filtering or apodization, for enhancing measured MR data in terms of resolution by means for deblurring, windowing, zero filling, or generation of gray-scaled images, colour-coded images or images displaying vectors instead of pixels (image data processing or generation, in general [G06T](#))}
- WARNING
Not complete pending reclassification, see also [G01R 33/56](#)
- U G01R 33/561 by reduction of the scanning time, i.e. fast acquiring systems, e.g. using echo-planar pulse sequences
- G01R 33/5611 {Parallel magnetic resonance imaging, e.g. sensitivity encoding [SENSE]}, simultaneous acquisition of spatial harmonics [SMASH], unaliasing by Fourier encoding of the overlaps using the temporal dimension [UNFOLD], k-t-broad-use linear acquisition speed-up technique [k-t-BLAST], k-t-SENSE (-structural details of arrays of sub-coils [G01R 33/3415](#)-)}
- U G01R 33/5613 {Generating steady state signals, e.g. low flip angle sequences (FLASH)}
- G01R 33/5614 {using a fully balanced steady-state free precession [bSSFP] pulse sequence, e.g. trueFISP}

- G01R 33/5615 {Echo train techniques involving acquiring plural, differently encoded, echo signals after one RF excitation, e.g. using gradient refocusing in echo planar imaging [EPI]}, RF refocusing in rapid acquisition with relaxation enhancement [RARE] or using both RF and gradient refocusing in gradient and spin echo imaging [GRASE]}
- G01R 33/5619 {by temporal sharing of data, e.g. keyhole, block regional interpolation scheme for k-Space [BRISK]}
- U G01R 33/563 of moving material, e.g. flow contrast angiography
- U G01R 33/56308 {Characterization of motion or flow; Dynamic imaging}
- G01R 33/56333 {Involving spatial modulation of the magnetization within an imaged region, e.g. spatial modulation of magnetization [SPAMM]} tagging (-perfusion imaging based on arterial spin tagging [G01R 33/56366](#))}
- G01R 33/5635 {Angiography, e.g. contrast-enhanced angiography [CE-MRA]} or time-of-flight angiography [TOF-MRA]}
- U G01R 33/565 Correction of image distortions, e.g. due to magnetic field inhomogeneities
- G01R 33/56509 {due to motion, displacement or flow, e.g. gradient moment nulling (-[G01R 33/567](#) takes precedence)}
- G01R 33/56563 {caused by a distortion of the main magnetic field B₀, e.g. temporal variation of the magnitude or spatial inhomogeneity of B₀ (-[G01R 33/56509](#) , [G01R 33/56518](#) , [G01R 33/56536](#) take precedence)}
- G01R 33/56572 {caused by a distortion of a gradient magnetic field, e.g. non-linearity of a gradient magnetic field (-[G01R 33/56509](#) , [G01R 33/56518](#) , [G01R 33/56536](#) take precedence)}
- G01R 33/5659 {caused by a distortion of the RF magnetic field, e.g. spatial inhomogeneities of the RF magnetic field (-[G01R 33/56509](#) , [G01R 33/56518](#) , [G01R 33/56536](#) take precedence)}
- WARNING
Not complete pending reclassification, see also [G01R 33/565](#)
- G01R 33/567 gated by physiological signals {i.e. synchronization of acquired MR data with periodical motion of an object of interest, e.g. monitoring or triggering system for cardiac or respiratory gating}
- U G01R 33/58 Calibration of imaging systems, e.g. using test probes{, Phantoms; Calibration objects or fiducial markers such as active or passive RF coils surrounding an MR active material}
- G01R 33/583 {Calibration of signal excitation or detection systems, e.g. for optimal RF excitation power or frequency (-[G01R 33/246](#) takes precedence)}
- WARNING
Not complete pending reclassification, see also [G01R 33/58](#)
- G01R 33/60 using electron paramagnetic resonance (-[G01R 33/24](#) , [G01R 33/62](#) take precedence-)
- G01R 33/62 using double resonance (-[G01R 33/24](#) takes precedence-)
- G01R 33/64 using cyclotron resonance (-[G01R 33/24](#) takes precedence-){ Omegatrons per se [H01J 49/38](#)}
- G01R 35/00** **Testing or calibrating of apparatus covered by the preceding groups**{(-[G01R 31/31901](#) takes precedence)}

- G01R 35/005
- {Calibrating; Standards or reference devices, e.g. voltage or resistance standards, "golden" references (-[G01R 33/0035](#) , [G01R 35/002](#) take precedence-)}

Project: N/A (G01S)

G01S

RADIO DIRECTION-FINDING; RADIO NAVIGATION; DETERMINING DISTANCE OR VELOCITY BY USE OF RADIO WAVES; LOCATING OR PRESENCE-DETECTING BY USE OF THE REFLECTION OR RERADIATION OF RADIO WAVES; ANALOGOUS ARRANGEMENTS USING OTHER WAVES (for special applications, see the relevant subclasses, e.g. [A61B](#), [G01F](#), [G01N](#), [G02B](#); measuring dimensions or angles of objects [G01B](#); navigation in general [G01C](#); measuring infrasonic, sonic or ultrasonic vibrations in general [G01H](#); measuring infra-red, visible, or ultra-violet radiation in general [G01J](#); transducers per se, see the relevant subclasses, e.g. [G01L](#), [H01L](#), [H04R](#); measuring direction or velocity of flowing fluids by reception or emission of radiowaves or other waves and based on propagation effects caused in the fluid itself [G01P](#); measuring electric or magnetic variables in general [G01R](#); detecting masses or objects by methods not involving reflection or radiation of radio, acoustic or other waves [G01V](#); {time-interval measuring [G04F](#); aerials [H01Q](#))

NOTES

In this subclass, the following term is used with the meaning indicated:

- "transponder" means an arrangement which reacts to an incoming interrogating or detecting wave by emitting a specific answering or identifying wave.

Attention is drawn to the Notes following the title of class [G01](#) and to Note (1) following the title of subclass [G09B](#).

WARNING

The following IPC group is not used in the CPC scheme. Subject matter covered by this group is classified in the following CPC groups: - [G01S 7/26](#) covered by [G01S 7/06](#)

G01S 1/00

Beacons or beacon systems transmitting signals having a characteristic or characteristics capable of being detected by non-directional receivers and defining directions, positions, or position lines fixed relatively to the beacon transmitters; Receivers co-operating therewith (-position fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#)-)

- G01S 1/02
- using radio waves (-[G01S 19/00](#) takes precedence-)
- U G01S 1/022
- {Means for monitoring or calibrating}
- G01S 1/028
- • {Simulation means, e.g. of beacon signals therefor (-for teaching or training purposes [G09B 9/00](#)-)}
- U G01S 1/04
- • Details
- G01S 1/047
- • • {Displays or indicators (-[G01S 1/06](#) takes precedence-)}
- G01S 1/08
- • Systems for determining direction or position line {aerial arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#) ; combinations of different interacting units for giving a desired directional characteristic [H01Q 21/29](#) ; aerials or aerial systems providing at least two radiation patterns [H01Q 25/00](#)-}
- G01S 1/20
- • • using a comparison of transit time of synchronised signals transmitted from non-directional aerials or aerial systems spaced apart, i.e. path-difference systems {synchronisation in general [H03L 7/00](#)-}

- U G01S 1/24
 - • • • the synchronised signals being pulses or equivalent modulations on carrier waves and the transit times being compared by measuring the difference in arrival time of a significant part of the modulations, {e.g. LORAN systems}
- G01S 1/26
 - • • • • Systems in which pulses or time-base signals are generated locally at the receiver and brought into predetermined time-relationship with received signals, e.g. pulse duration coincides with time interval between arrival of significant part of modulation of signals received from first and second aerials or aerial systems {contains no documents}
- G01S 1/28
 - • • • • wherein the predetermined time-relationship is maintained automatically {contains no documents}
- U G01S 1/30
 - • • • the synchronised signals being continuous waves or intermittent trains of continuous waves, the intermittency not being for the purpose of determining direction or position line and the transit times being compared by measuring the phase difference
- G01S 1/304
 - • • • • {Analogous systems in which a beat frequency, obtained by heterodyning the signals, is compared in phase with a reference signal obtained by heterodyning the signals in a fixed reference point and transmitted therefrom, e.g. LORAC (*long range accuracy*) or TORAN systems} (~~long range accuracy~~) or (~~TORAN systems~~)
- G01S 1/32
 - • • • • Systems in which the signals received, with or without amplification, or signals derived therefrom, are compared in phase directly {contains no documents}
- G01S 1/34
 - • • • • Systems in which first and second synchronised signals are transmitted from both aerials or aerial systems and a beat frequency obtained by heterodyning the first signals with each other is compared in phase with a beat frequency obtained by heterodyning the second signals with each other {contains no documents}
- G01S 1/36
 - • • • • Systems in which a beat frequency, obtained by heterodyning the synchronised signals, is compared in phase with a reference signal having a phase substantially independent of direction {contains no documents}
- U G01S 1/44
 - • • Rotating or oscillating beam beacons defining directions in the plane of rotation or oscillation
- U G01S 1/46
 - • • • Broad-beam systems producing at a receiver a substantially continuous sinusoidal envelope signal of the carrier wave of the beam, the phase angle of which is dependent upon the angle between the direction of the receiver from the beacon and a reference direction from the beacon, e.g. cardioid system
- G01S 1/48
 - • • • • wherein the phase angle of the direction-dependent envelope signal is a multiple of the direction angle, e.g. for "fine" bearing indication {TACAN}
- G01S 1/72
 - using ultrasonic, sonic or infrasonic waves (signalling devices [G08B](#))
- G01S 1/76
 - • Systems for determining direction or position line (-sound focusing or directing using electrical steering of transducer arrays, e.g. beam steering, in general [G10K 11/34-](#))
- G01S 3/00**
 - Direction-finders for determining the direction from which infrasonic, sonic, ultrasonic, or electromagnetic waves, or particle emission, not having a directional significance, are being received (-position fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#) ; for geophysical measurement [G01C](#) ; telescope mountings [G02B-](#))**
- U G01S 3/02
 - using radio waves
- U G01S 3/04
 - • Details

- G01S 3/06
- • • Means for increasing effective directivity, e.g. by combining signals having differently-oriented directivity characteristics, by sharpening the envelope waveform of the signal desired from a rotating or oscillating beam aerial (-comparing amplitude of signals having differently-oriented directivity characteristics to determine direction [G01S 3/16](#) , [G01S 3/28](#) ; modifications of aerials or aerial systems [H01Q](#)-)
- G01S 3/12
- • • Means for determining sense of direction, e.g. by combining signals from directional aerial or goniometer search coil with those from non-directional aerial (-determining direction by amplitude comparison of signals derived by combining directional and non-directional signals [G01S 3/24](#) , [G01S 3/34](#)-){ [G01S 3/065](#) takes precedence-}
- G01S 3/14
- • • Systems for determining direction or deviation from predetermined direction{ aerial arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#) ; combinations of different interacting aerial units for giving a desired directional characteristic [H01Q 21/29](#) ; aerials or aerial systems providing at least two radiation patterns [H01Q 25/00](#)-}
- G01S 3/146
- • • {by comparing linear polarisation components (-polarisation details of antenna systems per se [H01Q 21/245](#)-)}
- G01S 3/16
- • • using amplitude comparison of signals derived sequentially from receiving aerials or aerial systems having differently-oriented directivity characteristics or from an aerial system having periodically-varied orientation of directivity characteristic{ [G01S 3/146](#) takes precedence-}
- G01S 3/28
- • • using amplitude comparison of signals derived simultaneously from receiving aerials or aerial systems having differently-oriented directivity characteristics{ [G01S 3/146](#) takes precedence-}
- G01S 3/38
- • • using adjustment of real or effective orientation of directivity characteristic of an aerial or aerial system to give a desired condition of signal derived from that aerial or aerial system, e.g. to give a maximum or minimum signal (-[G01S 3/16](#) , [G01S 3/28](#) take precedence-)
- G01S 3/46
- • • using aerials spaced apart and measuring {frequency}phase or time difference between signals therefrom, i.e. path-difference systems
- G01S 3/58
- • • Rotating or oscillating beam systems using continuous analysis of received signal for determining direction in the plane of rotation or oscillation or for determining deviation from a predetermined direction in such a plane (-[G01S 3/14](#) takes precedence-)
- U G01S 3/66
- • • • Narrow-beam systems producing in the receiver a pulse-type envelope signal of the carrier wave of the beam, the timing of which is dependent upon the angle between the direction of the transmitter from the receiver and a reference direction from the receiver; Overlapping broad-beam systems defining in the receiver a narrow zone and producing a pulse-type envelope signal of the carrier wave of the beam, the timing of which is dependent upon the angle between the direction of the transmitter from the receiver and a reference direction from the receiver
- G01S 3/68
- • • • wherein the timing of the pulse-type envelope signal is indicated by cathode-ray tube (-radar cathode-ray tube indicators providing co-ordinated display of distance and direction [G01S 7/10](#)-)
- G01S 3/74
- • Multi-channel systems specially adapted for direction-finding, i.e. having a single aerial system capable of giving simultaneous indications of the directions of different signals (-systems in which the directions of different signals are determined sequentially and displayed simultaneously [G01S 3/04](#) , [G01S 3/14](#)-)
- U G01S 3/78
- using electromagnetic waves other than radio waves
- U G01S 3/782
- • Systems for determining direction or deviation from predetermined direction

- U G01S 3/785
 - • • using adjustment of orientation of directivity characteristics of a detector or detector system to give a desired condition of signal derived from that detector or detector system
- G01S 3/786
 - • • • the desired condition being maintained automatically, { i.e. tracking systems; [G01S 3/783](#) takes precedence }
- G01S 3/7867
 - • • • {Star trackers} (-navigation using star trackers [G01C 21/025](#)-)}
- U G01S 3/80
 - using ultrasonic, sonic or infrasonic waves
- G01S 3/801
 - • Details { [G01S 3/82](#) , [G01S 3/84](#) , [G01S 3/86](#) take precedence }
- G01S 3/802
 - • Systems for determining direction or deviation from predetermined direction {(-sound-focusing or directing using electrical steering of transducer arrays, e.g. beam steering, in general [G10K 11/34](#)-)}
- G01S 5/00**
 - Position-fixing by co-ordinating two or more direction or position line determinations; Position-fixing by co-ordinating two or more distance determinations** {(-using active systems [G01S 13/00](#) , [G01S 15/00](#) , [G01S 17/00](#)-)}
- G01S 5/0009
 - {Transmission of position information to remote stations} (-transmission of measured values in general, [G08C](#); services making use of location of users or terminals, [H04W 4/02](#)-)}
- G01S 5/0045
 - • {Transmission from base station to mobile station} (-[G01S 5/009](#) takes precedence-)}
- G01S 5/02
 - using radio waves (-[G01S 19/00](#) takes precedence-)
- U G01S 5/0205
 - • {Details}
- G01S 5/021
 - • • {Calibration, monitoring or correction} (-[G01S 5/0252](#) takes precedence-)}
- G01S 5/0226
 - • • {of transmitters or network of transmitters} (-wireless system synchronisation per se [H04B 7/2662](#)-)}
- G01S 5/0242
 - • • {locating transmitters to be used for positioning} (-[G01S 5/0289](#) takes precedence-)}
- G01S 5/0247
 - • {Determination of attitude} (-using inertial means [G01C 9/00](#) ; control of attitude [G05D 1/08](#)-)}
- G01S 5/0257
 - • {Hybrid positioning solutions} (-by coordinating position lines of different shape [G01S 5/12](#)-)}
- G01S 5/0278
 - • {involving statistical or probabilistic considerations} (-[G01S 5/0252](#) , [G01S 5/0294](#) take precedence-)}
- G01S 5/06
 - • Position of source determined by co-ordinating a plurality of position lines defined by path-difference measurements (-[G01S 5/12](#) takes precedence-)
- G01S 5/10
 - • Position of receiver fixed by co-ordinating a plurality of position lines defined by path-difference measurements {e.g. omega or decca systems} (-[G01S 5/12](#) takes precedence; { beacons and receivers cooperating therewith [G01S 1/306](#) , [G01S 1/308](#) })
- G01S 5/12
 - • by co-ordinating position lines of different shape, e.g. hyperbolic, circular, elliptical, radial (-radar indicators providing co-ordinated display of direction and distance [G01S 7/10](#)-)
- U G01S 5/16
 - using electromagnetic waves other than radio waves
- G01S 5/163
 - • {Determination of attitude} (-using inertial means [G01C 9/00](#) ; control of attitude [G05D 1/08](#)-)}
- U G01S 5/18
 - using ultrasonic, sonic, or infrasonic waves
- G01S 5/186
 - • {Determination of attitude} (-using inertial means [G01C 9/00](#) ; control of attitude [G05D 1/08](#)-)}
- G01S 5/22
 - • Position of source determined by co-ordinating a plurality of position lines defined by path-difference measurements (-[G01S 5/28](#) takes precedence-)

- G01S 5/26
 - • Position of receiver fixed by co-ordinating a plurality of position lines defined by path-difference measurements (~~G01S 5/28 takes precedence~~)
- G01S 5/28
 - • by co-ordinating position lines of different shape, e.g. hyperbolic, circular, elliptical, radial (~~sonar indicators providing co-ordinated display of direction and distance G01S 7/62~~)
- G01S 7/00**

Details of systems according to groups [G01S 13/00](#) , [G01S 15/00](#) , [G01S 17/00](#) ~~{(apparatus for measuring unknown time-intervals by electronic means, e.g. Vernier method [G04F 10/00](#))}~~
- G01S 7/003
 - {Transmission of data between radar, sonar or lidar systems and remote stations (~~in general [G08C](#)~~)}
- G01S 7/006
 - • {using shared front-end circuitry, e.g. antennas (~~G01S 13/765 , [G01S 13/825](#) take precedence~~)}
- G01S 7/02
 - of systems according to group [G01S 13/00](#)
- G01S 7/021
 - • {Auxiliary means for detecting or identifying radar signals or the like, e.g. radar jamming signals (~~multi-channel PRF-analysers, per se [G01R 23/155](#)~~)}
- G01S 7/023
 - • {interference mitigation, e.g. reducing or avoiding non-intentional interference with other HF-transmitters, base station transmitters for mobile communication or other radar systems, e.g. using electro-magnetic interference [EMI] reduction techniques (~~means for anti-jamming [G01S 7/36](#) ; auxiliary means for detecting or identifying radar signals or the like [G01S 7/021](#)~~)}
- G01S 7/024
 - • {using polarisation effects (~~in waveguides [H01P 1/165](#) ; for aerials [H01Q](#) , e.g. [H01Q 15/22](#) , [H01Q 15/24](#) , [H01Q 19/195](#)~~)}
- G01S 7/03
 - • Details of HF subsystems specially adapted therefor, e.g. common to transmitter and receiver (~~TR boxes [H01J 17/64](#) ; waveguides or resonators or other devices of the waveguide type [H01P](#) ; aerials [H01Q](#) ; basic electronic circuitry, e.g. generation of oscillations, modulation, demodulation, amplification, pulse technique [H03](#) ; impedance networks, resonators [H03H](#)~~)
- G01S 7/034
 - • • {Duplexers (~~switching devices for waveguides [H01P 1/10](#) ; transmit-receive switching in transceivers [H04B 1/44](#)~~)}
- G01S 7/036
 - • • {involving a transfer mixer (mixers in general, [H03D 7/00](#))}
- U G01S 7/04
 - • Display arrangements
- G01S 7/046
 - • • {using an intermediate storage device, e.g. a recording/reproducing device (~~video recording in general [H04N](#)~~)}
- G01S 7/06
 - • • Cathode-ray tube displays {or other two-dimensional or three-dimensional displays (~~cathode ray oscilloscopes in general [G01R 13/20](#)~~)}

WARNING
Groups [G01S 7/062](#) - [G01S 7/24](#) are not complete pending a reorganization. See provisionally [G01S 7/06](#)
- G01S 7/064
 - • • • {using a display memory for image processing (~~G01S 7/298 takes precedence~~)}
- G01S 7/068
 - • • • {with data-rate converters preceding the display, e.g. flicker free display, constant brightness display (~~G01S 7/298 takes precedence~~)}
- G01S 7/10
 - • • • Providing two-dimensional and co-ordinated display of distance and direction{ in general [G01R 13/208](#)}
- G01S 7/20
 - • • • Stereoscopic displays; Three-dimensional displays; Pseudo-three-dimensional displays{ in general [G01R 13/206](#)}
- G01S 7/22
 - • • • Producing cursor lines and indicia by electronic means{ in general [G01R 13/30](#)}
- U G01S 7/28
 - • Details of pulse systems

- G01S 7/2813
 - . . . {Means providing a modification of the radiation pattern for cancelling noise, clutter or interfering signals, e.g. side lobe suppression, side lobe blanking, null-steering arrays (-specially adapted to secondary radar systems [G01S 13/762](#) ; aerials or aerials systems [H01Q 21/29](#) , [H01Q 25/00](#)-)}
- U G01S 7/285
 - . . . Receivers
- G01S 7/292
 - Extracting wanted echo-signals (-~~Doppler systems G01S 13/50~~ ~~Doppler systems G01S 13/50~~)
- U G01S 7/295
 - Means for transforming co-ordinates or for evaluating data, e.g. using computers
- G01S 7/2955
 - {Means for determining the position of the radar coordinate system for evaluating the position data of the target in another coordinate system (-[G01S 7/24](#) takes precedence; sighting devices adapted for indirect laying of fire [F41G 3/16](#) ; Inertial navigation [G01C 21/16](#)-)}
- U G01S 7/35
 - . . Details of non-pulse systems
- U G01S 7/352
 - . . . {Receivers}
- G01S 7/354
 - {Extracting wanted echo-signals (-~~Doppler systems G01S 13/50~~ ~~Doppler systems G01S 13/50~~)}
- G01S 7/36
 - . . Means for anti-jamming (-in general [H04K 3/00](#)-),{e.g. ECCM, i.e. electronic counter-counter measures (-for irregular PRF see also [G01S 13/22](#) , [G01S 13/528](#) ; for frequency agility of carrier wave see also [G01S 13/24](#) ; [G01S 7/2813](#) takes precedence-) ; random interference pulse cancellers [G01S 7/2928](#) ; identification of radar jamming signals [G01S 7/021](#)-}
- G01S 7/38
 - . . Jamming means, e.g. producing false echoes (-in general [H04K 3/00](#)-) { reflecting surfaces comprising a plurality of reflecting particles, e.g. chaff, [H01Q 15/145](#) ; identification of radar signals [G01S 7/021](#)-}
- U G01S 7/40
 - . . Means for monitoring or calibrating
- G01S 7/4004
 - . . . {of parts of a radar system (-see provisionally also [G01S 7/40](#)-)}
- G01S 7/4052
 - . . . {by simulation of echoes (-analogue simulators in general [G06G 7/78](#)-)}
- U G01S 7/41
 - . . using analysis of echo signal for target characterisation; Target signature; Target cross-section
- G01S 7/411
 - . . . {Identification of targets based on measurements of radar reflectivity (-[G01S 7/415](#) takes precedence-)}
- G01S 7/48
 - . . of systems according to group [G01S 17/00](#)
- U G01S 7/483
 - . . Details of pulse systems
- U G01S 7/486
 - . . . Receivers
- U G01S 7/487
 - Extracting wanted echo signals,{e.g. pulse detection}
- G01S 7/4876
 - {by removing unwanted signals (-[G01S 7/495](#) takes precedence-)}
- G01S 7/495
 - . . Counter-measures or counter-counter-measures {using electronic or electro-optical means}
- G01S 7/499
 - . . using polarisation effects (-measuring polarisation of light [G01J](#)-)
- G01S 7/52
 - . . of systems according to group [G01S 15/00](#)
- G01S 7/52001
 - . . {Auxiliary means for detecting or identifying sonar signals or the like, e.g. sonar jamming signals (-multi-channel PRF-analysers per se [G01R 23/155](#)-)}
- G01S 7/52003
 - . . {Techniques for enhancing spatial resolution of targets (-beam formers in general [G10K 11/34](#) ; [G01S 7/52046](#) takes precedence-)}
- G01S 7/52004
 - . . {Means for monitoring or calibrating (short-range imaging [G01S 7/5205](#))}
- G01S 7/52017
 - . . {particularly adapted to short-range imaging (-[G01S 7/53](#) takes precedence-)}
- U G01S 7/52023
 - . . . {Details of receivers}
- G01S 7/52025
 - {for pulse systems (-[G01S 7/52034](#) takes precedence-)}

- G01S 7/52026 {Extracting wanted echo signals (~~Doppler systems G01S 15/50~~; *Doppler systems G01S 15/50*; Doppler short range imaging systems [G01S 15/8979](#)-)}
- G01S 7/5203 {for non-pulse systems, e.g. CW systems (~~G01S 7/52034~~ takes precedence)}
- G01S 7/52033 {Gain control of receivers (~~for seismic signals G01V 1/245~~-)}
- U G01S 7/52036 {using analysis of echo signal for target characterisation}
- U G01S 7/52038 {involving non-linear properties of the propagation medium or of the reflective target}
- G01S 7/52039 {exploiting the non-linear response of a contrast enhancer; e.g. a contrast agent (~~diagnostic techniques involving the use of contrast agents A61B 8/481~~-)}
- G01S 7/52041 {detecting modification of a contrast enhancer, e.g. detecting the destruction of a contrast agent by an acoustic wave, e.g. loss of correlation (~~diagnostic techniques involving the use of contrast agents A61B 8/481~~-)}
- G01S 7/52042 {determining elastic properties of the propagation medium or of the reflective target (~~diagnostic techniques involving the measurement of strain A61B 8/485~~-)}
- G01S 7/52046 . . . {Techniques for image enhancement involving transmitter or receiver (~~image enhancement by image data processing G06T 5/00~~-)}
- G01S 7/52047 {for elimination of side lobes or of grating lobes; for increasing resolving power (~~beam formers in general G10K 11/34~~-)}
- U G01S 7/52053 . . . {Display arrangements}
- G01S 7/52057 {Cathode ray tube displays (~~cathode ray oscilloscopes in general G01R 13/20~~-)}
- U G01S 7/5206 {Two-dimensional coordinated display of distance and direction; B-scan display}
- G01S 7/52061 {Plan position indication (*PPI display*) (~~PPI display~~); C-scan display}
- G01S 7/52068 {Stereoscopic displays; Three-dimensional displays; Pseudo 3D displays (~~G01S 15/8993~~ takes precedence)}
- G01S 7/52079 . . . {Constructional features (~~constructional features of transducers B06B~~; mounting transducers [G10K 11/00](#) ; constructional features of ultrasonic medical diagnostic devices [A61B 8/44](#)-)}
- G01S 7/52082 {involving a modular construction, e.g. a computer with short range imaging equipment (~~modular ultrasonic medical diagnostic devices A61B 8/4411~~-)}
- G01S 7/52084 {related to particular user interfaces (~~special user input means for ultrasonic medical diagnostic devices A61B 8/467~~-)}
- G01S 7/52085 . . . {Details related to the ultrasound signal acquisition, e.g. scan sequences (~~control of medical diagnostic ultrasound devices A61B 8/54~~-)}
- G01S 7/52087 {using synchronization techniques (~~control of medical diagnostic ultrasound devices involving acquisition triggered by a physiological signal A61B 8/543~~-)}
- G01S 7/52088 {involving retrospective scan line rearrangements (~~medical diagnostic ultrasound devices involving retrospective matching to a physiological signal A61B 8/5284~~-)}
- U G01S 7/5209 {using multibeam transmission}
- G01S 7/52093 {using coded signals (~~G01S 15/8959~~ takes precedence)}

- G01S 7/52096
 - . . . {related to power management, e.g. saving power or prolonging life of electronic components ~~(-details of power supplies for ultrasonic medical diagnostic imaging devices [A61B 8/56-](#))~~}
- G01S 7/521
 - . . {Constructional features ~~(-constructional features of transducers [B06B](#); mounting transducers [G10K 11/00-](#))~~}
- G01S 7/523
 - . . Details of pulse systems~~{(-short-range imaging [G01S 7/52017](#) ; methods or devices for transmitting, conducting or directing sound [G10K 11/18-](#))~~}
- U G01S 7/526
 - . . . Receivers
- G01S 7/527
 - Extracting wanted echo signals~~{(-~~Doppler systems G01S 15/50~~ *Doppler systems [G01S 15/50](#)*)~~}
- G01S 7/529
 - Gain of receiver varied automatically during pulse-recurrence period~~{(-for seismic signals [G01V 1/245-](#))~~}
- G01S 7/534
 - . . Details of non-pulse systems~~{(-short-range imaging [G01S 7/52017](#))~~}
- G01S 7/5345
 - . . . {Gain control of receivers ~~(-for seismic signals [G01V 1/245-](#))~~}
- G01S 7/537
 - . . Counter-measures or counter-counter-measures, e.g. jamming, anti-jamming~~{(-in general [H04K-](#))~~}
- G01S 7/56
 - . . Display arrangements~~{(-short-range imaging [G01S 7/52053-](#))~~}
- G01S 7/62
 - . . . Cathode-ray tube displays {or other two-dimensional or three-dimensional displays ~~(-cathode ray oscilloscopes in general [G01R 13/20-](#))~~}
- G01S 7/64
 - . . Luminous indications ~~(-[G01S 7/62](#) takes precedence-)~~~~{(-short-range imaging [G01S 7/52076-](#))~~}
- G01S 11/00**

Systems for determining distance or velocity not using reflection or reradiation ~~(-direction-finders [G01S 3/00](#) ; position-fixing by co-ordinating two or more distance determinations [G01S 5/00-](#))~~
- G01S 11/02
 - . using radio waves ~~(-[G01S 19/00](#) takes precedence-)~~
- G01S 11/08
 - . . using synchronised clocks ~~(-synchronisation of electronic clocks [G04G 7/02-](#))~~
- G01S 13/00**

Systems using the reflection or reradiation of radio waves, e.g. radar systems; Analogous systems using reflection or reradiation of waves whose nature or wavelength is irrelevant or unspecified ~~(-using acoustic waves [G01S 15/00](#) ; using electromagnetic waves other than radio waves [G01S 17/00-](#))~~

NOTES

This group covers :

- systems for detecting the presence of an object, e.g. by reflection or reradiation from the object itself, or from a transponder associated with the object, for determining the distance or relative velocity of an object, for providing a co-ordinated display of the distance and direction of an object or for obtaining an image thereof;
- systems arranged for mounting on a moving craft or vehicle and using the reflection of waves from an extended surface external to the craft, e.g. the surface of the earth, to determine the velocity and direction of motion of the craft

relative to the surface.

This group does not cover :

- systems for determining the direction of an object by means not employing reflection or reradiation, which are covered by groups [G01S 1/00](#) or [G01S 3/00](#) ;
- systems for determining distance or velocity of an object by means not employing reflection or reradiation, which are covered by group [G01S 11/00](#) .

- G01S 13/006
 - {Theoretical aspects (~~G01S 7/418~~ , ~~G01S 13/9094~~ , ~~G01S 13/958~~ take precedence-)}
- U G01S 13/02
 - Systems using reflection of radio waves, e.g. primary radar systems; Analogous systems
- G01S 13/0218
 - {Very long range radars, e.g. surface wave radar, over-the-horizon or ionospheric propagation systems (~~for meteorological use G01S 13/95-~~)}
- G01S 13/04
 - • Systems determining the presence of a target (~~based on relative movement of target G01S 13/56-~~)
- U G01S 13/06
 - • Systems determining position data of a target
- G01S 13/08
 - • • Systems for measuring distance only (~~indirect measurement G01S 13/46-~~)
- G01S 13/10
 - • • • using transmission of interrupted pulse modulated waves (~~determination of distance by phase measurement G01S 13/32-~~)
- G01S 13/103
 - • • • • {particularities of the measurement of the distance (~~G01S 13/12~~ , ~~G01S 13/14~~ , ~~G01S 13/16~~ , ~~G01S 13/18~~ and ~~G01S 13/20~~ take precedence-)}
- G01S 13/106
 - • • • • {using transmission of pulses having some particular characteristics (~~G01S 13/12~~ , ~~G01S 13/22~~ , ~~G01S 13/24~~ , ~~G01S 13/26~~ , ~~G01S 13/28~~ and ~~G01S 13/30~~ take precedence-)}
- G01S 13/22
 - • • • • using irregular pulse repetition frequency{ [G01S 13/12](#) takes precedence-}
- U G01S 13/26
 - • • • • wherein the transmitted pulses use a frequency- or phase-modulated carrier wave
- U G01S 13/28
 - • • • • • with time compression of received pulses
- G01S 13/282
 - • • • • • {using a frequency modulated carrier wave (~~G01S 13/286~~ takes precedence-)}
- G01S 13/42
 - • • Simultaneous measurement of distance and other co-ordinates (~~indirect measurement G01S 13/46-~~)
- G01S 13/426
 - • • • {Scanning radar, e.g. 3D radar (~~G01S 13/66~~ takes precedence-)}
- U G01S 13/44
 - • • • Monopulse radar, i.e. simultaneous lobing
- G01S 13/4409
 - • • • • {HF sub-systems particularly adapted therefor, e.g. circuits for signal combination (~~multi-lobing aerials or aerial systems H01Q 25/00-~~)}
- G01S 13/4472
 - • • • • {with means specially adapted to airborne monopulse systems (~~clutter elimination using Doppler effect: G01S 13/449-~~)}
- U G01S 13/50
 - • Systems of measurement based on relative movement of target
- G01S 13/505
 - • • {using Doppler effect for determining closest range to a target or corresponding time, e.g. miss-distance indicator (~~proximity fuze see F42C 13/04~~ ; miss-distance indicators in general [F41J 5/12-](#))}

- G01S 13/52
 - • • Discriminating between fixed and moving objects or between objects moving at different speeds{(-coherent receivers [G01S 7/288](#)-)}
- U G01S 13/522
 - • • • using transmissions of interrupted pulse modulated waves
- G01S 13/524
 - • • • • based upon the phase or frequency shift resulting from movement of objects, with reference to the transmitted signals, e.g. coherent MTI {(-coherent receivers [G01S 7/288](#)-)}
- G01S 13/5244
 - • • • • {Adaptive clutter cancellation {(-specially adapted for airborne MTI, [G01S 13/5242](#)-)}
- G01S 13/5248
 - • • • • {combining a coherent MTI processor with a zero Doppler processing channel and a clutter mapped memory, e.g. MTD (*Moving target detector*), (*Moving target detector*), (-area MTI [G01S 13/538](#)-)}
- G01S 13/526
 - • • • • performing filtering on the whole spectrum without loss of range information, e.g. using delay line cancellers or comb filters; { [G01S 13/5244](#) takes precedence-}
- G01S 13/53
 - • • • • performing filtering on a single spectral line and associated with one or more range gates with a phase detector or a frequency mixer to extract the Doppler information, e.g. pulse Doppler radar{ [G01S 13/5244](#) takes precedence-}
- G01S 13/56
 - • • • for presence detection{ presence detection using near field arrangements [G01V 3/00](#) , e.g. [G01V 3/08](#) , [G01V 3/12](#) ; burglar, theft or intruder alarms with electrical actuation [G08B 13/22](#) - [G08B 13/26](#)-}
- G01S 13/58
 - • • Velocity or trajectory determination systems; Sense-of-movement determination systems{(-systems applied to the controlling of traffic [G01S 13/92](#)-)}
- U G01S 13/585
 - • • • {processing the video signal in order to evaluate or display the velocity value}
- G01S 13/587
 - • • • • {using optical means {(-optical computing devices in general [G06E](#)-)}
- G01S 13/60
 - • • • wherein the transmitter and receiver are mounted on the moving object, e.g. for determining ground speed, drift angle, ground track {(-[G01S 13/64](#) takes precedence-)}
- G01S 13/62
 - • • • Sense-of-movement determination{(-[G01S 13/589](#) takes precedence-)}
- U G01S 13/74
 - Systems using reradiation of radio waves, e.g. secondary radar systems; Analogous systems
- U G01S 13/75
 - • using transponders powered from received waves, e.g. using passive transponders, {or using passive reflectors}
- U G01S 13/751
 - • • {wherein the responder or reflector radiates a coded signal}
- G01S 13/756
 - • • • {using a signal generator for modifying the reflectivity of the reflector {(-[G01S 13/758](#) takes precedence-)}
- U G01S 13/76
 - • wherein pulse-type signals are transmitted
- G01S 13/762
 - • • {with special measures concerning the radiation pattern, e.g. S.L.S. (-aerials or aerial systems providing at least two radiation patterns e.g. providing sum and difference patterns, [H01Q 25/00](#)-)}
- G01S 13/767
 - • • {Responders; Transponders {(-teaching or practice apparatus for gun-aiming or gun-laying using reflecting targets or active targets [F41G 3/26](#)-)}
- G01S 13/78
 - • • discriminating between different kinds of targets, e.g. IFF-radar, i.e. identification of friend or foe{(-[G01S 13/75](#) , [G01S 13/767](#) take precedence-)}
- G01S 13/86
 - Combinations of radar systems with non-radar systems, e.g. sonar, direction finder{(-*Combination of sonar systems with non-sonar or non-radar systems G01S 15/025* ; *Combination of sonar systems with non-sonar or non-radar systems G01S 15/025* ; combination of lidar systems with systems other than lidar, radar or sonar [G01S 17/023](#)-)}

- U G01S 13/87 · Combinations of radar systems, e.g. primary radar and secondary radar
- G01S 13/874 · · {Combination of several systems for attitude determination (in general [G01C](#), control of attitude [G05D 1/08](#)-)}
- G01S 13/876 · · {Combination of several spaced transponders or reflectors of known location for determining the position of a receiver ([G01S 13/874](#) takes precedence-)}
- G01S 13/878 · · {Combination of several spaced transmitters or receivers of known location for determining the position of a transponder or a reflector ([G01S 13/874](#) takes precedence-)}
- G01S 13/88 · Radar or analogous systems specially adapted for specific applications (-electromagnetic prospecting or detecting of objects, e.g. near-field detection, [G01V 3/00](#)-)
- G01S 13/882 · · {for altimeters (-measuring height using barometric means [G01C 5/06](#)-)}
- G01S 13/883 · · {for missile homing, autodirectors (-missile guidance systems [F41G 7/22](#)-)}
- G01S 13/885 · · {for ground probing (-prospecting or detecting using electromagnetic waves [G01V 3/12](#)-)}
- G01S 13/886 · · {for alarm systems (-alarms with electrical actuation [G08B 13/22](#)-)}
- U G01S 13/89 · · for mapping or imaging
- G01S 13/90 · · · using synthetic aperture techniques, {e.g. correcting range migration errors (-compression in range per se [G01S 13/28](#) ; platform motion compensation for AMTI [G01S 13/5242](#)-)}
- G01S 13/9011 · · · · {with frequency domain processing of the SAR signals in azimuth ([G01S 13/9005](#) takes precedence-)}
- G01S 13/9017 · · · · {with time domain processing of the SAR signals in azimuth, e.g. time focusing ([G01S 13/9005](#) takes precedence-)}
- G01S 13/9023 · · · · {combined with monopulse or interferometric techniques (-monopulse hybrid systems [G01S 13/4481](#)-)}
- G01S 13/9029 · · · · {specially adapted for moving target detection (-MTI per se [G01S 13/52](#)-)}
- U G01S 13/9035 · · · · {Particular SAR processing techniques not provided for elsewhere, e.g. squint mode, doppler beam-sharpening mode, spotlight mode, bistatic SAR, inverse SAR}
- G01S 2013/9076 · · · · · {Polarimetric features in SAR (-see also [G01S 7/024](#)-)}
- G01S 13/91 · · for traffic control ([G01S 13/93](#) takes precedence-)
- U G01S 13/93 · · for anti-collision purposes
- G01S 13/9303 · · · {between aircraft or spacecraft in flight, e.g. secant (-terrain-avoidance systems [G01S 13/94](#)-)}
- U G01S 13/931 · · · {between land vehicles; between land vehicles and fixed obstacles}
- U G01S 2013/9371 · · · · {Sensor installation details}
- G01S 2013/9389 · · · · · {in the bumper area (-ultrasonic transducer in bumper area [G01S 2015/938](#) ; bumper with obstacle sensor of electric or electronic type [B60R 19/483](#)-)}

U G01S 15/00 Systems using the reflection or reradiation of acoustic waves, e.g. sonar systems

NOTES

This group covers :

- systems for detecting the presence of an object, e.g. by reflection or reradiation from the object itself, or from a transponder associated with the object, for determining

the distance or relative velocity of an object,
for
providing a co-ordinated display of the distance
and
direction of an object or for obtaining an image
thereof;
- systems arranged for mounting on a moving craft or
vehicle
and using the reflection of waves from an extended
surface
external to the craft, e.g. the surface of the earth,
to
determine the velocity and direction of motion of the
craft
relative to the surface.

This group does not cover :

- systems for determining the direction of an object by
means
not employing reflection or reradiation, which are
covered
by groups [G01S 1/00](#) or [G01S 3/00](#)
;
- systems for determining distance or velocity of an
object
by means not employing reflection or reradiation, which
are
covered by group [G01S 11/00](#) .

- G01S 15/02
 - using reflection of acoustic waves (~~G01S 15/66~~ takes precedence)
- U G01S 15/06
 - • Systems determining the position data of a target
- G01S 15/08
 - • • Systems for measuring distance only (~~indirect measurement G01S 15/46~~)
- G01S 15/10
 - • • • using transmission of interrupted pulse-modulated waves (~~determination of distance by phase measurement G01S 15/32~~)
- G01S 15/101
 - • • • • {Particularities of the measurement of distance (~~G01S 15/12~~ , [G01S 15/14](#) , and [G01S 15/18](#) take precedence)}
- G01S 15/42
 - • • Simultaneous measurement of distance and other co-ordinates (~~indirect measurement G01S 15/46~~)
- U G01S 15/50
 - • Systems of measurement, based on relative movement of the target
- U G01S 15/52
 - • • Discriminating between fixed and moving objects or between objects moving at different speeds
- G01S 15/523
 - • • • {for presence detection (~~burglar, theft or intruder alarms G08B 13/00~~ , e.g. [G08B 13/16](#))}
- G01S 15/58
 - • • Velocity or trajectory determination systems; Sense-of-movement determination systems(~~velocity measurement in imaging systems G01S 15/8979~~)
- G01S 15/62
 - • • • Sense-of-movement determination(~~G01S 15/588~~ takes precedence)}
- G01S 15/74
 - Systems using reradiation of acoustic waves, e.g. IFF, i.e. identification of friend or foe(~~teaching or practice apparatus for gun-arming or gun-laying using reflecting targets or active targets F41G 3/26~~)
- U G01S 15/87
 - Combinations of sonar systems
- G01S 15/872
 - • {Combination of several systems for attitude determination (~~using inertial means G01C 9/00~~ , control of attitude [G05D 1/08](#))}
- G01S 15/874
 - • {Combination of several spaced transponders or reflectors of known location for determining the position of a receiver (~~G01S 15/872~~ takes precedence)}

- G01S 15/876
 - • {Combination of several spaced transmitters or receivers of known location for determining the position of a transponder or a reflector (~~G01S 15/872~~ takes precedence)}
- G01S 15/88
 - Sonar systems specially adapted for specific applications (~~seismic or acoustic prospecting or detecting G01V 1/00~~)
- U G01S 15/89
 - • for mapping or imaging
- U G01S 15/8906
 - • • {Short-range imaging systems; Acoustic microscope systems using pulse-echo techniques}
- G01S 15/8909
 - • • • {using a static transducer configuration (~~sound-focusing or directing per se G10K 11/26~~)}
- G01S 15/8934
 - • • • {using a dynamic transducer configuration (~~mounting transducers, e.g. provided with mechanical moving or orienting device per se G10K 11/004~~)}
- U G01S 15/8965
 - • • • {using acousto-optical or acousto-electronic conversion techniques}
- G01S 15/8968
 - • • • • {using acoustical modulation of a light beam (~~acousto-optical light control devices G02F 1/11 , G02F 1/33~~)}
- G01S 15/897
 - • • • • {using application of holographic techniques (holography per se G03H)}
- G01S 15/8975
 - • • • • {using acoustical image/electron beam converter tubes (~~tubes therefor H01J 31/495~~)}
- G01S 15/8977
 - • • • • {using special techniques for image reconstruction, e.g. FFT, geometrical transformations, spatial deconvolution, time deconvolution (~~digital image processing per se G06T 1/00~~)}
- U G01S 15/93
 - • for anti-collision purposes
- U G01S 15/931
 - • • {between land vehicles; between land vehicles and fixed obstacles}
- G01S 2015/937
 - • • • {sensor installation details (~~constructional features of transducers G01S 7/521 and B06B; casing of transducers, e.g. housing, cover or filler details, G10K 9/22 ; mounting of transducers, i.e. fixture, fitting or holder details, G10K 11/004~~)}
- G01S 2015/938
 - • • • • {in the bumper area (~~radar in bumper area G01S 2013/9389 ; bumper with obstacle sensor of electric or electronic type B60R 19/483~~)}

G01S 17/00

Systems using the reflection or reradiation of electromagnetic waves other than radio waves, e.g. lidar systems (~~photogrammetry or videogrammetry G01C 11/00~~)

NOTE

The note after group [G01S 13/00](#) also applies to this group.

- G01S 17/02
 - Systems using the reflection of electromagnetic waves other than radio waves (~~G01S 17/66~~ takes precedence)
- U G01S 17/06
 - • Systems determining position data of a target
- G01S 17/08
 - • • for measuring distance only (~~indirect measurement G01S 17/46 ; active triangulation systems G01S 17/48 ; passive systems using a parallactic triangle G01C 3/10 , G01C 3/22 , G01C 3/24 , G01C 3/26~~)
- G01S 17/10
 - • • • using transmission of interrupted pulse-modulated waves (~~determination of distance by phase measurements G01S 17/32~~)
- G01S 17/42
 - • • Simultaneous measurement of distance and other co-ordinates (~~indirect measurement G01S 17/46~~)
- U G01S 17/46
 - • • Indirect determination of position data
- G01S 17/48
 - • • • Active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves (~~passive systems using a parallactic triangle G01C 3/10 , G01C 3/22 , G01C 3/24 , G01C 3/26 ; active systems for automatic generation of focusing signals G02B 7/32~~)

- G01S 17/74
- Systems using reradiation of electromagnetic waves other than radio waves, e.g. IFF, i.e. identification of friend or foe (teaching or practice apparatus for gun-arming or gun-laying using reflecting targets or active targets [F41G 3/26](#))
- U G01S 19/00** **Satellite radio beacon positioning systems; Determining position, velocity or attitude using signals transmitted by such systems**
- NOTE
- In this group, or in the patent documents classified in this group, the following abbreviations are often used:
- PDOP = Position Dilution of Precision - RAIM = Receiver Autonomous Integrity Monitoring
- U G01S 19/01** • Satellite radio beacon positioning systems transmitting time-stamped messages, e.g. GPS [Global Positioning System], GLONASS [Global Orbiting Navigation Satellite System] or GALILEO
- U G01S 19/13** • • Receivers
- G01S 19/21** • • • interference related issues; {Issues related to cross-correlation, spoofing or other methods of denial of service (interference-related aspects in spread spectrum receivers per se [H04B 1/7097](#))}
- G01S 19/24** • • • Acquisition or tracking {or demodulation} of signals transmitted by the system (synchronisation aspects of direct sequence spread spectrum modulation [H04B 1/7073](#))
- G01S 19/29** • • • • carrier, {including Doppler,} related (G01S 19/246 takes precedence)
- G01S 19/30** • • • • code related (G01S 19/246 takes precedence)
- G01S 2205/00** **Position-fixing by co-ordinating two or more direction or position line determinations; Position-fixing by co-ordinating two or more distance determinations (not used)**
- G01S 2205/001** • Transmission of position information to remote stations (not used)

Project: N/A (G01T)

- G01T** **MEASUREMENT OF NUCLEAR OR X-RADIATION (radiation analysis of materials, mass spectrometry G01N; counters per se G06M, H03K; electric discharge tubes for analysing radiation or particles H01J 40/00 , H01J 47/00 , H01J 49/00-)**
- NOTES
- This subclass covers the measurement of X-radiation, gamma radiation, corpuscular radiation, cosmic radiation or neutron radiation.
- Attention is drawn to the Notes following the title of class [G01](#).
- G01T 1/00** **Measuring X-radiation, gamma radiation, corpuscular radiation, or cosmic radiation (G01T 3/00 , G01T 5/00 take precedence)**
- G01T 1/02** • Dosimeters (G01T 1/15 takes precedence, measuring exposure time to X-rays [H05G 1/28](#))
- G01T 1/04** • • Chemical dosimeters (G01T 1/06 , G01T 1/08 take precedence)
- G01T 1/06** • • Glass dosimeters {using colour change; including plastic dosimeters}
- G01T 1/08** • • Photographic dosimeters (sensitive materials, processing thereof [G03C](#) ; { photometry [G01J 1/52](#) })
- U G01T 1/10** • • Luminescent dosimeters
- G01T 1/105** • • • Read-out devices (G01T 1/115 takes precedence)
- G01T 1/11** • • • Thermo-luminescent dosimeters (thermo-luminescent compositions [C09K 11/00](#))

- G01T 1/14
 - • Electrostatic dosimeters (-construction of ionisation chambers [H01J 47/02](#) ; { electrometers [G01R 5/28](#) })
- G01T 1/15
 - Instruments in which pulses generated by a radiation detector are integrated, e.g. by a diode pump circuit (-pulse rate meters in general [G01R 23/02](#)-)
- G01T 1/16
 - Measuring radiation intensity (-[G01T 1/29](#) takes precedence; { self-powered detectors [G01T 3/006](#) ; using an ionisation chamber filled with a liquid or solid, e.g. frozen liquid, dielectric [G01T 3/008](#) })
- G01T 1/1603
 - • {with a combination of at least two different types of detector (-see provisionally also [G01T 1/16](#)-)}
- G01T 1/1606
 - • {-with other specified detectors not provided for in the other sub-groups of [G01T 1/16](#)-(-see provisionally also [G01T 1/16](#)-)}
- G01T 1/161
 - • Application in the field of nuclear medicine, e.g. in vivo counting({-apparatus for radiation diagnosis [A61B 6/00](#)-})
- G01T 1/1611
 - • • {using both transmission and emission sources sequentially (-SPECT imaging [G01T 1/1642](#) ; PET imaging [G01T 1/2985](#) ; detecting hidden objects, e.g. weapons, explosives [G01V 5/0008](#))}
- G01T 1/1612
 - • • • {with scintillation detectors (-[G01T 1/20](#) takes precedence-)}
- G01T 1/1614
 - • • • {with semiconductor detectors (-[G01T 1/24](#) takes precedence-)}
- G01T 1/1615
 - • • {using both transmission and emission sources simultaneously (-SPECT imaging [G01T 1/1642](#) ; PET imaging [G01T 1/2985](#) ; detecting hidden objects, e.g. weapons, explosives [G01V 5/0008](#))}
- G01T 1/1617
 - • • • {with scintillation detectors (-[G01T 1/20](#) takes precedence-)}
- G01T 1/1618
 - • • • {with semiconductor detectors (-[G01T 1/24](#) takes precedence-)}
- G01T 1/163
 - • • Whole body counters{ hand or feet contamination measurement [G01T 1/167](#) ; lung, brain, thyroid, kidney or the like counting [G01T 1/16](#)-}
- G01T 1/1635
 - • • • {involving relative movement between detector and subject; scanning beds (-profile scanning [G01T 1/166](#) ; positioning patients, tiltable tables for radiation diagnosis [A61B 6/04](#)-)}
- G01T 1/164
 - • • Scintigraphy (-radioisotopes [G21G 4/00](#) ; tracers [G21H 5/00](#) ; { measurement of spatial distribution [G01T 1/2914](#) ; apparatus for radiation diagnosis in different planes [A61B 6/02](#) })
- U G01T 1/1641
 - • • • {Static instruments for imaging the distribution of radioactivity in one or two dimensions using one or several scintillating elements; Radio-isotope cameras}
- G01T 1/1644
 - • • • • {using an array of optically separate scintillation elements permitting direct location of scintillations (-[G01T 1/1645](#) takes precedence-)}
- G01T 1/1647
 - • • • • {Processing of scintigraphic data (-not related to a particular imaging system [G01T 1/2992](#)-)}
- G01T 1/1648
 - • • • • {Ancillary equipment for scintillation cameras e.g. reference markers, devices for removing motion artifacts, calibration devices (-adapted for flow studies [G01T 1/1647](#)-)}
- G01T 1/166
 - • • • • involving relative movement between detector and subject ({ scanners in general without using scintigraphy [G01T 1/2964](#) })
- G01T 1/1663
 - • • • • {Processing methods of scan data, e.g. involving contrast enhancement, background reduction, smoothing, motion correction, dual radio-isotope scanning, computer processing (-for measuring spatial distribution of radiation [G01T 1/2992](#) ; general purpose image data processing [G06T 1/00](#) ; computerized tomography [G06T 11/003](#)-); Ancillary equipment(-colour printers [G01T 1/1666](#)-)}
- G01T 1/1666
 - • • • • • {adapted for printing different symbols or colours according to the intensity or energy level of the detected radioactivity (-depth discrimination in colour [G01T 1/2985](#)-)}

- G01T 1/167
 - Measuring radioactive content of objects, e.g. contamination (-whole body counters [G01T 1/163](#)-)
- G01T 1/169
 - Exploration, location of contaminated surface areas (-prospecting by the use of nuclear radiation e.g. of natural or induced radioactivity [G01V 5/00](#)-){in situ measurement, e.g. floor contamination monitor(-directional detectors [G01T 1/2907](#)-)}
- G01T 1/17
 - Circuit arrangements not adapted to a particular type of detector{(-pulse-selection circuits [H03K](#) , [G01R](#)-)}
- G01T 1/171
 - • {Compensation of dead-time counting losses (see provisionally also [G01T 1/17](#))}
- G01T 1/172
 - • with coincidence circuit arrangements (-[G01T 1/178](#) takes precedence; { combination of detectors, see [G01T 1/1603](#) , [G01T 1/30](#) , [G01T 1/361](#) })
- G01T 1/175
 - • Power supply circuits (-power supply circuits per se [H02J](#) ; converters [H02M](#)-)
- G01T 1/18
 - with counting-tube arrangements, e.g. with Geiger counters (-tubes [H01J 47/08](#) ; { with alarm provision [G01T 7/125](#) })
- G01T 1/185
 - with ionisation chamber arrangements (-construction of ionisation chambers [H01J 47/02](#) ; { gas analysis by ionisation [G01N 27/66](#) ; measuring pressure [G01L 9/00](#) ; leak detection [G01M 3/00](#) ; tele-measurements [G08C](#) })
- U G01T 1/20
 - with scintillation detectors
- G01T 1/2004
 - • {Scintilloscopes (-fluoroscopes [G21K 4/00](#) ; radiation diagnosis [A61B 6/00](#)-)}
- U G01T 1/202
 - • the detector being a crystal
- G01T 1/2023
 - • • {Selection of materials (-see provisionally also [G01T 1/202](#)-)}
- G01T 1/2026
 - • • {Well-type detectors (-see provisionally also [G01T 1/202](#)-)}
- U G01T 1/203
 - • the detector being made of plastics
- G01T 1/2033
 - • • {Selection of materials (-see provisionally also [G01T 1/203](#)-)}
- G01T 1/2036
 - • • {Well-type detectors (-see provisionally also [G01T 1/203](#)-)}
- G01T 1/24
 - with semiconductor detectors (-semiconductor devices per se [H01L 31/00](#)-)
- G01T 1/241
 - • {Electrode arrangements, e.g. continuous or parallel strips or the like (-constructional or manufacturing details [H01L 31/00](#)-)}
- G01T 1/242
 - • {Stacked detectors, e.g. for depth information} (-constructional or manufacturing details [H01L 25/00](#)-)}
- G01T 1/243
 - • {Modular detectors, e.g. arrays formed from self contained units (-constructional or manufacturing details [H01L 25/00](#)-)}
- G01T 1/247
 - • {Detector read-out circuitry (for processing gain or off-set correction [H04N](#))}
- G01T 1/249
 - • {specially adapted for use in SPECT or PET (-SPECT imaging [G01T 1/1642](#) ; PET imaging [G01T 1/2985](#) ; detecting hidden objects, e.g. weapons, explosives [G01V 5/0008](#))}
- G01T 1/26
 - with resistance detectors{(-photoresistors [H01L 31/00](#)-)}
- G01T 1/28
 - with secondary-emission detectors (-secondary-electron-emitting electrodes in general [H01J 1/32](#)-){optionally combined with scintillation counters(-secondary emission tubes [H01J 43/00](#)-)}
- G01T 1/29
 - Measurement performed on radiation beams, e.g. position or section of the beam; Measurement of spatial distribution of radiation (-scintigraphy [G01T 1/164](#) ; mass-spectrometers [H01J 49/025](#)-)
- G01T 1/2907
 - {Angle determination; Directional detectors; Telescopes (-prospecting by the use of nuclear radiation, e.g. of natural or induced radioactivity [G01V 5/00](#)-)}
- U G01T 1/2914
 - {Measurement of spatial distribution of radiation}

- G01T 1/2921 . . . {Static instruments for imaging the distribution of radioactivity in one or two dimensions; Radio-isotope cameras (-using scintigraphy [G01T 1/1641-](#))}
- G01T 1/295 {using coded aperture devices e.g. Fresnel zone plates (-handling of radiation of particles e.g. using diaphragms, collimators, diffraction [G21K 1/00-](#))}
- G01T 1/2957 {using channel multiplier arrays (-channel multipliers [H01J 43/18](#) ; [G01T 1/1645](#) takes precedence-)}
- G01T 1/2964 . . . {Scanners (-using scintigraphy [G01T 1/166-](#))}
- G01T 1/2978 . . . {Hybrid imaging systems, e.g. using a position sensitive detector (camera) to determine the distribution in one direction and using mechanical movement of the detector or the subject in the other direction or using a camera to determine the distribution in two dimensions and using movement of the camera or the subject to increase the field of view (-[G01T 1/2985](#) takes precedence-)}
- G01T 1/2985 . . . {In depth localisation e.g. using positron emitters; *Tomographic imaging (longitudinal and transverse section imaging; Tomographic imaging apparatus for radiation diagnosis sequentially in different planes, stereoscopic radiation diagnosis)*(~~longitudinal and transverse section imaging; apparatus for radiation diagnosis sequentially in different planes, stereoscopic radiation diagnosis~~); (-using external radiation sources [A61B 6/02-](#))}
- G01T 1/2992 . . . {Radioisotope data or image processing not related to a particular imaging system; Off-line processing of pictures, e.g. rescanners (-for measuring radiation intensity [G01T 1/1663](#) ; digital computing or data processing equipment or methods specially adapted for nuclear physics or nuclear engineering **G06F15/52** ; general purpose image data processing [G06T 1/00](#) ; computerized tomography [G06T 11/003-](#))}
- G01T 1/30 . . . Measuring half-life of a radioactive substance{(-period meters for nuclear fission reactors [G21C 17/14-](#))}
- G01T 1/36 . . . Measuring spectral distribution of X-rays or of nuclear radiation {spectrometry(-pulse selection circuits per se [H03K](#) ; investigation of materials by radiation diffraction [G01N 23/20](#) ; spectrometer tubes [H01J 49/00-](#))}
- G01T 1/361 . . . {with a combination of detectors of different types, e.g. anti-Compton spectrometers (-intensity measurement with a combination of detectors [G01T 1/1603](#) ; with coincidence circuit [G01T 1/172](#) ; see provisionally also [G01T 1/36-](#))}
- NOTE
[G01T 1/361](#) takes precedence over [G01T 1/362](#)
- G01T 1/362 . . . {with scintillation detectors (-see provisionally also [G01T 1/36](#) , [G01T 1/20-](#))}
- G01T 1/365 . . . {with ionisation detectors e.g. proportional counter (-see provisionally also [G01T 1/36-](#))}
- G01T 1/366 . . . {with semi-conductor detectors (-see provisionally also [G01T 1/36-](#))}
- G01T 1/367 . . . {with resistance detectors (-see provisionally also [G01T 1/36-](#))}
- G01T 1/368 . . . {with secondary-emission detectors (-see provisionally [G01T 1/36-](#))}
- G01T 1/38 . . . Particle discrimination and measurement of relative mass, e.g. by measurement of loss of energy with distance (dE/dx){(-constructional details of semiconductor detectors therefor [H01L 31/00-](#))}
- G01T 1/40 . . . Stabilisation of spectrometers{(-circuits specially adapted for scintillation detectors [G01T 1/208-](#))}

- G01T 3/00** **Measuring neutron radiation** (**-G01T 5/00 takes precedence; { tubes therefor [H01J 47/12](#) ; circuits with such tubes [G01T 1/18](#) ; measuring short time intervals [G04F 10/00](#) ; measuring pulse characteristics [G01R 29/02](#) ; neutron choppers [G21K 1/04](#) ; polarimeters [G01T 1/32](#) }**)
- U G01T 3/001 · {Spectrometry}
- G01T 3/003 · · {Recoil spectrometers} (-light-nuclei recoil ionisation tubes per se [H01J 47/1277](#)-)}
- G01T 3/005 · · {Time-of-flight spectrometers} (-see provisionally also [G01T 3/00](#)-)}
- G01T 3/006 · {using self-powered detectors (for neutrons as well as for Y- or X-rays) , e.g. using Compton-effect (Compton diodes) or photo-emission or a (n,B) nuclear reaction} (-photovoltaic semiconductors [H01L 31/00](#) ; photo-tubes [H01J 40/00](#) ; thermionic generators [H01J 45/00](#) ; radioisotopic generators [G21H 1/00](#) , e.g. [G21H 1/02](#), [G21H 1/04](#)-)}
- G01T 3/008 · {using an ionisation chamber filled with a gas, liquid or solid, e.g. frozen liquid, dielectric} (**-G01T 3/006 takes precedence-**)}
- G01T 3/08 · with semiconductor detectors} (-semiconductor detectors per se [H01L 31/00](#)-)}
- G01T 5/00** **Recording of movements or tracks of particles** (**-spark chambers [H01J 47/00](#)-**); **Processing or analysis of such tracks**
- G01T 5/002 · {using a combination of several movement of track recording devices} (-detectors associated with recording chambers and only serving to trigger these chambers, see the appropriate groups of the chamber e.g. [G01T 5/04](#) - [G01T 5/08](#) ; see provisionally also [G01T 5/00](#) and other sub-groups-)}
- G01T 5/004 · {Non-electrical readout of multi-wire or parallel-plate chambers} (-non-electrical readout in such chambers per se [H01J 47/22](#)-)}
- G01T 5/08 · Scintillation chambers} (-discharge tubes [H01J 40/00](#) , [H01J 47/00](#) ; semiconductor devices [H01L](#)-)}
- G01T 5/12 · Circuit arrangements with multi-wire or parallel-plate chambers, e.g. spark chambers} (-tubes per se [H01J 47/00](#)-)}
- G01T 5/122 · · {for readout of each individual wires; (-readout in such chambers per se [H01J 47/16](#)-); for processing the output signals}
- U **G01T 7/00** **Details of radiation-measuring instruments**
- G01T 7/005 · {calibration techniques} (-stabilization of spectrometer [G01T 1/40](#)-)}
- G01T 7/02 · Collecting means for receiving or storing samples to be investigated {and possibly directly transporting the samples to the measuring arrangement; particularly for investigating radioactive fluids(-sampling, preparing specimens for investigation in general [G01N 1/00](#) , [G01N 1/02](#) ; shielded cells or rooms structurally combined with manipulating devices [G21F](#) ; measuring of chromatographically separated samples [G01N 30/00](#) to [G01N 30/96](#)-)}
- G01T 7/06 · · by electrostatic precipitation} (**-G01T 7/04 takes precedence-**)
- G01T 7/08 · Means for conveying samples received{(i.e. sample changers [G01N 35/00](#)-)}
- U G01T 7/12 · Provision for actuation of an alarm
- G01T 7/125 · · {Alarm- or controlling circuits using ionisation chambers, proportional counters or Geiger-Mueller tubes, also functioning as UV detectors} (-measuring radiation intensity with counting tubes [G01T 1/18](#) ; measuring radiation intensity with ionisation chambers [G01T 1/185](#) ; fire alarms actuated by presence of radiation of particles, e.g. of infra-red radiation, of ions [G08B 17/11](#) ; flame monitoring in combustion devices [F23Q 7/00](#) , [F23N](#) ; discharge tubes per se [H01J 47/00](#)-)}

Project: N/A (G01V)**G01V**

GEOPHYSICS; GRAVITATIONAL MEASUREMENTS; DETECTING MASSES OR OBJECTS (-detecting or locating foreign bodies for diagnostic, surgical or person-identification purposes [A61B](#); means for indicating the location of accidentally buried, e.g. snow-buried persons [A63B 29/02](#) ; investigating or analysing earth materials by determining their chemical or physical properties [G01N](#); measuring electric or magnetic variables in general, other than direction or magnitude of the earth`s field [G01R](#); electronic or nuclear magnetic resonance arrangements [G01R 33/20](#) ; radar, sonar or analogous methods in general, detecting masses or objects involving these methods [G01S](#)-)

NOTES

In this subclass, the geophysical methods apply both to the earth and to other celestial objects, e.g. planets.

Attention is drawn to the Notes following the title of class [G01](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G01V 3/11](#) covered by [G01V 3/101](#) , [G01V 3/104](#)

U G01V 1/00**Seismology; Seismic or acoustic prospecting or detecting**NOTE

Groups [G01V 1/44](#) to [G01V 1/52](#) take precedence over groups [G01V 1/001](#) to [G01V 1/393](#) [G01V 1/42](#)

WARNING

Group [G01V 1/159](#) does not correspond to former or current IPC groups.

Concordance ECLA:IPC for this group is as follows: - [G01V 1/159](#) : [G01V 1/02](#)

G01V 1/001

- {Acoustic presence detection (measurement of sonic vibrations [G01H](#); alarm systems [G08B](#))}

G01V 1/003

- {Seismic data acquisition in general, e.g. survey design (-[G01V 1/3808](#) , [G01V 1/42](#) takes precedence-)}

G01V 1/006

- • {generating single signals by using more than one generator, e.g. beam steering or focussing arrays (-[G01V 1/13](#) , [G01V 1/3861](#) takes precedence-)}

G01V 1/008

- {Earthquake measurement or prediction (-event detection for microseismic events [G01V 1/288](#)-)}

G01V 1/02

- Generating seismic energy ({ [G01V 1/003](#) takes precedence } ; blasting in general [F42](#); nuclear explosives [G21J](#))

U G01V 1/04

- • Details

G01V 1/06

- • • Ignition devices (-[G01V 1/393](#) takes precedence-)

G01V 1/09

- • • Transporting arrangements, e.g. on vehicles (-[G01V 1/38](#) takes precedence-)

G01V 1/104

- • using explosive charges (-[G01V 1/157](#) takes precedence-)

G01V 1/133

- • using fluidic driving means, e.g. highly pressurised fluids; {using implosion} (-[G01V 1/104](#) takes precedence-)

G01V 1/143

- • using mechanical driving means {e.g. motor driven shaft}(-[G01V 1/104](#) , [G01V 1/133](#) take precedence-)

G01V 1/157

- • using spark discharges; using exploding wires (spark gaps, {non-enclosed} discharge apparatus, not otherwise provided for [H01T](#)-)

- G01V 1/159
 - • {using piezoelectric or magnetostrictive driving means (-generating mechanical vibrations by using piezoelectric or magnetostrictive effect in general, [B06B 1/06](#) , [B06B 1/08](#)-)}
- G01V 1/16
 - Receiving elements for seismic signals (electromechanical transducers [H04R](#)); Arrangements or adaptations of receiving elements
- G01V 1/168
 - • {Deployment of receiver elements (-[G01V 1/3843](#) takes precedence-)}
- G01V 1/18
 - • Receiving elements, e.g. seismometer, geophone {or torque detectors, for localised single point measurements}
- U G01V 1/20
 - • Arrangements of receiving elements, e.g. geophone pattern
- G01V 1/201
 - • • {Constructional details of seismic cables, e.g. streamers (-integrated optoseismic systems [G01V 1/226](#) ; line connectors in general [H01R](#), transducer mountings in general [G10K 11/004](#)-)}
- G01V 1/208
 - • • • {having a continuous structure (detecting traffic [G08G](#), transducers in general [G10K](#))}
- G01V 1/22
 - Transmitting seismic signals to recording or processing apparatus (signal transmitting systems in general [G08C](#); transmission systems in general [H04B](#))
- G01V 1/24
 - Recording seismic data (-transforming one recording into another [G01V 1/32](#) ; recording measured values in general [G01D](#)-)
- G01V 1/245
 - • {Amplitude control for seismic recording (-control of amplification in general [H03G](#)-)}
- G01V 1/28
 - Processing seismic data, e.g. analysis, for interpretation, for correction (-[G01V 1/48](#) takes precedence-)
- G01V 1/288
 - • {Event detection in seismic signals, e.g. microseismics} (-earthquakes [G01V 1/008](#) ; [G01V 1/36](#) takes precedence-)
- G01V 1/30
 - • Analysis (-[G01V 1/50](#) takes precedence-)
- G01V 1/308
 - • • {Time lapse or 4D effects, e.g. production related effects to the formation (fluid flow per se [E21B 47/00](#))}
- G01V 1/32
 - • Transforming one recording into another {or one representation into another}
- G01V 1/34
 - • Displaying seismic recordings {or visualisation of seismic data or attributes}
- U G01V 1/36
 - • Effecting static or dynamic corrections on records, e.g. correcting spread; Correlating seismic signals; Eliminating effects of unwanted energy
- G01V 1/364
 - • • {Seismic filtering (-[G01V 1/37](#) takes precedence-)}
- G01V 1/38
 - specially adapted for water-covered areas (-[G01V 1/28](#) , { [G01V 1/42](#) }take precedence)]
- G01V 1/3808
 - • {Seismic data acquisition, e.g. survey design (-in general [G01V 1/003](#)-)}
- G01V 1/3843
 - • {Deployment of seismic devices, e.g. of streamers (equipment for marine deployment in general [B63B](#))}
- U G01V 1/40
 - specially adapted for well-logging
- G01V 1/42
 - • using generators in one well and receivers elsewhere or vice-versa (-[G01V 1/52](#) takes precedence-)
- G01V 1/44
 - • using generators and receivers in the same well (-[G01V 1/52](#) takes precedence-)
- G01V 3/00**
 - Electric or magnetic prospecting or detecting (-by optical means [G01V 8/00](#)-); Measuring magnetic field characteristics of the earth, e.g. declination, deviation (for navigation, for surveying [G01C](#); { measuring direction or magnitude of magnetic fields or magnetic flux in general [G01R 33/02](#) })**

- G01V 3/08
 - operating with magnetic or electric fields produced or modified by objects or geological structures or by detecting devices (-with electromagnetic waves [G01V 3/12](#) ; measuring the magnetic field characteristics of the earth [G01V 3/40](#)-)
- G01V 3/081
 - • {the magnetic field is produced by the objects or geological structures (-characterised by the method of magnetic field measurement [G01R 33/00](#)-)}
- G01V 3/082
 - • {operating with fields produced by spontaneous potentials, e.g. electrochemical or produced by telluric currents (-[G01V 3/26](#) takes precedence-)}
- G01V 3/088
 - • {operating with electric fields (-[G01V 3/082](#) takes precedence-)}
- U G01V 3/10
 - • using induction coils
- G01V 3/101
 - • • {by measuring the impedance of the search coil; by measuring features of a resonant circuit comprising the search coil (-measuring impedance or characteristics derived therefrom [G01R 27/00](#) , e.g. quality factor [G01R 27/26](#)-)}
- G01V 3/104
 - • • {using several coupled or uncoupled coils (-[G01V 3/101](#) takes precedence-)}
- G01V 3/12
 - operating with electromagnetic waves{(-operating with millimetre waves [G01V 8/005](#)-)}
- U G01V 3/15
 - specially adapted for use during transport, e.g. by a person, vehicle or boat
- G01V 3/16
 - • specially adapted for use from aircraft (-[G01V 3/165](#) to [G01V 3/175](#) take precedence-)
- G01V 3/165
 - • operating with magnetic or electric fields produced or modified by the object or by the detecting device (-with electromagnetic waves [G01V 3/17](#)-)
- G01V 3/17
 - • operating with electromagnetic waves{(-operating with millimetre waves [G01V 8/005](#)-)}
- U G01V 3/18
 - specially adapted for well-logging
- G01V 3/26
 - • operating with magnetic or electric fields produced or modified either by the surrounding earth formation or by the detecting device (-with electromagnetic waves [G01V 3/30](#)-)
- G01V 3/36
 - Recording data (-[G01V 3/34](#) takes precedence-)
- G01V 3/38
 - Processing data, e.g. for analysis, for interpretation, for correction (-computing in general [G06](#)-)
- G01V 5/00**

Prospecting or detecting by the use of nuclear radiation, e.g. of natural or induced radioactivity (determining the properties of materials [G01N](#); measuring nuclear radiation [G01T](#))

WARNING

Pending reclassification, the subgroups of this group are not complete; see also this group
- G01V 5/0008
 - {Detecting hidden objects, e.g. weapons, explosives (-sorting of materials or articles according to radioactive properties [B07C 5/342](#) ; investigating or analysing materials by the use of wave or particle radiation [G01N 23/00](#)-)}
- U G01V 5/0016
 - • {Active interrogation, i.e. using an external radiation source, e.g. using pulsed, continuous or cosmic rays}
- G01V 5/0041
 - • • {Multiple energy techniques using one type of radiation, e.g. X-rays of different energies (-multi-beam applications, e.g. X-rays and neutrons [G01V 5/0033](#) ; spectroscopic applications [G01V 5/0016](#)-)}
- G01V 5/005
 - • • {using Tomography, e.g. CT or SPECT (-detector details in CT applications [G01T 1/2985](#)-)}

- G01V 5/0066
- • {having relative motion between the source, detector and object other than by conveyor (-G01V 5/005 takes precedence-)}
- G01V 5/0075
- {Passive interrogation (-for hand, feet or portals G01T 1/167 ; for contaminated surface areas G01T 1/169-)}
- U G01V 5/04
- specially adapted for well-logging
- G01V 5/08
- • using primary nuclear radiation sources or X-rays{ e.g. for inducing radioactivity; investigating or analysing materials by the use of wave or particle radiation, e.g. X-rays, neutrons G01N 23/00 }
- G01V 5/10
- • • using neutron sources{ neutron generating tubes H05H 5/00 ; neutron sources using isotopes G21G 4/00 }
- G01V 5/12
- • • using gamma or X-ray sources{ gamma sources using isotopes G21G 4/00 ; X-ray tubes H01J 35/00 }
- U G01V 7/00** **Measuring gravitational fields or waves; Gravimetric prospecting or detecting**
- G01V 7/005
- {using a resonating body or device, e.g. string (-G01V 7/08 to G01V 7/12 take precedence; measuring resonant frequency of mechanical vibrations G01H 13/00 ; measuring frequency per se G01R 23/00-)}
- G01V 7/08
- using balances (-balances in general G01G-)
- G01V 8/00** **Prospecting or detecting by optical means (-measurement of characteristics of light G01J ; optical scanning systems G02B 26/10 ; discharge tubes detecting the presence of radiation H01J 40/00 , H01J 47/00 ; semiconductor devices sensitive to light H01L 31/00-)**
- NOTE
This group covers the use of {millimetre waves,} infra-red, visible or ultra-violet light.
- G01V 8/10
- Detecting, e.g. by using light barriers (-by reflection from the object G01S 17/00 ; counting of objects carried by a conveyer G06M 7/00 ; signalling or calling arrangements G08B ; detecting movement of traffic to be counted or controlled G08G 1/01 ; proximity switches H03K 17/945 , H03K 17/965-)
- G01V 9/00** **Prospecting or detecting by methods not provided for in groups G01V 1/00 to G01V 8/00**
- G01V 9/007
- {by detecting gases or particles representative of underground layers at or near the surface (-analysing earth materials G01N 33/24 ; analysing gases per se G01N-)}
- G01V 11/00** **prospecting or detecting by methods combining techniques covered by two or more of main groups G01V 1/00 to G01V 9/00**
- G01V 11/002
- {Details, e.g. power supply systems for logging instruments, transmitting or recording data, specially adapted for well logging, also if the prospecting method is irrelevant (-means for transmitting well survey signals E21B 47/12 ; signal transmission systems in general G08C ; transmission in general H04B-)}
- G01V 11/005
- • {Devices for positioning logging sondes with respect to the borehole wall (-centralising devices for drilling rods or pipes E21B 17/10 ; setting or locking tools in boreholes E21B 23/00 ; Locating objects in boreholes E21B 47/09-)}
- G01V 15/00** **Tags attached to, or associated with, an object, in order to enable detection of the object (-record carriers for use with machines G06K 19/00 ; signs, labels G09F-)**
- U G01V 2210/00** **Details of seismic processing or analysis**

- G01V 2210/20 · Trace signal pre-filtering to select, remove or transform specific events or signal components, i.e. trace-in/trace-out (-removing noise [G01V 2210/32-](#))
- G01V 2210/30 · Noise handling (-trace signal pre-filtering [G01V 2210/20-](#))
- G01V 2210/34 · · Noise estimation (-quality control [G01V 2200/14-](#))
- G01V 2210/40 · Transforming data representation (-for pre-filtering purposes [G01V 2210/20-](#))
- G01V 2210/50 · Corrections or adjustments related to wave propagation (-noise handling [G01V 2210/30-](#))

Project: N/A (G02B)**G02B**

OPTICAL ELEMENTS, SYSTEMS, OR APPARATUS (-G02F takes precedence; measuring-instruments, see the relevant subclass of G01, e.g. optical rangefinders G01C; testing of optical elements, systems, or apparatus G01M 11/00 ; spectacles G02C; sound lenses G10K 11/30 ; electron and ion "optics" H01J; X-ray "optics" H01J, H05G 1/00 ; optical elements structurally combined with electric discharge tubes H01J 5/16 , H01J 29/89 , H01J 37/22 ; microwave "optics" H01Q; combination of optical elements with television receivers H04N 5/72 ; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84 ; {optical apparatus 42H})

NOTE

In this subclass, the following terms are used with the meanings indicated :

- "simple lens or prism" means a single lens or prism;
- "compound lens or prism" means an optical member, the constituents of which either are close together without air-space or (except in group **G02B11/00**) are "in broken contact", i.e. with the air-space between the constituents having no essential optical influence;
- "objective" means a lens or an optical system designed to produce a real image of a real object;
- "eyepiece" means a lens or an optical system designed to produce a virtual image for viewing by the eye or by another optical system;
- "front" or "rear" is determined by looking from the more distant conjugate.

WARNING

The following IPC groups are not used in the CPC classification system. Subject matter covered by these groups is classified in the CPC groups: [G02B 11/00](#) - [G02B 11/34](#) covered by [G02B 9/00](#) and subgroups and [G02B 13/00](#) and subgroups

G02B 1/00

Optical elements characterised by the material of which they are made (-compositions of optical glasses [C03C 3/00](#) ; cements for glass [C03C 27/00-](#))

- U G02B 1/002 · {made of materials engineered to provide properties not available in nature, e.g. metamaterials}

- G02B 1/005
 - {made of photonic crystals or photonic band gap materials (~~-photonic band-gap structures or photonic lattices in integrated optics G02B 6/1225 ; photonic band-gap structures or photonic lattices in optical fibres G02B 6/02295-~~)}
 - G02B 1/02
 - made of crystals, e.g. rock-salt, semi-conductors (~~-G02B 1/08 takes precedence-~~)
 - G02B 1/04
 - made of organic materials, e.g. plastics (~~-G02B 1/08 takes precedence-~~)
- NOTE**
In this group the use of specific polymers is indicated using the relevant subdivision of [C08L](#) preceded by a plus sign
- G02B 1/10
 - {~~Coatings~~ *Optical coatings* produced by application to, or surface treatment of, optical elements, ~~e.g. anti-reflection coatings (-G02B 1/08 takes precedence; reflecting coatings G02B 5/08 ; coating of glass in general C03C 17/00-)~~}

Project: RP0110 (G02B)

- G02B 1/105
 - {Protective coatings (~~anti-fouling arrangements G02B 27/0006~~)}

WARNING
Group G02B 1/105 is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups G02B 1/14, G02B 1/16 - G02B 1/18.

Until reclassification is complete, groups G02B 1/105 and G02B 1/14 - G02B 1/18 should be considered in order to perform a complete search.
- U G02B 1/11
 - Anti-reflection coatings
- G02B 1/111
 - • {using ~~one or more~~ layers comprising organic ~~material~~ *materials* (~~G02B 1/118 takes precedence~~)}

WARNING
Group G02B 1/111 is incomplete pending reclassification of documents from group G02B 1/118.

Until reclassification is complete, groups G02B 1/111 and G02B 1/118 should be considered in order to perform a complete search.
- G02B 1/113
 - • • {using ~~one or more layers comprising~~ inorganic ~~material~~ *layer materials* only (~~G02B 1/118 takes precedence~~)}

WARNING
Groups G02B 1/113 - G02B 1/116 are incomplete pending reclassification of documents from group G02B 1/118.

Until reclassification is complete, groups G02B 1/113 - G02B 1/116 and G02B 1/118 should be considered in order to perform a complete search.

Project: N/A (G02B)

- G02B 1/115
 - • • • {Multilayers}

Project: RP0110 (G02B)

- G02B 1/116
 - • • • • {including ~~one or more~~ *electrically* conducting layers}

NOTE

When {the arrangement of} electrically conducting layers also exhibit an anti-static effect, classification is also made in group G02B 1/16

Project: N/A (G02B)

- G02B 1/118
- • {having sub-*optical* wavelength surface structures designed to provide an enhanced transmittance, e.g. moth-eye structures (~~anti-glare structures G02B 5/02~~, ~~surface plasmon devices G02B 5/008~~)}
- G02B 1/12
- • by surface treatment, e.g. by irradiation (~~surface treatment of glass by irradiation G03C 23/0005~~)
- N G02B 1/14
- • Protective coatings, e.g. hard coatings
- WARNING
Group [G02B 1/14](#) is incomplete pending reclassification of documents from group [G02B 1/105](#).
- Until reclassification is complete, groups [G02B 1/14](#) and [G02B 1/105](#) should be considered in order to perform a complete search.
- N G02B 1/16
- • having an anti-static effect, e.g. electrically conducting coatings
- WARNING
Group [G02B 1/16](#) is incomplete pending reclassification of documents from groups [G02B 1/10](#), [G02B 1/105](#) and [G02B 1/116](#).
- Until reclassification is complete, groups [G02B 1/16](#), [G02B 1/10](#), [G02B 1/105](#) and [G02B 1/116](#) should be considered in order to perform a complete search.
- N G02B 1/18
- • Coatings for keeping optical surfaces clean, e.g. hydrophobic or photo-catalytic films ([G02B 1/16](#) takes precedence)
- WARNING
Group [G02B 1/18](#) is incomplete pending reclassification of documents from groups [G02B 1/10](#), [G02B 1/105](#) and [G02B 27/0006](#).
- Until reclassification is complete, groups [G02B 1/18](#), [G02B 1/10](#), [G02B 1/105](#) and [G02B 27/0006](#) should be considered in order to perform a complete search.
- G02B 3/00** **Simple or compound lenses (artificial eyes [A61F 2/14](#) ; spectacle lenses or contact lenses for the eyes [G02C](#) ; watch or clock glasses [G04B 39/00](#))**
- G02B 3/0006
- {Arrays (~~G02B 3/02~~, [G02B 5/188](#) take precedence)}
- U G02B 3/0037
- • {characterized by the distribution or form of lenses}
- G02B 3/005
- • • {arranged along a single direction only, e.g. lenticular sheets (~~G02B 3/0043~~ takes precedence)}
- G02B 3/0056
- • • {arranged along two different directions in a plane, e.g. honeycomb arrangement of lenses (~~G02B 3/0043~~ takes precedence; miniaturised objectives for electronic devices employing wafer level optics [G02B 13/0085](#))}
- U G02B 3/0062
- • • {Stacked lens arrays, i.e. refractive surfaces arranged in at least two planes, without structurally separate optical elements in-between}
- G02B 3/0068
- • • • {arranged in a single integral body or plate, e.g. laminates or hybrid structures with other optical elements (~~G02B 5/1885~~, [G02B 17/002](#), [G02B 27/2214](#) take precedence)}
- G02B 3/0081
- {having one or more elements with analytic function to create variable power (~~variable magnification in general [G02B 15/00](#)~~)}
- G02B 3/02
- with non-spherical faces (~~G02B 3/10~~ takes precedence)
- G02B 3/08
- • with discontinuous faces, e.g. Fresnel lens (~~diffractive Fresnel lenses [G02B 5/1876](#)~~)

G02B 5/00	Optical elements other than lenses (-light guides G02B 6/00 ; optical logic elements G02F 3/00-)
G02B 5/005	· {Diaphragms (-for cameras G03B 9/02 -)}
G02B 5/008	· {Surface plasmon devices (-diffractive gratings with a pitch less than or comparable to the wavelength G02B 5/1809 ; surface plasmons in integrated optics G02B 6/1226 ; optical analysis of materials by means of surface plasmons G01N 21/553 -)}
U G02B 5/02	· Diffusing elements; Afocal elements
U G02B 5/0205	· · {characterised by the diffusing properties}
U G02B 5/021	· · · {the diffusion taking place at the element's surface, e.g. by means of surface roughening or micro-prismatic structures}
G02B 5/0221	· · · · {the surface having an irregular structure (- G02B 5/0226 takes precedence-)}
G02B 5/0231	· · · · {the surface having micro-prismatic or micro-pyramidal shape (-macroscopic prism arrays G02B 5/045 -)}
G02B 5/08	· Mirrors(-vehicle mirrors involving special optical features B60R 1/08 -)}
G02B 5/0808	· · {having a single reflecting layer (- G02B 5/0883 , G02B 5/0891 take precedence-)}
G02B 5/0816	· · {Multilayer mirrors, i.e. having two or more reflecting layers (- G02B 5/0883 , G02B 5/0891 take precedence-)}
G02B 5/0883	· · {with a refractive index gradient (-rugate filters G02B 5/289 -)}
G02B 5/0891	· · {Ultraviolet [UV] mirrors (-apparatus for microlithography exposure G03F 7/70 ; X-ray multilayer structures G21K 1/06 -)}
U G02B 5/12	· Reflex reflectors
G02B 5/136	· · plural reflecting elements forming part of a unitary body (- G02B 5/124 takes precedence-)
G02B 5/18	· Diffraction gratings(-holographic optical elements G02B 5/32 , G03H ; integrally combined with optical fibres G02B 6/02057 ; for coupling light guides G02B 6/34 ; integrally combined with optical integrated light guides G02B 6/12 ;grating systems G02B 27/44 -)}
G02B 5/1814	· · {structurally combined with one or more further optical elements, e.g. lenses, mirrors, prisms or other diffraction gratings (- G02B 5/189 takes precedence-)}
G02B 5/1819	· · · {Plural gratings positioned on the same surface, e.g. array of gratings (-plural diffractive elements positioned sequentially along the optical path G02B 27/4272 -)}
G02B 5/1828	· · {having means for producing variable diffraction (-controlling the direction of light by means of one or more diffracting elements G02B 26/0808 ; acousto-optical elements G02F 1/11 , G02F 1/33 ; electro- or magneto-optical diffraction G02F 1/292 , G02F 1/2955 -)}
G02B 5/1833	· · {comprising birefringent materials (-birefringent elements per se G02B 5/3083 -)}
G02B 5/1842	· · {Gratings for image generation (- G02B 5/1847 takes precedence-)}
G02B 5/1861	· · {Reflection gratings characterised by their structure, e.g. step profile, contours of substrate or grooves, pitch variations, materials (- G02B 5/1809 , G02B 5/1828 , G02B 5/1833 , G02B 5/1838 and G02B 5/1847 take precedence-)}
G02B 5/1866	· · {Transmission gratings characterised by their structure, e.g. step profile, contours of substrate or grooves, pitch variations, materials (- G02B 5/1809 , G02B 5/1828 , G02B 5/1833 , G02B 5/1838 and G02B 5/1847 take precedence-)}

- G02B 5/1876
- {Diffractive Fresnel lenses; Zone plates; Kinoforms (~~G02B 5/1842, G02B 5/1847~~ take precedence; optical systems having diffractive correction means [G02B 27/0037](#) ; Fresnel lenses operating by refraction [G02B 3/08](#)-)}
- G02B 5/20
- Filters (~~polarising elements [G02B 5/30](#) ; { manufacturing optical filters by photographic processes [G03C 7/12](#) , by lithographic processes [G03F 7/0007](#) }~~)
- G02B 5/203
- {having holographic or diffractive elements (~~diffraction gratings per se [G02B 5/18](#) ; holographic elements per se [G02B 5/32](#) ; generating the spectrum using diffraction elements [G01J 3/18](#)-)}~~
- G02B 5/204
- {in which spectral selection is performed by means of a conductive grid or array, e.g. frequency selective surfaces (~~for use with wavelengths longer than the infra-red light [H01Q 15/0006](#)-)}~~
- G02B 5/22
- Absorbing filters(~~[G02B 5/201](#) to [G02B 5/208](#) take precedence-~~)
- G02B 5/24
- Liquid filters (~~[G02B 5/23](#) takes precedence-~~)
- G02B 5/26
- Reflecting filters (~~[G02B 5/28](#) takes precedence-~~)
- U G02B 5/28
- Interference filters
- G02B 5/284
- {of etalon type comprising a resonant cavity other than a thin solid film, e.g. gas, air, solid plates (~~etalons for fibre optic multiplexing [G02B 6/29358](#) ; etalons for spectral measurement [G01J 3/26](#)-)}~~
- G02B 5/285
- {comprising deposited thin solid films (~~[G02B 5/281](#) to [G02B 5/289](#) take precedence; multilayered film filters for fibre optic multiplexing [G02B 6/29361](#)-)}~~
- G02B 5/30
- Polarising elements (~~light-modulating devices [G02F 1/00](#)-)~~
- G02B 5/3016
- {involving passive liquid crystal elements (~~optical properties of liquid crystals [G02F 1/0063](#) ; polarising elements associated with active liquid crystal devices [G02F 1/133528](#)-)}~~
- G02B 5/3025
- {Polarisers, i.e. arrangements capable of producing a definite output polarisation state from an unpolarised input state (~~[G02B 5/3008](#) , [G02B 5/3016](#) take precedence-~~)}
- G02B 5/3075
- {for use in the UV (~~[G02B 5/3066](#) takes precedence-~~)}
- G02B 5/3083
- {Birefringent or phase retarding elements (~~[G02B 5/3008](#) , [G02B 5/3016](#) take precedence; systems for polarisation control [G02B 27/286](#) ; manufacturing phase modulating patterns by lithographic processes [G03F 7/001](#)-)}~~
- G02B 5/32
- {Birefringent or phase retarding elements (~~[G02B 5/3008](#) , [G02B 5/3016](#) take precedence; systems for polarisation control [G02B 27/286](#) ; manufacturing phase modulating patterns by lithographic processes [G03F 7/001](#)-)}~~
- U **G02B 6/00**
- Light guides**
- G02B 6/0001
- {specially adapted for lighting devices or systems (~~lighting or signalling on vehicles using light guides [B60Q 1/00](#) ; lighting devices for vehicle interior using light guides [B60Q 3/002](#) ; lighting devices mounted on the vehicle rear part using light guides [F21S 48/2225](#) ; lighting devices for vehicle dashboards [B60Q 3/04](#) ; measuring arrangements having light conducting pointers [G01D 13/265](#) ; illumination of liquid crystal displays [G02F1/13357](#) ; illuminated signs [G09F 13/00](#)-)}~~
- G02B 6/0005
- {the light guides being of the fibre type (~~[G02B 6/0003](#) takes precedence-~~)}
- G02B 6/0006
- {Coupling light into the fibre (~~in general [G02B 6/4298](#)-)}~~
- U G02B 6/0011
- {the light guides being planar or of plate-like form}
- G02B 6/0013
- {Means for improving the coupling-in of light from the light source into the light guide (~~coupling light into light guides in general [G02B 6/42](#)-)}~~
- G02B 6/0075
- {Arrangements of multiple light guides (~~[G02B 6/0028](#) takes precedence-~~)}

- U G02B 6/0081
 - . . . {Mechanical or electrical aspects of the light guide and light source in the lighting device peculiar to the adaptation to planar light guides, e.g. concerning packaging}
- G02B 6/0085
 - {Means for removing heat created by the light source from the package (-heat extraction or cooling elements for semiconductor light sources in general [H01L 33/64](#)-)}
- U G02B 6/0086
 - {Positioning aspects}
- G02B 6/009
 - {of the light source in the package (-[G02B 6/0021](#) takes precedence-)}
- G02B 6/0091
 - {of the light source relative to the light guide (-[G02B 6/0021](#) takes precedence-)}
- G02B 6/02
 - . Optical fibre with cladding {with or without a coating}(-mechanical structures for providing tensile strength and external protection [G02B 6/44](#)-)
- U G02B 6/02004
 - . . {characterised by the core effective area or mode field radius}
- U G02B 6/02009
 - . . . {Large effective area or mode field radius, e.g. to reduce nonlinear effects in single mode fibres}
- G02B 6/02023
 - {Based on higher order modes, i.e. propagating modes other than the LP01 or HE11 fundamental mode (-mode converters [G02B 6/14](#)-)}
- G02B 6/02028
 - . . . {Small effective area or mode field radius, e.g. for allowing nonlinear effects (-non-linear optical waveguide devices [G02F 1/365](#)-)}
- G02B 6/02033
 - . . {Core or cladding made from organic material, e.g. polymeric material (-[G02B 1/04](#) takes precedence-)}
- G02B 6/02047
 - . . {Dual mode fibre (-[G02B 6/105](#) takes precedence-)}
- G02B 6/02052
 - . . {comprising optical elements other than gratings, e.g. filters (-comprising gratings [G02B 6/02057](#)-)}
- U G02B 6/02057
 - . . {comprising gratings}
- G02B 6/02061
 - . . . {Grating external to the fibre and in contact with the fibre, e.g. evanescently coupled, gratings applied to the fibre end (-mechanically induced in the fibre [G02B 6/02071](#) , surface relief on the fibre [G02B 6/02066](#)-)}
- G02B 6/02071
 - . . . {Mechanically induced gratings, e.g. having microbends (-[G02B 6/02066](#) takes precedence; mode converters [G02B 6/14](#)-)}
- U G02B 6/02076
 - . . . {Refractive index modulation gratings, e.g. Bragg gratings}
- G02B 6/0208
 - {characterised by their structure, wavelength response (-[G02B 6/02114](#) , [G02B 6/02171](#) , [G02B 6/02195](#) take precedence; multiple layer cores or claddings [G02B 6/036](#) , protective coverings [G02B 6/4429](#)-)}
- G02B 6/02114
 - {characterised by enhanced photosensitivity characteristics of the fibre, e.g. hydrogen loading, heat treatment (-treatment of glass fibres by ion diffusion, implantation, radiation, [C03C 25/60](#) , [C03C 25/62](#)-)}
- G02B 6/02123
 - {characterised by the method of manufacture of the grating (-photolithography [G03F 7/0005](#)-)}
- G02B 6/02147
 - {Point by point fabrication, i.e. grating elements induced one step at a time along the fibre, e.g. by scanning a laser beam, arc discharge scanning (-[G02B 6/02133](#) and [G02B 6/02142](#) take precedence-)}
- G02B 6/02152
 - {involving moving the fibre or a manufacturing element, stretching of the fibre (-[G02B 6/02147](#) takes precedence-)}
- U G02B 6/02171
 - {characterised by means for compensating environmentally induced changes}
- U G02B 6/02176
 - {due to temperature fluctuations}
- G02B 6/02185
 - {based on treating the fibre, e.g. post-manufacture treatment, thermal aging, annealing (-annealing glass fibres [C03B 37/15](#)-)}
- U G02B 6/02195
 - {characterised by means for tuning the grating}

- G02B 6/022
 - • • • {using mechanical stress, e.g. tuning by compression or elongation, special geometrical shapes such as "dog-bone" or taper (~~G02B 6/02204~~ takes precedence; optical modulation using photo-elastic effect [G02F 1/0131](#)-)}
- G02B 6/02204
 - • • • {using thermal effects, e.g. heating or cooling of a temperature sensitive mounting body (~~optical modulation using thermo-optic effect [G02F 1/0147](#)~~-)}
- G02B 6/02209
 - • • • {Mounting means, e.g. adhesives, casings (~~G02B 6/02171~~ and [G02B 6/02195](#) take precedence-)}
- U G02B 6/02214
 - {tailored to obtain the desired dispersion, e.g. dispersion shifted, dispersion flattened}
- G02B 6/02228
 - • • {Characterised by the wavelength dispersion slope properties around 1550 nm (~~G02B 6/02228~~ takes precedence-)}
- G02B 6/02285
 - • • {Characterised by the polarisation mode dispersion [PMD] properties, e.g. for minimising PMD (~~fabrication methods for minimising PMD [C03B 37/02745](#)~~-)}
- G02B 6/02295
 - • {Microstructured optical fibre (~~polarisation properties thereof [G02B 6/105](#) and [G02B 6/024](#)~~-)}
- G02B 6/02395
 - • {Glass optical fibre with a protective coating, e.g. two layer polymer coating deposited directly on a silica cladding surface during fibre manufacture (~~G02B 6/02052~~, [G02B 6/02057](#), [G02B 6/105](#), [G02B 6/024](#), [G02B 6/032](#), [G02B 6/14](#) take precedence; optical cables, i.e. comprising protective structures external to the protective coating such as a jacket or plural coated optical fibres [G02B 6/44](#); coating on fibre gratings [G02B 6/02104](#); coating of glass to obtain optical fibres [C03C 25/104](#); multilayer core or cladding [G02B 6/036](#); reinforcing splice joints [G02B 6/2558](#)-)}
- G02B 6/028
 - • with core or cladding having graded refractive index (~~G02B 6/02033~~, [G02B 6/02295](#) take precedence-)}
- G02B 6/0281
 - • • {Graded index region forming part of the central core segment, e.g. alpha profile, triangular, trapezoidal core (~~G02B 6/0288~~, [G02B 6/0286](#) take precedence-)}
- G02B 6/0283
 - • • {Graded index region external to the central core segment, e.g. sloping layer or triangular or trapezoidal layer (~~G02B 6/0288~~, [G02B 6/0286](#) take precedence-)}
- G02B 6/0286
 - • • {Combination of graded index in the central core segment and a graded index layer external to the central core segment (~~G02B 6/0288~~ takes precedence-)}
- G02B 6/032
 - • with non solid core or cladding ([G02B 6/02295](#) takes precedence-}
- G02B 6/036
 - • core or cladding comprising multiple layers (~~multicore optical fibres [G02B 6/02042](#); microstructured properties [G02B 6/02295](#); omniguide fibres [G02B 6/023](#)~~-)}
- G02B 6/04
 - formed by bundles of fibres (~~G02B 6/24~~ takes precedence-}
- G02B 6/10
 - of the optical waveguide type (~~G02B 6/02~~, [G02B 6/24](#) take precedence; devices or arrangements for the control of light by electric, magnetic, electro-magnetic or acoustic means [G02F 1/00](#); transferring the modulation of modulated light [G02F 2/00](#); optical logic elements [G02F 3/00](#); optical analogue/digital converters [G02F 7/00](#); stores using opto-electronic devices [G11C 11/42](#), { using electro-optical elements [G11C 13/047](#) }; electric waveguides [H01P](#); transmission of information by optical means [H04B 10/00](#); multiplex systems [H04J 14/00](#)-}

- G02B 6/12
 - • of the integrated circuit kind (-production or processing of single crystals [C30B](#) ; electric integrated circuits [H01L 27/00](#) { coupling fibres and integrated optical circuits [G02B 6/30](#) })
- U G02B 6/12007
 - • • {forming wavelength selective elements, e.g. multiplexer, demultiplexer}
- G02B 6/12009
 - • • • {comprising arrayed waveguide grating [AWG]} devices, i.e. with a phased array of waveguides}}
- G02B 6/12019
 - • • • • {characterised by the optical interconnection to or from the AWG devices, e.g. integration or coupling with lasers or photodiodes (-coupling integrated waveguide to fibre [G02B 6/30](#) , to optoelectronic element [G02B 6/42](#) ; monolithic integration of integrated waveguides with other optical elements [G02B 6/12004](#)-)}
- G02B 6/12033
 - • • • • {characterised by means for configuring the device, e.g. moveable element for wavelength tuning (-switching [G02B 6/35](#) ; thermo-optic devices [G02F 1/0147](#)-)}
- U G02B 2006/12035
 - • • {Materials}
- G02B 2006/12078
 - • • • {Gallium arsenide or alloys ([GaAs](#), [GaAlAs](#), [GaAsP](#), [GaInAs](#))}([GaAs](#), [GaAlAs](#), [GaAsP](#), [GaInAs](#))}
- U G02B 6/122
 - • • basic optical elements, e.g. light-guiding paths
- G02B 6/1228
 - • • • {Tapered waveguides, e.g. integrated spot-size transformers (-for coupling with fibres [G02B 6/305](#)-)}
- G02B 6/126
 - • • using polarisation effects({[G02B 6/1226](#) takes precedence-})
- U G02B 6/13
 - • • Integrated optical circuits characterised by the manufacturing method
- G02B 6/131
 - • • • by using epitaxial growth (-epitaxial growth for semiconductors [H01L 21/36](#)-)
- U G02B 6/134
 - • • • by substitution by dopant atoms
- G02B 6/1342
 - • • • • {using diffusion (-diffusion in single crystals [C30B 31/00](#) ; diffusion in glass [C03C 23/00](#)-)}
- G02B 6/1345
 - • • • • {using ion exchange (-ion exchange in glass [C03C 21/00](#)-)}
- G02B 6/1347
 - • • • • {using ion implantation (-ion implantation in glass [C03C 23/0055](#) ; ion implantation in general [C23C](#)-)}
- G02B 6/24
 - Coupling light guides (-for electric waveguides [H01P 1/00](#)-)
- U G02B 6/255
 - • Splicing of light guides, e.g. by fusion or bonding
- G02B 6/2551
 - • • {using thermal methods, e.g. fusion welding by arc discharge, laser beam, plasma torch (-making optical fibres with heat application [C03B 37/15](#)-)}
- G02B 6/26
 - • Optical coupling means (-[G02B 6/36](#) , [G02B 6/42](#) take precedence-)
- G02B 6/264
 - • • {with optical elements between opposed fibre ends which perform a function other than beam splitting (-having lens focusing means [G02B 6/32](#) ; utilising prism or grating [G02B 6/34](#)-)}
- G02B 6/268
 - • • {for modal dispersion control, e.g. concatenation of light guides having different modal dispersion properties (-graded index multimode fibres [G02B 6/0288](#) ; multimodal transmission systems [H04B10/13](#)-)}
- G02B 6/27
 - • • with polarisation selective and adjusting means ({ for wavelength selection [G02B 6/29302](#) ; of the integrated waveguide kind [G02B 6/126](#) } ; polarisation; polarisation systems in general [G02B 27/28](#) ; optical polarisation multiplex systems [H04J 14/06](#)-)
- U G02B 6/2726
 - • • • {in or on light guides, e.g. polarisation means assembled in a light guide}
- G02B 6/274
 - • • • • {based on light guide birefringence, e.g. due to coupling between light guides (-[G02B 6/105](#) , [G02B 6/024](#) take precedence; mechanically induced birefringence [G02F 1/0134](#)-)}

- G02B 6/2746
 - {comprising non-reciprocal devices, e.g. isolators, FRM, circulators, quasi-isolators (-magneto-optic non-reciprocal devices [G02F 1/093-](#))}
- U G02B 6/2753
 - {characterised by their function or use, i.e. of the complete device}
- G02B 6/278
 - {Controlling polarisation mode dispersion [PMD]}, e.g. PMD compensation or emulation (-PMD minimised transmission systems [H04B 10/2569-](#))}
- U G02B 6/28
 - having data bus means, i.e. plural waveguides interconnected and providing an inherently bidirectional system by mixing and splitting signals
- U G02B 6/2804
 - {forming multipart couplers without wavelength selective elements, e.g. "T" couplers, star couplers}
- U G02B 6/2821
 - {using lateral coupling between contiguous fibres to split or combine optical signals}
- G02B 6/2826
 - {using mechanical machining means for shaping of the couplers, e.g. grinding or polishing (-grinding , polishing in general [B24-](#))}
- G02B 6/2843
 - {the couplers having polarisation maintaining or holding properties (-polarisation preserving light guides [G02B 6/105-](#))}
- G02B 6/2852
 - {using tapping light guides arranged sidewardly, e.g. in a non-parallel relationship with respect to the bus light guides (*light extraction or launching through cladding, with or without surface discontinuities, bent structures*) (~~light extraction or launching through cladding, with or without surface discontinuities, bent structures~~)}
- G02B 6/2861
 - {using fibre optic delay lines and optical elements associated with them, e.g. for use in signal processing, e.g. filtering (-delay lines in general [H03H](#) , [H01P 9/00](#) ; optical computing devices [G06E-](#))}
- G02B 2006/2865
 - {-couplers of the 3x3 type }
- G02B 6/287
 - Structuring of light guides to shape optical elements with heat application (-[G02B 6/255](#) takes precedence-)
- G02B 6/293
 - with wavelength selective means ({ [G02B 6/02052](#) , [G02B 6/02057](#) take precedence } ; for optical elements in use, see the relevant subgroups of this subclass; optical wavelength-division multiplexing systems [H04J 14/02](#) ; { in or associated with an integrated waveguide arrangement [G02B 6/12007](#) ; mode multiplexing [G02B 6/14](#) })
- G02B 6/29301
 - {based on a phased array of light guides (-integrated arrayed waveguide gratings [G02B 6/12009-](#))}
- G02B 6/29304
 - {operating by diffraction, e.g. grating (-[G02B 6/29301](#) takes precedence; spectrometers using gratings [G01J 3/18-](#))}
- U G02B 6/29305
 - {as bulk element, i.e. free space arrangement external to a light guide}
- G02B 6/29308
 - {Diffractive element having focusing properties, e.g. curved gratings (-Rowland circle spectrometers [G01J 3/20-](#))}
- G02B 6/29313
 - {characterised by means for controlling the position or direction of light incident to or leaving the diffractive element, e.g. for varying the wavelength response (-switching [G02B 6/35-](#))}
- G02B 6/29316
 - {Light guides comprising a diffractive element, e.g. grating in or on the light guide such that diffracted light is confined in the light guide (-[G02B 6/02057](#) , [G02B 6/29332](#) , [G02B 6/29356](#) take precedence-)}
- U G02B 6/29317
 - {Light guides of the optical fibre type}
- G02B 6/29319
 - {With a cascade of diffractive elements or of diffraction operations (-forming interferometer by splitting and recombining [G02B 6/29347](#) - [G02B 6/29358-](#))}

- G02B 6/29322 {Diffractive elements of the tunable type (~~G02B 6/02195~~ takes precedence; optical modulation devices based on a change of the optical properties of the medium [G02F 1/00](#)-)}
- G02B 6/29323 {Coupling to or out of the diffractive element through the lateral surface of the light guide (~~evanescent grating couplers [G02B 6/29332](#)~~-)}
- G02B 6/29325 {of the slab or planar or plate like form, i.e. confinement in a single transverse dimension only (~~integrated circuit planar waveguide arrangements [G02B 6/12007](#) ; specially adapted for lighting [G02B 6/0011](#)~~-)}
- G02B 6/29326 {Diffractive elements having focusing properties, e.g. curved gratings (~~Rowland circle spectrometers [G01J 3/20](#)~~-)}
- U G02B 6/29331 {operating by evanescent wave coupling}
- G02B 6/29332 {Wavelength selective couplers, i.e. based on evanescent coupling between light guides, e.g. fused fibre couplers with transverse coupling between fibres having different propagation constant wavelength dependency (~~non wavelength-selective light guide couplers [G02B 6/28](#)~~-)}
- G02B 6/29335 {Evanescent coupling to a resonator cavity, i.e. between a waveguide mode and a resonant mode of the cavity (~~wavelength selective means based on resonator cavity coupled non-evanescently [G02B 6/29356](#) , [G02B 6/29358](#)~~-)}
- U G02B 6/29338 {Loop resonators}
- G02B 6/29341 {Loop resonators operating in a whispering gallery mode evanescently coupled to a light guide, e.g. sphere or disk or cylinder (~~evanescent coupling for sensing fluorescence [G01N 21/648](#)~~-)}
- G02B 6/29346 {operating by wave or beam interference (~~interferometers for measuring [G01B 9/02](#)~~-)}
- G02B 6/29356 {Interference cavity within a single light guide, e.g. between two fibre gratings (~~[G02B 6/29347](#) - [G02B 6/2935](#) take precedence; evanescent coupling to a resonator cavity [G02B 6/29335](#)~~-)}
- G02B 6/29358 {Multiple beam interferometer external to a light guide, e.g. Fabry-Pérot, etalon, VIPA plate, OTDL plate, continuous interferometer, parallel plate resonator (~~[G02B 6/29347](#) , [G02B 6/29349](#) , [G02B 6/2935](#) , [G02B 6/29361](#) take precedence; resonator evanescently coupled to light guide [G02B 6/29335](#)~~-)}
- U G02B 6/29361 {Interference filters, e.g. multilayer coatings, thin film filters, dichroic splitters or mirrors based on multilayers, WDM filters}
- G02B 6/29368 {Light guide comprising the filter, e.g. filter deposited on a fibre end (~~[G02B 6/29359](#) takes precedence~~-)}
- U G02B 6/29371 {operating principle based on material dispersion}
- G02B 6/29374 {in an optical light guide (~~[G02B 6/02214](#) takes precedence~~-)}
- G02B 6/29376 {coupling light guides for controlling wavelength dispersion, e.g. by concatenation of two light guides having different dispersion properties (~~dispersion managed optical transmission systems [H04B 10/25253](#)~~-)}
- U G02B 6/29379 {characterised by the function or use of the complete device}
- U G02B 6/2938 {for multiplexing or demultiplexing, i.e. combining or separating wavelengths, e.g. 1xN, NxM}
- U G02B 6/29382 {including at least adding or dropping a signal, i.e. passing the majority of signals}

- G02B 6/29385 {Channel monitoring, e.g. by tapping (-channel monitoring in optical transmission systems **H04B10/08-**)}
- G02B 6/29389 {Bandpass filtering, e.g. 1x1 device rejecting or passing certain wavelengths (-G02B 6/2938 takes precedence-)}
- G02B 6/29392 {Controlling dispersion (-G02B 6/02214 takes precedence; modal dispersion control G02B 6/268-)}
- G02B 6/29394 {Compensating wavelength dispersion (-G02B 6/29376 takes precedence; dispersion compensated optical transmission systems **H04B10/18-**)}
- G02B 6/29395 {configurable, e.g. tunable or reconfigurable (-switching G02B 6/35-)}
- G02B 6/32 having lens focusing means {positioned between opposed fibre ends(-with lens being an integral part of the single fibre end G02B 6/262-)}
- G02B 6/34 utilising prism or grating((-G02B 6/293 takes precedence-)}
- G02B 6/35 having switching means (-optical switching in general G02B 26/08 ; by changing the optical properties of the medium G02F 1/00-)
- U G02B 6/3502 {involving direct waveguide displacement, e.g. cantilever type waveguide displacement involving waveguide bending, or displacing an interposed waveguide between stationary waveguides}
- G02B 6/3504 {Rotating, tilting or pivoting the waveguides, or with the waveguides describing a curved path (-rotary joint G02B 6/3628-)}
- G02B 6/351 {involving stationary waveguides with moving interposed optical elements (-G02B 6/3538 takes precedence; interposed waveguides G02B 6/3502-)}
- U G02B 6/3512 {the optical element being reflective, e.g. mirror}
- G02B 6/3518 {the reflective optical element being an intrinsic part of a MEMS device, i.e. fabricated together with the MEMS device (-MEMS devices in general B81B; manufacture of MEM devices in general B81C; micromechanical devices controlling the direction of light G02B 26/0833-)}
- G02B 6/3522 {the optical element enabling or impairing total internal reflection (-using evanescent coupling G02B 6/3536-)}
- G02B 6/353 {the optical element being a shutter, baffle, beam dump or opaque element (-absorbers on light guide termination G02B 6/243-)}
- G02B 6/3536 {involving evanescent coupling variation, e.g. by a moving element such as a membrane which changes the effective refractive index (-mode converters G02B 6/14 ; adjustable lateral coupling between waveguides G02B 6/283 ; electro- optical refractive index variations G02F 1/0118-)}
- G02B 6/3538 {based on displacement or deformation of a liquid (-controlling the intensity of light by displacement or deformation of a fluid in general G02B 26/004 ; fluid-filled lens of variable focal length G02B 3/14-)}
- U G02B 6/354 {Switching arrangements, i.e. number of input/output ports and interconnection types}
- G02B 6/356 {in an optical cross-connect device, e.g. routing and switching aspects of interconnecting different paths propagating different wavelengths to (re)configure the various input and output links (-switching polarized beams G02B 6/3594 ; power equalizers G02B 6/356 and G02B 6/3594 ; path selecting means H04Q 11/0001-)}
- U G02B 6/3564 {Mechanical details of the actuation mechanism associated with the moving element or mounting mechanism details}
- U G02B 6/3568 {characterised by the actuating force}
- G02B 6/357 {Electrostatic force (-electrostatic forces controlling reflecting elements in general G02B 26/0841-)}

- G02B 6/3572 {Magnetic force (-magnetic forces controlling reflecting elements in general [G02B 26/085](#) ; magneto-optic devices [G02F 1/09](#)-)}
- G02B 6/3576 {Temperature or heat actuation (-thermal forces controlling reflecting elements in general [G02B 26/0866](#) ; thermo-optic devices [G02F 1/0147](#)-)}
- G02B 6/3578 {Piezoelectric force (-piezoelectric forces controlling reflecting elements in general [G02B 26/0858](#) ; piezo-optic devices [G02F 1/0131](#)-)}
- G02B 6/3584 {constructional details of an associated actuator having a MEMS construction; i.e. constructed using semiconductor technology such as etching (MEMS per se [B81B](#), [B81C](#))}
- G02B 6/3586 {Control or adjustment details, e.g. calibrating (-testing optical equipment [G01M 11/00](#)-)}
- WARNING
- The scope of this group has been changed: for rotating, tilting or pivoting the waveguides, or with the waveguides describing a curved path see [G02B 6/3504](#)
- G02B 6/3592 {Means for removing polarization dependence of the switching means, i.e. polarization insensitive switching (-light guides coupling with polarization selective and adjusting means [G02B 6/27](#)-)}
- G02B 6/3598 {Switching means directly located between an optoelectronic element and waveguides, including direct displacement of either the element or the waveguide, e.g. optical pulse generation (-based on changing the optical properties of the medium [G02F 1/00](#) ; optical pulse generation in optical transmitters [H04B10/155](#) ; optical pulse generation by controlling laser operation [H01S 3/00](#)-)}
- G02B 6/36 {Mechanical coupling means ({ [G02B 6/06](#) , [G02B 6/30](#) , [G02B 6/35](#) , [G02B 6/38](#) } , [G02B 6/255](#) , [G02B 6/42](#) take precedence-)}
- G02B 6/3608 {Fibre wiring boards, i.e. where fibres are embedded or attached in a pattern on or to a substrate, e.g. flexible sheets (-optical ribbon cables in support members [G02B 6/4401](#)-)}
- G02B 6/3616 {Holders, macro size fixtures for mechanically holding or positioning fibres, e.g. on an optical bench (-supporting carriers of a micro-bench type [G02B 6/3648](#) ; micromanipulators [B25J 7/00](#) ; cassettes, bobbins [G02B 6/4439](#)-)}
- G02B 6/3624 {Fibre head, e.g. fibre probe termination (-optical details of light guide terminations [G02B 6/241](#) ; reshaping of light guides [G02B 6/2552](#) ; optical details of coupling light into or out of fibre end [G02B 6/262](#)-)}
- G02B 6/3628 {for mounting fibres to supporting carriers (-[G02B 6/3608](#) , [G02B 6/3616](#) take precedence-)}
- U G02B 6/3632 {characterised by the cross-sectional shape of the mechanical coupling means}
- G02B 6/3636 {the mechanical coupling means being grooves (-[G02B 6/3652](#) takes precedence-)}
- G02B 6/3648 {Supporting carriers of a micro-bench type, i.e. with micro-machined additional mechanical structures (micro-structured devices per se [B81B](#))}
- G02B 6/3684 {characterised by the manufacturing process of surface profiling of the supporting carrier (-manufacturing micro-systems per se [B81C 1/00015](#)-)}
- G02B 6/3692 {with surface micro-machining involving etching, e.g. wet or dry etching steps (-surface micro-machining involving subtractive techniques [B81C 1/00055](#)-)}

- G02B 6/3696 {by moulding, e.g. injection moulding, casting, embossing, stamping, stenciling, printing, or with metallic mould insert manufacturing using LIGA or MIGA techniques (-shaping the mould surface by machining [B29C 33/38](#) ; moulding techniques [B29C 39/00](#) , [B29C 43/00](#) , [B29C 45/00](#) , [B29C 47/00](#) , [B29C 59/00](#) ; stamping, printing or embossing techniques [B81C 1/00444](#) ; surface micro-machining using LIGA [B81C 2201/032](#)-)}
- U G02B 6/38 . . . having fibre to fibre mating means
- G02B 6/3801 {Permanent connections, i.e. wherein fibres are kept aligned by mechanical means (-splices by bonding [G02B 6/255](#) ; fusion splices [G02B 6/2551](#)-)}
- G02B 6/3802 {Assembly tools, e.g. crimping tool or pressing bench (-splicing machines [G02B 6/2553](#)-)}
- G02B 6/3806 {Semi-permanent connections, i.e. wherein the mechanical means keeping the fibres aligned allow for removal of the fibres (-dismountable connectors [G02B 6/3807](#)-)}
- U G02B 6/3807 {Dismountable connectors, i.e. comprising plugs}
- U G02B 6/381 {of the ferrule type, e.g. fibre ends embedded in ferrules, connecting a pair of fibres}
- G02B 6/3812 {having polarisation-maintaining light guides (-light guides having polarisation effects per se [G02B 6/105](#)-)}
- G02B 6/3813 {for transmission of high energy beam (-coupling high energy sources and light guides [G02B 6/4296](#)-)}
- G02B 6/3816 {for use under water, high pressure connectors (provisionally see [G02B 6/4428](#))}
- G02B 6/3817 {containing optical and electrical conductors (-cables including electrical and optical conductors [H01B 11/22](#) ; **G092B6/38D2H** takes precedence-)}
- G02B 6/3818 {of a low-reflection-loss type (-[G02B 6/3813](#) takes precedence-)}
- G02B 6/382 {with index-matching medium between light guides (-provisionally see [G02B 6/4212](#)-)}
- G02B 6/3821 {with axial spring biasing or loading means (-[G02B 6/3847](#) takes precedence-)}
- G02B 6/3823 {containing surplus lengths, internal fibre loops (-provisionally see also [G02B 6/444](#)-)}
- U G02B 6/3826 {characterised by form or shape}
- G02B 6/3829 {Bent or angled connectors (-[G02B 6/3827](#) takes precedence-)}
- G02B 6/383 {Hermaphroditic connectors, i.e. two identical plugs mating with one another, each plug having both male and female diametrically opposed engaging parts; electric hermaphroditic coupling [H01R 24/84](#) , [H01R 13/28](#)-}
- G02B 6/3831 {comprising a keying element on the plug or adapter, e.g. to forbid wrong connection (-keying element on the ferrule [G02B 6/3851](#) ; keying element for electrical coupling [H01R 13/64](#)-)}
- U G02B 6/3833 {Details of mounting fibres in ferrules; Assembly methods; Manufacture}
- U G02B 6/3834 {Means for centering or aligning the light guide within the ferrule}
- G02B 6/3843 {with auxiliary facilities for movably aligning or adjusting the fibre within its ferrule, e.g. measuring position or eccentricity (-testing the alignment of axes, including eccentricity, [G01B 11/27](#)-)}
- U G02B 6/3847 {with means preventing fibre end damage, e.g. recessed fibre surfaces}

- G02B 6/3849 {using mechanical protective elements, e.g. caps, hoods, sealing membranes (~~G02B 6/3816~~ takes precedence; provisionally see [H01R 13/44](#)-)}
- G02B 6/385 {Accessories for testing or observation of connectors (~~means for centering or aligning the light guide within the ferrule with auxiliary facilities for movably aligning or adjusting the fibre within its ferrule, measuring position, eccentricity G02B 6/3843~~ ; mechanical features associated with the optical testing of optical fibres [G01M 11/088](#)-)}
- G02B 6/3853 {Lens inside the ferrule (~~lensed connectors G02B 6/32~~-)}
- G02B 6/3855 {characterised by the method of anchoring or fixing the fibre within the ferrule (~~G02B 6/3854~~ takes precedence)-}
- U G02B 6/3858 {Clamping, i.e. with only elastic deformation}
- G02B 6/3859 {Ferrules characterised by use of shape memory material (SMM), e.g. heat recoverable polymers, Ti-Ni compounds (~~chemical aspects of SMM see the relevant places under C08 and C22; SMM used for shaping by moulding B29C 61/00~~ ; SMM for electrical coupling [H01R 4/01](#) , [H01R 4/72](#) , [H01R 12/856](#) , [H02G 15/1806](#)-)}
- G02B 6/3861 {Adhesive bonding (adhesives in general [C09J](#))}
- G02B 6/3863 {fabricated by using polishing techniques (~~grinding of the fibre ends B24B 19/226~~-)}
- G02B 6/3865 {fabricated by using moulding techniques (~~shaping techniques of plastic materials in general B29C; producing plastic optical fiber connectors B29D 11/0075~~-)}
- G02B 6/3866 {Devices, tools or methods for cleaning connectors (cleaning in general [B08B](#))}
- U G02B 6/3869 {Mounting ferrules to connector body, i.e. plugs}
- G02B 6/3871 {Ferrule rotatable with respect to plug body, e.g. for setting rotational position} (~~adjusting fibre within the ferrule, G02B 6/3843~~); Fixation of ferrules after rotation
- U G02B 6/3873 {Connectors using guide surfaces for aligning ferrule ends, e.g. tubes, sleeves, V-grooves, rods, pins, balls}
- G02B 6/3885 {Multicore or multichannel optical connectors, i.e. one single ferrule containing more than one fibre, e.g. ribbon type (~~optical ribbon cable G02B 6/4403~~ , [G02B 6/448](#)-)}
- G02B 6/3895 {identification of connection, e.g. right plug to the right socket or full engagement of the mating parts (~~keying element on the plug or adapter G02B 6/3831~~ ; keying element on the ferrule [G02B 6/3851](#) ; keying element for electrical connection [H01R 13/64](#)-)}
- G02B 6/3898 {Tools, e.g. handheld; Tuning wrenches; Jigs used with connectors, e.g. for extracting, removing or inserting in a panel, for engaging or coupling connectors, for assembling or disassembling components within the connector, for applying clips to hold two connectors together or for crimping (~~tools for cleaning, G02B 6/3866~~ ; tools in general [B25B](#)-)}
- U G02B 6/42 Coupling light guides with opto-electronic elements
- NOTE
In this group, the following expression is used with the meaning indicated:
- "opto-electronic elements" includes light emitting elements, e.g. lasers or LED's, as well as light receiving elements, e.g. photodiodes or phototransistors
- U G02B 6/4201 {Packages, e.g. shape, construction, internal or external details}

- G02B 6/4204 {the coupling comprising intermediate optical elements, e.g. lenses, holograms (-encapsulated active devices [H01S 5/02208](#) , [H01L 33/52](#)-)}
- G02B 6/4206 {Optical features (-[G02B 6/4207](#) , [G02B 6/421](#) take precedence-)}
- G02B 6/4207 {with optical elements reducing the sensitivity to optical feedback (-anti-reflection devices specially adapted for lasers, see [H01S 3/0064](#)-)}
- G02B 6/4208 {using non-reciprocal elements or birefringent plates, i.e. quasi-isolators (-optical isolators per se [G02F 1/093](#) , [G02F 1/0955](#)-)}
- G02B 6/4213 {the intermediate optical elements being polarisation selective optical elements (-[G02B 6/27](#) takes precedence-)}
- G02B 6/4214 {the intermediate optical element having redirecting reflective means, e.g. mirrors, prisms for deflecting the radiation from horizontal to down- or upward direction toward a device (-[G02B 6/4246](#) takes precedence-)}
- G02B 6/4215 {the intermediate optical elements being wavelength selective optical elements, e.g. variable wavelength optical modules or wavelength lockers (-[G02B 6/4246](#) takes precedence-)}
- G02B 6/4216 {incorporating polarisation-maintaining fibres (-polarisation-maintaining fibres per se [G02B 6/105](#)-)}
- U G02B 6/4219 {Mechanical fixtures for holding or positioning the elements relative to each other in the couplings; Alignment methods for the elements, e.g. measuring or observing methods especially used therefor}
- G02B 6/422 {Active alignment, i.e. moving the elements in response to the detected degree of coupling or position of the elements (-[G02B 6/4233](#) , [G02B 6/4234](#) take precedence-)}
- G02B 6/4228 {Passive alignment, i.e. without a detection of the degree of coupling or the position of the elements (-[G02B 6/4234](#) takes precedence-)}
- G02B 6/4232 {using the surface tension of fluid solder to align the elements, e.g. solder bump techniques (-flip-chip mounting techniques in assembly of semiconductor devices [H01L 24/81](#)-)}
- U G02B 6/4236 {Fixing or mounting methods of the aligned elements}
- U G02B 6/424 {Mounting of the optical light guide}
- G02B 6/4243 {Mounting of the optical light guide into a groove (-mounting optical light guides into a groove in general [G02B 6/3636](#)-)}
- G02B 6/4248 {Feed-through connections for the hermetical passage of fibres through a package wall} (-see provisionally also [G02B 6/4428](#)-)}
- U G02B 6/4249 {comprising arrays of active devices and fibres}
- G02B 6/425 {Optical features (-semiconductor laser arrays [H01S 5/40](#) ; hybrid LED arrays [H01L 25/0753](#) ; monolithic LED arrays [H01L 27/153](#)-)}
- G02B 6/4251 {Sealed packages (-[G02B 6/4248](#) takes precedence-)}
- G02B 6/4253 {by embedding housing components in an adhesive or a polymer material (-[G02B 6/4212](#) takes precedence-)}
- G02B 6/4254 {with an inert gas, e.g. nitrogen or oxygen (-gas filled packages for semiconductor lasers [H01S 5/0222](#)-)}
- U G02B 6/4256 {Details of housings}
- G02B 6/4257 {having a supporting carrier or a mounting substrate or a mounting plate (-[G02B 6/3648](#) takes precedence-)}
- G02B 6/4262 {characterised by the shape of the housing (-for semiconductor lasers [H01S 5/02208](#)-)}
- G02B 6/4266 {Thermal aspects, temperature control or temperature monitoring (-thermal aspect of electrical circuits [H05K 7/20](#) , [H05K 5/0213](#) , temperature control in general [G05D 23/19](#)-)}

- G02B 6/4268 {Cooling (-of semiconductor devices [H01L 23/24](#) ; of electric apparatus [H05K 7/20](#) ; of instruments [G12B 15/00](#)-)}
- G02B 6/4274 {Electrical aspects (-[G02B 6/4263](#) and [G02B 6/4265](#) take precedence-)}
- G02B 6/4277 {Protection against electromagnetic interference [EMI], e.g. shielding means (-shielding of electric apparatus [H05K 9/00](#) , of instruments [G12B 17/00](#)-)}
- U G02B 6/428 {containing printed circuit boards [PCB]}
- G02B 6/4281 {the printed circuit boards being flexible (-in general [H05K 1/147](#)-)}
- G02B 6/4284 {of optical modules with disconnectable electrical connectors (-latching arms for electrical connectors [H01R 13/627](#)-)}
- G02B 6/4287 {Optical modules with tapping or launching means through the surface of the waveguide (-[G02B 6/2852](#) , [G02B 6/4286](#) take precedence-)}
- G02B 6/4298 . . . {coupling with non-coherent light sources and/or radiation detectors, e.g. lamps, incandescent bulbs, scintillation chambers (coupling of solar energy into light guides [F24J](#))}
- G02B 6/43 . . . Arrangements comprising a plurality of opto-electronic elements and associated optical interconnections (-light-emissive or light-sensitive semiconductor devices [H01L 27/00](#) , [H01L 31/00](#) , [H01L 33/00](#)-); {Transmitting or receiving optical signals between chips, wafers or boards; Optical backplane assemblies}
- G02B 6/44 . Mechanical structures for providing tensile strength and external protection for fibres, e.g. optical transmission cables (cables incorporating electric conductors and optical fibres{where features relating to the optical fibres are not of interest} [H01B 11/22](#)-)}
- U G02B 6/4401 . . {Optical cables}
- G02B 6/4402 . . . {with one single optical waveguide (-[G02B 6/4429](#) , [G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/4403 . . . {with ribbon structure (-[G02B 6/4429](#) , [G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/4405 . . . {with longitudinally spaced waveguide clamping (-[G02B 6/4429](#) , [G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/4407 . . . {with internal fluted support member (-[G02B 6/4429](#) , [G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/441 . . . {built up from sub-bundles (-[G02B 6/4429](#) , [G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/4415 . . . {Cables for special applications (-[G02B 6/4429](#) , [G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/4429 . . . {Strengthening and protecting features (-[G02B 6/4492](#) , [G02B 6/4494](#) , [G02B 6/4496](#) take precedence-)}
- U G02B 6/4439 . . . {Auxiliary devices}
- U G02B 6/444 {Systems and boxes with surplus length}
- U G02B 6/4441 {[Boxes]}
- U G02B 6/4446 {Cableboxes}
- G02B 6/4447 {with divided shells (-[G02B 6/4448](#) takes precedence-)}
- G02B 6/4451 {underground connection boxes (-[G02B 6/4448](#) takes precedence-)}
- G02B 6/4463 {Mechanical aspects of installing cables in ducts or the like (-methods or apparatus for laying electrical cables through tubing or conduit [H02G 1/08](#)-)}
- G02B 6/4464 {by fluid drag (-[G02B 6/4466](#) takes precedence-)}
- G02B 6/4465 {Pulling eyes (-[G02B 6/4466](#) takes precedence-)}

- G02B 6/447 {locatable, e.g. magnetic means (-detection of buried cables [G01V-](#))}
- G02B 6/4471 {terminating, fan-out, clamping, strain-relieving or like devices (-demountable connectors [G02B 6/3807-](#))}
- U G02B 6/4472 {Manifolds}
- G02B 6/4475 {with provision for lateral branching (-[G02B 6/4495](#) takes precedence-)}
- U G02B 6/4479 {Fabrication methods}
- G02B 6/4483 {Injection or filling devices (-hydrogen absorbing materials [G02B 6/4492](#) ; water blocking or hydrophobic materials [G02B 6/4494-](#))}
- G02B 6/4492 {provided with hydrogen absorbing materials (-[G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/4494 {provided with water blocking or hydrophobic materials (-[G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/4495 {with provision in the cable protection, e.g. weak line, for gaining access to one or more fibres, e.g. for branching or tapping (-break-out terminations [G02B 6/4439-](#))}
- G02B 6/4496 {Freeze-prevention means (-[G02B 6/4439](#) , [G02B 6/4479](#) take precedence-)}
- G02B 6/46 Processes or apparatus adapted for installing optical fibres or optical cables (-installation of cables containing electric conductors and optical fibres [H02G-](#))
- U G02B 7/00 Mountings, adjusting means, or light-tight connections, for optical elements**
- G02B 7/003 {Alignment of optical elements (-[G02B 7/001](#) , [G02B 7/002](#) take precedence; for mirrors [G02B 7/1822-](#))}
- G02B 7/02 for lenses{(-supports for magnifying lenses [G02B 25/002-](#))}
- G02B 7/026 {using retaining rings or springs (-[G02B 7/027](#) takes precedence-)}
- U G02B 7/04 with mechanism for focusing or varying magnification
- G02B 7/09 adapted for automatic focusing or varying magnification (-automatic generation of focusing signals [G02B 7/28-](#))
- U G02B 7/10 by relative axial movement of several lenses, e.g. of varifocal objective lens
- G02B 7/102 {controlled by a microcomputer (-cameras with interchangeable lenses [G03B 17/14-](#))}
- G02B 7/14 adapted to interchange lenses{(-[G02B 7/027](#) takes precedence-)}
- U G02B 7/18 for prisms; for mirrors
- G02B 7/1805 {for prisms (-[G02B 7/181](#) takes precedence-)}
- U G02B 7/181 {with means for compensating for changes in temperature or for controlling the temperature; thermal stabilisation}
- G02B 7/1815 {with cooling or heating systems (-cooling arrangements for laser mirrors [H01S 3/0401-](#))}
- G02B 7/182 for mirrors ({ [G02B 7/181](#) takes precedence; mounting of MEMS mirrors, e.g. DMDs, [G02B 26/0833](#) } ; optical devices or arrangements using movable or deformable optical elements for controlling the intensity, colour, phase, polarisation or direction of light [G02B 26/00](#) ; { mirror arrangements in vehicles [B60R 1/02](#) })
- G02B 7/1822 {comprising means for aligning the optical axis (-[G02B 7/1821](#) takes precedence-)}
- G02B 7/185 with means for adjusting the shape of the mirror surface (-mirrors with curved faces [G02B 5/10-](#)){ not in use, see [G02B 26/06](#) , [G02B 26/0825-](#)}
- G02B 7/188 Membrane mirrors{ not in use, see [G02B 26/06](#) , [G02B 26/0825-](#)}

- G02B 7/192 · · · with means for minimising internal mirror stresses {not in use}
- G02B 7/195 · · · · Fluid-cooled mirrors{ not in use, see [G02B 7/181](#)-}
- G02B 7/198 · · · with means for adjusting the mirror relative to its support{ not in use, see [G02B 7/1822](#) and subgroups-}
- G02B 7/28 · Systems for automatic generation of focusing signals (measuring distance per se [G01C](#), [SG01S](#); using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. [G03B](#), [G03F](#),{[H04N](#)})
- U G02B 7/30 · · using parallax triangle with a base line
- G02B 7/32 · · · using active means, e.g. light emitter{(including both an active and a passive focus detecting device [G02B 7/285](#) ; using ultrasound [G02B 7/40](#)-)}
- G02B 7/36 · · using image sharpness techniques{, e.g. image processing techniques for generating autofocus signals(-in cameras having a solid state image sensor [H04N 5/23212](#) ; image data processing per se [G06T](#)-)}
- G02B 9/00 Optical objectives characterised both by the number of the components and their arrangements according to their sign, i.e. + or -([G02B 15/00](#) takes precedence-)**
- G02B 9/02 · having one + component only{(-simple lenses [G02B 3/00](#)-)}
- U G02B 9/12 · having three components only
- U G02B 9/14 · · arranged + - +
- G02B 9/18 · · · only one component having a compound lens {(-[G02B 9/30](#) takes precedence-)}
- G02B 9/24 · · · two of the components having compound lenses {(-[G02B 9/30](#) takes precedence-)}
- G02B 13/00 Optical objectives specially designed for the purposes specified below (with variable magnification{in general} [G02B 15/00](#)-)**
- NOTE
Unless specified in the title of the subgroups, this group and its subgroups do not cover objectives comprising reflecting surfaces, which are covered by [G02B 17/06](#) , [G02B 17/08](#) and their subgroups
- G02B 13/0005 · {having F-Theta characteristic {(-scanning systems employing movable or deformable optical elements [G02B 26/10](#)-)}
- G02B 13/001 · {Miniaturised objectives for electronic devices, e.g. portable telephones, webcams, PDAs, small digital cameras {(-[G02B 23/243](#) takes precedence-)}
- U G02B 13/0015 · · {characterised by the lens design}
- G02B 13/002 · · · {having at least one aspherical surface {(-aspherical lenses per se [G02B 3/02](#)-)}
- NOTE
When classifying in this group, a lens is deemed to be a simple lens or a compound lens
- G02B 13/0085 · · {employing wafer level optics {(-lens arrays per se [G02B 3/0006](#)-)}
- G02B 13/009 · · {having zoom function {zoom lenses per se [G02B 15/00](#)}
- G02B 13/0095 · {Relay lenses or rod lenses {(-in instruments for viewing the inside of hollow bodies [G02B 23/2446](#)-)}
- U G02B 13/08 · Anamorphic objectives
- G02B 13/10 · · involving prisms {(-[G02B 13/12](#) takes precedence-)}
- G02B 13/14 · for use with infra-red or ultra-violet radiation {([G02B 13/008](#) , } [G02B 13/16](#) take precedence-}

- G02B 13/18
- with lenses having one or more non-spherical face, e.g. for reducing geometrical aberration ({-[G02B 13/002](#) takes precedence-})
- G02B 13/20
- Soft-focus objectives (-diffusing elements in general [G02B 5/02-](#))
- G02B 15/00**
- Optical objectives with means for varying the magnification (-anamorphic objectives [G02B 13/08-](#))**
- U G02B 15/02
- by changing, adding, or subtracting a part of the objective, e.g. convertible objective
- U G02B 15/10
- • by adding a part, e.g. close-up attachment
- G02B 15/12
- • • by adding telescopic attachments (-[G02B 15/14](#) takes precedence-)
- U G02B 15/14
- by axial movement of one or more lenses or groups of lenses relative to the image plane for continuously varying the equivalent focal length of the objective
- G02B 15/16
- • with interdependent non-linearly related movements between one lens or lens group, and another lens or lens group (-[G02B 15/22](#) takes precedence-)
- G02B 15/163
- • • having a first movable lens or lens group and a second movable lens or lens group, both in front of a fixed lens or lens group (-[G02B 15/177](#) takes precedence-)
- G02B 17/00**
- Systems with reflecting surfaces, with or without refracting elements (-microscopes [G02B 21/00](#) ; telescopes, periscopes [G02B 23/00](#) ; for beam splitting or combining [G02B 27/10](#) ; for optical projection [G02B 27/18-](#))**
- G02B 17/004
- {Systems comprising a plurality of reflections between two or more surfaces, e.g. cells, resonators (-multipass arrangements for optical cuvettes [G01N 21/031](#) ; laser resonators [H01S 3/05-](#))}
- G02B 17/006
- {Systems in which light is reflected on a plurality of parallel surfaces, e.g. louver mirrors, total internal reflection [TIR] lenses (-**Fresnel mirrors [G02B 5/09](#)**, **Fresnel lenses [G02B 3/08](#)** **Fresnel mirrors [G02B 5/09](#)**, **Fresnel lenses [G02B 3/08](#)**)}
- U G02B 17/02
- Catoptric systems, e.g. image erecting and reversing system
- G02B 17/026
- • {having static image erecting or reversing properties only (-[G02B 17/045](#) takes precedence; optical derotators [G02B 27/642](#) ; optical devices for controlling the direction of light using movable or deformable optical elements [G02B 26/08-](#))}
- U G02B 17/04
- • using prisms only
- G02B 17/045
- • • {having static image erecting or reversing properties only (-optical derotators [G02B 27/642](#) ; optical devices for controlling the direction of light using movable or deformable optical elements [G02B 26/08-](#))}
- G02B 17/06
- • using mirrors only {i.e. having only one curved mirror(-used in non-imaging applications [G02B 19/00-](#))}
- G02B 17/0605
- • • {using two curved mirrors (-[G02B 17/0668](#) , [G02B 17/0694](#) take precedence-)}
- G02B 17/0626
- • • {using three curved mirrors (-[G02B 17/0668](#) , [G02B 17/0694](#) take precedence-)}
- G02B 17/0647
- • • {using more than three curved mirrors (-[G02B 17/0668](#) , [G02B 17/0694](#) take precedence-)}
- U G02B 17/0668
- • • {having non-imaging properties}
- WARNING**
- This group and subgroups are no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B 19/00](#) and subgroups

- G02B 17/0673
- . . . {for light condensing, e.g. for use with a light emitter (-details of lighting devices in general [F21V](#); semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission [H01L 33/00](#)-)}
- G02B 17/0694
- . . . {with variable magnification or multiple imaging planes, including multispectral systems (-systems with only refractive elements [G02B 15/14](#)-)}
- G02B 17/08
- . Catadioptric systems((-used in non-imaging applications [G02B 19/00](#)-)}
- G02B 17/0804
- . . {using two curved mirrors (-[G02B 17/0864](#) , **G02B1708Z** takes precedence-)}
- G02B 17/082
- . . {using three curved mirrors (-[G02B 17/0864](#) , [G02B 17/0896](#) take precedence-)}
- G02B 17/0836
- . . {using more than three curved mirrors (-[G02B 17/0864](#) , [G02B 17/0896](#) take precedence-)}
- U G02B 17/0864
- . {having non-imaging properties}
- WARNING**
- This group and subgroups are no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B 19/00](#) and subgroups
- G02B 17/0868
- . . . {for light condensing, e.g. for use with a light emitter (-details of lighting devices in general [F21V](#); semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission [H01L 33/00](#)-)}
- G02B 17/0896
- . . {with variable magnification or multiple imaging planes, including multispectral systems (-systems with only refractive elements [G02B 15/14](#)-)}
- G02B 19/00**
- Condensers,{e.g. light collectors or similar non-imaging optics} (-for microscopes [G02B 21/08](#)-)**
- WARNING**
- This group and subgroups are not complete pending reclassification, see [G02B 17/0668](#) and subgroups
- U G02B 19/0004
- . {characterised by the optical means employed}
- G02B 19/0019
- . . {having reflective surfaces only (*e.g. louvre systems, systems with multiple planar reflectors*)}(~~e.g. louvre systems, systems with multiple planar reflectors~~)}
- U G02B 19/0033
- . {characterised by the use}
- G02B 19/0038
- . . {for use with ambient light (-[G02B 19/009](#) , [G02B 19/0095](#) take precedence-)}
- G02B 19/0047
- . . {for use with a light source (-[G02B 19/009](#) , [G02B 19/0095](#) take precedence; details of lighting devices in general [F21V](#); non-semiconductor lasers having optical devices external to the laser cavity [H01S 3/005](#)-)}
- G02B 19/0052
- . . . {the light source comprising a laser diode (-coupling into light guides using intermediate optical elements [G02B 6/4204](#) ; semiconductor lasers having optical devices external to the laser cavity [H01S 5/005](#)-)}
- G02B 19/0057
- {in the form of a laser diode array, e.g. laser diode bar (-semiconductor laser arrays with beam combining arrangement [H01S 5/4012](#)-)}
- G02B 19/0061
- . . . {the light source comprising a LED (-semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission [H01L 33/00](#)-)}
- G02B 19/0076
- . . {for use with a detector (-[G02B 19/009](#) , [G02B 19/0095](#) take precedence-)}
- G02B 19/0085
- . . {for use with both a detector and a source (-e.g. in a transceiver, [G02B 19/009](#) , [G02B 19/0095](#) take precedence-)}

- G02B 21/00** **Microscopes** (~~eyepieces G02B 25/00 ; polarising systems G02B 27/28 ; measuring microscopes G01B 9/04 ; microtomes G01N 1/06 ; scanning-probe techniques or apparatus G01Q~~)
- U G02B 21/0004 · {specially adapted for specific applications}
 - G02B 21/0012 · {Surgical microscopes (~~counterbalanced structures for surgical microscopes G02B 7/001~~)}
 - G02B 21/002 · {Scanning microscopes (~~scanning near field optical microscopes G01Q 60/18~~)}
 - U G02B 21/0024 · · {Confocal scanning microscopes (CSOMs) or confocal "macroscopes"; Accessories which are not restricted to use with CSOMs, e.g. sample holders}
- NOTE**
Objective revolvers or the like are classified in other groups of [G02B 21/00](#)
- G02B 21/0032 · · · {Optical details of illumination, e.g. light-sources, pinholes, beam splitters, slits, fibers (~~G02B 21/0036 to G02B 21/008 ; G02B 21/0036 to G02B 21/008~~ ; means for illumination of specimens in general [G02B 21/06](#))}
 - U G02B 21/0052 · · · {Optical details of the image generation}
 - G02B 21/0064 · · · · {multi-spectral or wavelength-selective arrangements, e.g. wavelength fan-out, chromatic profiling (~~G02B 21/0076 takes precedence~~)}
 - G02B 21/0096 · {with photometer devices (~~photometers per se G01J~~)}
 - U G02B 21/02 · Objectives
 - G02B 21/025 · {with variable magnification (~~variable magnification G02B 15/00~~)}
 - U G02B 21/06 · Means for illuminating specimens
 - U G02B 21/08 · · Condensers
 - G02B 21/10 · · · affording dark-field illumination (~~G02B 21/14 { and G02B 21/125 }take precedence~~)
 - G02B 21/12 · · · affording bright-field illumination (~~G02B 21/14 takes precedence~~)
 - G02B 21/16 · adapted for ultra-violet illumination; {Fluorescence microscopes(~~G02B 21/0076 takes precedence~~)}
 - U G02B 21/24 · Base structure
 - G02B 21/241 · · {Devices for focusing (~~focusing in general G02B 7/28~~)}
 - G02B 21/248 · · {objective (*or ocular*) turrets}(~~or ocular~~)turrets}
 - G02B 21/34 · Microscope slides, e.g. mounting specimens on microscope slides (~~preparing specimens for investigation G01N 1/28 ; means for supporting the objects or the materials to be analysed in electron microscopes H01J 37/20~~)
 - G02B 21/36 · arranged for photographic purposes or projection purposes (~~G02B 21/18 takes precedence~~){or digital imaging or video purposes including associated control and data processing arrangements(~~image data processing per se G06T~~)}
 - G02B 21/361 · · {Optical details, e.g. image relay to the camera or image sensor (~~G02B 21/364 takes precedence; illumination details G02B 21/06 and subgroups~~)}
 - G02B 21/362 · · {Mechanical details, e.g. mountings for the camera or image sensor, housings (~~G02B 21/364 takes precedence~~)}
 - G02B 21/365 · · {Control or image processing arrangements for digital or video microscopes (~~G02B 21/361 , G02B 21/362 take precedence~~)}

- G02B 23/00** Telescopes, e.g. binoculars; Periscopes; Instruments for viewing the inside of hollow bodies ~~(-diagnostic instruments A61B-)~~; Viewfinders ~~(-objectives G02B 9/00 , G02B11/00 , G02B 15/00 , G02B 17/00 ; eyepieces G02B 25/00-)~~; Optical aiming or sighting devices ~~(-non-optical aspects of weapon aiming or sighting devices F41G-)~~
- G02B 23/02 • involving prisms or mirrors ~~(-G02B 23/14 takes precedence-)~~
- G02B 23/04 • • for the purpose of beam splitting or combining, e.g. fitted with eyepieces for more than one observer ~~(-G02B 23/10 takes precedence-)~~
- G02B 23/08 • • Periscopes~~{(-arrangements on floating structures of underwater viewing devices B63C 11/49 ; arrangement of visual watch equipment on submarines B63G 8/38-)}~~
- G02B 23/10 • • reflecting into the field of view additional indications, e.g. from collimator ~~(-collimators in general G02B 27/30 ; graticules G02B 27/34-)~~
- G02B 23/105 • • • {Sighting devices with light source and collimating reflector ~~(-reflecting sights for small arms having light source F41G 1/34-)}~~
- G02B 23/12 • with means for image conversion or intensification ~~(-objectives for image conversion or intensification G02B 13/16 ; electrical image converters with optical input and optical output H01J 31/50-)~~
- G02B 23/14 • Viewfinders ~~(-for photographic apparatus G03B 13/02-)~~
- G02B 23/16 • Housings; Caps; Mountings; Supports, e.g. with counterweight (cases or receptacles A45C{ ; for submarine periscopes G02B 23/08 })
- G02B 23/18 • • for binocular arrangements~~{(-focusing binocular pairs G02B 7/06 ; adjusting pupillary distance of binocular pairs G02B 7/12-)}~~
- G02B 23/20 • • Collapsible housings ~~(-G02B 23/18 takes precedence-)~~
- G02B 23/22 • • Underwater equipment~~{(-for submarine periscopes G02B 23/08 ; arrangements on floating structures of underwater viewing devices B63C 11/49 ; arrangement of visual watch equipment on submarines B63G 8/38-)}~~
- NOTE**
This group covers housings, mountings, supports or the like for underwater equipment other than periscopes
- G02B 23/24 • Instruments {or systems}for viewing the inside of hollow bodies, e.g. fibrescopes
- U G02B 23/2407 • • {Optical details}
- G02B 23/2446 • • • {of the image relay ~~(-G02B 23/26 takes precedence-)}~~
- U G02B 23/2476 • • {Non-optical details, e.g. housings, mountings, supports}
- G02B 23/2484 • • • {Arrangements in relation to a camera or imaging device ~~(-processing or control of video signals generated by an endoscope H04N 5/232 , H04N 5/235-)}~~
- G02B 23/26 • • using light guides~~{(-for illumination G02B 23/2469-)}~~
- G02B 25/00** Eyepieces; Magnifying glasses ~~(-simple lenses G02B 3/00-)~~
- U G02B 25/002 • {Magnifying glasses}
- G02B 25/005 • • {with means for adjusting the magnifying glass or the object viewed ~~(-G02B 25/004 takes precedence-)}~~
- G02B 25/007 • • {comprising other optical elements than lenses ~~(-G02B 25/004 , G02B 25/005 take precedence-)}~~
- G02B 25/008 • • {comprising two or more lenses ~~(-G02B 25/004 to G02B 25/007 take precedence-)}~~

- G02B 26/00** **Optical devices or arrangements using movable or deformable optical elements for controlling the intensity, colour, phase, polarisation or direction of light, e.g. switching, gating, modulating (-specially adapted to measuring characteristics of light [G01J](#) ; using devices or arrangements the optical operation of which is modified by changing the optical properties of the medium of the devices or the arrangements [G02F 1/00](#) ; control of light in general [G05D 25/00](#) ; control of light sources [H01S 3/10](#) , [H05B 37/00](#) to [H05B 43/00](#) ; mechanically operable parts of lighting devices for the control of light [F21V](#)-)**
- G02B 26/001 • {based on interference in an adjustable optical cavity (-interference filters [G02B 5/28](#) ; devices or arrangements using multiple reflections in spectrometry or monochromators [G01J 3/26](#)-)}
- G02B 26/02 • for controlling the intensity of light((-[G02B 26/004](#) takes precedence-)}
- G02B 26/026 • • {based on the rotation of particles under the influence of an external field, e.g. gyricons, twisting ball displays (-based on orientable dipolar particles [G02F 1/172](#) ; based on electrophoresis [G02F 1/167](#)-)}
- G02B 26/04 • • by periodically varying the intensity of light, e.g. using choppers (-shutters, diaphragms for cameras [G03B 9/00](#) ; devices for eliminating or reducing the effect of flicker in projection systems [G03B 21/40](#)-)
- G02B 26/06 • for controlling the phase of light (-[G02B 26/08](#) takes precedence { , measuring optical phase difference [G01J 9/00](#) })
- G02B 26/08 • for controlling the direction of light (-in light guides [G02B 6/35](#)-)
- U G02B 26/0816 • • {by means of one or more reflecting elements}
- G02B 26/0825 • • • {the reflecting element being a flexible sheet or membrane, e.g. for varying the focus (-flexible mirrors for cosmetic use [A45D 42/24](#)-)}
- G02B 26/0833 • • • {the reflecting element being a micromechanical device, e.g. a MEMS mirror, DMD (-[G02B 26/0825](#) takes precedence; micromechanical devices in general [B81B](#)-)}
- G02B 26/10 • • Scanning systems (-for special applications, see the relevant places, e.g. [G03B 27/32](#), { [G03F 7/20](#) }, [G03G 15/04](#) , [G09G 3/00](#) , [H04N](#)-)
- G02B 26/101 • • • {with both horizontal and vertical deflecting means, e.g. raster or XY scanners (-colour television using laser beams scanning a display screen [H04N 9/3129](#)-)}
- G02B 26/103 • • • {having movable or deformable optical fibres, light guides or waveguides as scanning elements (-light guides per se [G02B 6/00](#)-)}
- G02B 26/105 • • • {with one or more pivoting mirrors or galvano-mirrors (-[G02B 26/101](#) takes precedence-)}
- G02B 26/106 • • • {having diffraction gratings as scanning elements, e.g. holographic scanners (-holographic optical elements [G02B 5/32](#) , holography [G03H](#)-)}
- U G02B 26/12 • • • using multifaceted mirrors
- G02B 26/124 • • • • {Details of the optical system between the light source and the polygonal mirror (-[G02B 26/123](#) , [G02B 26/127](#) take precedence-)}
- G02B 26/125 • • • • {Details of the optical system between the polygonal mirror and the image plane (-[G02B 26/123](#), [G02B 26/127](#) take precedence; F-Theta lenses [G02B 13/0005](#))}
- G02B 26/127 • • • • {Adaptive control of the scanning light beam, e.g. using the feedback from one or more detectors (-[G02B 27/0031](#) takes precedence-)}
- G02B 27/00** **Other optical systems; Other optical apparatus (-means for bringing about special optical effects in shop-windows, show-cases [A47F](#) , e.g. [A47F 11/06](#) ; optical toys [A63H 33/22](#) ; designs or pictures characterised by special light effects [B44F 1/00](#)-)**

- G02B 27/0006
- {with means to keep optical surfaces clean, e.g. by preventing or removing dirt, stains, contamination, condensation ([G02B 1/18](#) takes precedence; cleaning in general [B08B](#)-)}
- G02B 27/0018
- {with means for preventing ghost images (-anti-reflection coatings [G02B 1/11](#)-)}
- U G02B 27/0025
- {for optical correction, e.g. distortion, aberration}
- G02B 27/0037
- • {with diffracting elements (-[G02B 27/0056](#) takes precedence; holographic optical elements [G02B 5/32](#) ; zone systems [G02B 5/1876](#)-)}
- G02B 27/0068
- • {having means for controlling the degree of correction, e.g. using phase modulators, movable elements (-controlling the phase of light using moving or deformable elements [G02B 26/06](#)-)}
- U G02B 27/01
- Head-up displays
- NOTE**
- Details of head-up displays covered by [G02B 27/01](#) but not provided for in this group are also to be classified under [G02B 27/01](#) and subgroups
- G02B 27/0101
- • {characterised by optical features (-[G02B 27/0172](#) takes precedence-)}
- G02B 27/0149
- • {characterised by mechanical features (-[G02B 27/0176](#) takes precedence-)}
- G02B 27/02
- Viewing or reading apparatus (-stereoscopic systems per se [G02B 27/22](#) ; of the projection type [G03B](#) ; slide-changing apparatus [G03B](#)-)
- G02B 27/022
- • {Viewing apparatus (-[G02B 27/04](#) , [G02B 27/06](#) , [G02B 27/08](#) take precedence-)}
- G02B 27/023
- • • {for viewing X-ray images using image converters, e.g. radiosopes (-X-ray screens [G21K 4/00](#) ; X-ray image conversion tubes [H01J 31/50](#) ; circuit arrangements for X-ray apparatus incorporating image intensifiers [H05G 1/64](#)-)}
- G02B 27/024
- • • {comprising a light source, e.g. for viewing photographic slides, X-ray transparencies (-[G02B 27/023](#) , and photographic, cine and overhead projectors [G03B 21/00](#) and subgroups [G02B 27/023](#) , and photographic, cine and overhead projectors [G03B 21/00](#) and subgroups)}
- G02B 27/027
- • • {comprising magnifying means (-[G02B 27/023](#) , [G02B 27/025](#) , [G02B 27/04](#) , [G02B 27/06](#) and [G02B 27/08](#) take precedence-)}
- G02B 27/09
- Beam shaping, e.g. changing the cross-sectional area, not otherwise provided for{(-adapting the beam shape of a laser diode [G02B 19/B3D](#) ; adapting the beam shape of an LED [G02B 19/B3L](#) ; coupling into light guides using intermediate optical elements [G02B 6/4204](#) ; beam shaping specially adapted for lasers [H01S 3/005](#)-)}
- G02B 27/0916
- • {Adapting the beam shape of a semiconductor light source such as a laser diode or an LED, e.g. for efficiently coupling into optical fibers (-coupling into light guides using intermediate optical elements [G02B 6/4204](#) ; details of lighting devices in general [F21V](#) ; semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission [H01L 33/00](#)-)}
- WARNING**
- This group and subgroups are no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B 19/00](#) and subgroups
- U G02B 27/0938
- • {Using specific optical elements}
- G02B 27/0944
- • • {Diffractive optical elements, e.g. gratings, holograms (-gratings per se [G02B 5/18](#) ; holograms used as optical elements per se [G02B 5/32](#)-)}
- U G02B 27/095
- • • {Refractive optical elements}
- G02B 27/0955
- • • • {Lenses (-lenses per se [G02B 3/00](#)-)}

- G02B 27/0961 {Lens arrays (-lens arrays per se [G02B 3/0006](#))}
- G02B 27/0966 {Cylindrical lenses (-cylindrical lenses per se [G02B 3/06](#)-)}
- G02B 27/0972 {Prisms (-prisms per se [G02B 5/04](#)-)}
- G02B 27/0994 . . . {Fibers, light pipes (-optical fibers per se [G02B 6/02](#)-)}
- G02B 27/10 {Beam splitting or combining systems (-polarising systems [G02B 27/28](#) ; mixing and splitting light signals using optical waveguides [G02B 6/28](#) ; { beam shaping, e.g. changing the cross-sectional area, by dividing or superposing multiple light beams [G02B 27/0905](#))}
- G02B 27/1006 . . . {for splitting or combining different wavelengths (-[G02B 27/1086](#) , [G02B 27/141](#) take precedence-)}
- G02B 27/1013 . . . {for color or multispectral image sensors, e.g. splitting an image into monochromatic image components on respective sensors (spectral imaging systems [G01J](#))}
- U G02B 27/102 . . . {for generating a colour image from monochromatic image signal sources}
- G02B 27/104 {for use with scanning systems (-scanning systems [G02B 26/10](#)-)}
- U G02B 27/14 . . . operating by reflection only
- G02B 27/144 . . . {using partially transparent surfaces without spectral selectivity (-[G02B 27/147](#) takes precedence-)}
- G02B 27/147 . . . {using averaging effects by spatially variable reflectivity on a microscopic level, e.g. polka dots, chequered or discontinuous patterns, or rapidly moving surfaces (-[G02B 27/1086](#) takes precedence-)}
- G02B 27/18 . . . for optical projection, e.g. combination of mirror and condenser and objective{ not in use, see the relevant CPC classes according to projector type, e.g. photographic, cine and overhead projectors [G03B 21/00](#) and subgroups, photographic projection printing [G03B 27/32](#) , photolithographic projectors [G03F 7/20](#) , projection television [H04N 5/74](#) , colour projection television [H04N 9/31](#)-}
- G02B 27/22 . . . for producing stereoscopic or other three dimensional effects ({ in microscopes [G02B 21/22](#) ; viewing apparatus [G02B 27/02](#) ; stereoscopic television [H04N 13/00](#))}
- G02B 27/2228 . . . {Stereoscopes or similar systems based on providing first and second images situated at first and second locations, said images corresponding to parallaxically displaced views of the same object, and presenting the first and second images to an observer`s left and right eyes respectively (-[G02B 27/2207](#) , [G02B 27/2264](#) , [G02B 27/26](#) take precedence-)}
- G02B 27/225 . . . {of the autostereoscopic type, i.e. left and right images projected to the left and right eyes of an observer who is not required to view the images through optical systems placed adjacent to the eyes (-autostereoscopic systems involving lenticular arrays or parallax barriers [G02B 27/2214](#)-)}
- G02B 27/24 . . . involving reflecting prisms and mirrors only{(-not used, see [G02B 27/22](#) and subgroups-)}
- G02B 27/28 . . . for polarising (-used in stereoscopes [G02B 27/26](#)-)
- G02B 27/286 . . . {for controlling or changing the state of polarisation, e.g. transforming one polarisation state into another (-[G02B 5/3083](#) takes precedence; light guide coupling means utilising polarising elements [G02B 6/34](#)-)}
- G02B 27/288 . . . {Filters employing polarising elements, e.g. Lyot or Solc filters (-[G02B 5/3016](#) takes precedence-)}
- G02B 27/40 . . . Optical focusing aids (-beam splitting or combining systems [G02B 27/10](#)-)
- G02B 27/42 . . . Diffraction optics{, i.e. systems including a diffractive element being designed for providing a diffractive effect} (-[G02B 27/60](#) takes precedence-)

- U G02B 27/4205
- {having a diffractive optical element [DOE] contributing to image formation, e.g. whereby modulation transfer function MTF or optical aberrations are relevant}
- G02B 27/4211
- • • {correcting chromatic aberrations (~~G02B 27/0056~~ , ~~G02B 27/4222~~ , ~~G02B 27/4227~~ take precedence)}
- G02B 27/4233
- • {having a diffractive element [DOE] contributing to a non-imaging application (~~diffusers having a diffractive element G02B 5/0252~~ ; filters having a diffractive element ~~G02B 5/203~~ ; systems for controlling the direction of light having diffractive elements ~~G02B 26/0808~~ ; scanning systems having diffractive elements ~~G02B 26/106~~ ; beam shaping systems using diffractive optical elements ~~G02B 27/0944~~ ; beam splitting or combining systems operating by diffraction ~~G02B 27/1086~~)}
- G02B 27/4238
- • • {in optical recording or readout devices (~~optical pick-up devices such as for CD, DVD or BD reader or recorder using diffraction optics G11B 7/1353~~)}
- G02B 27/4244
- • • {in wavelength selecting devices (spectrometry ~~G01J~~)}
- G02B 27/425
- • • {in illumination systems (~~mask illumination systems in photolithographic systems G03F 7/70158~~)}
- G02B 27/4255
- • • {for alignment or positioning purposes (~~optical displacement encoding scales G01D 5/347~~)}
- G02B 27/44
- • Grating systems; Zone plate systems (~~G02B 27/46~~ takes precedence; { beam splitting or combining systems operating by diffraction only ~~G02B 27/1086~~ }; spectrometry ~~G01J~~)
- WARNING
- This group is no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to ~~G02B 27/42~~ and subgroups
- G02B 27/46
- • Systems using spatial filters (~~character recognition G06K 9/00~~)
- NOTE
- In this group, the filter may be in any plane, e.g. the image or the Fourier transfer plane.
- G02B 27/48
- Laser speckle optics; {Speckle reduction arrangements} (~~speckle suppression in holography G03H 1/32~~)
- U G02B 27/50
- Optics for phase object visualisation
- G02B 27/52
- • Phase contrast optics (~~in microscopes G02B 21/14~~)
- G02B 27/60
- Systems using moirè fringes (~~means for converting the output of a sensing member using diffraction gratings G01D 5/38~~)
- G02B 27/62
- Optical apparatus specially adapted for adjusting optical elements during the assembly of optical systems (~~adjusting means being part of the system to be assembled G02B 7/00~~)
- G02B 27/64
- Imaging systems using optical elements for stabilisation of the lateral and angular position of the image (~~focusing systems G02B 7/04~~)
- G02B 27/646
- • {compensating for small deviations, e.g. due to vibration or shake (~~movement of one or more optical elements for control of motion blur in cameras, projectors or printers G03B 2205/0007~~ ; image stabilisation in cameras peculiar to the presence or use of an electronic image sensor ~~H04N 5/23248~~)}
- G02B 27/648
- • • {for automatically maintaining a reference alignment, e.g. in self-levelling surveying instruments (~~surveying instruments per se G01C~~)}

G02B 2207/00

Coding scheme for general features or characteristics of optical elements and systems of subclass [G02B](#), but not including elements and systems which would be classified in [G02B 6/00](#) and subgroups

Project: N/A (G02C)**U G02C 1/00****Assemblies of lenses with bridges or browbars**

U G02C 1/02

- Bridge or browbar secured to lenses without the use of rims

G02C 1/023

- • {-with lenses secured to the fixing parts by clamping, luting, soldering, gluing without holes or recesses in the lenses ([G02C 1/04](#) to [G02C 1/08](#) take precedence)}

G02C 1/10

- • {-Special mounting grooves in the rim or on the lens}

U G02C 3/00**Special supporting arrangements for lens assemblies or monacles (lenses therefor [G02C 7/00](#); by walking-sticks [A45B 3/00](#))**

G02C 3/003

- • {-Arrangements for fitting and securing to the head in the position of use}

G02C 3/006

- • {-Arrangements for fitting and securing to the head or neck not in the position of use}

U G02C 5/00**Construction of non-optical parts**

G02C 5/008

- • {-Spectacles frames characterized by their material, material structure and material properties}

U G02C 5/12

- Nose pads; Nose-engaging surfaces of bridges or rims

G02C 5/126

- • {-exchangeable or otherwise fitted to the shape of the nose}

G02C 5/128

- • {-Pince-nez}

U G02C 5/14

- Side-members

G02C 5/143

- • {-having special ear pieces}

G02C 5/146

- • {-having special front end}

U G02C 5/22

- Hinges (pivotal connection in general [F16C 11/00](#))

G02C 5/2209

- • {-Pivot bearings and hinge bolts other than screws}

U G02C 5/2218

- • {-Resilient hinges}

G02C 5/2227

- • • {-comprising a fixed hinge member and a coil spring}

G02C 5/2236

- • • {-comprising a sliding hinge member and a coil spring}

G02C 5/2245

- • • • {-comprising a sliding box containing a spring}

G02C 5/2254

- • • • {-comprising elastic means other than coil spring}

G02C 5/2272

- • {-Hinges without well-defined pivot axis}

G02C 5/2281

- • {-Special hinge screws}

G02C 5/229

- • {-Oblique hinge axis}

U G02C 7/00**Optical parts (characterised by the material [G02B 1/00](#))**

U G02C 7/02

- Lenses; Lens systems; { Methods of designing lenses}

G02C 7/022

- • {-Ophthalmic lenses having special refractive features achieved by special materials or material structures ([G02C 7/049](#) takes precedence)}

G02C 7/024

- • {-Methods of designing ophthalmic lenses}

G02C 7/025

- • • {-considering parameters of the viewed object}

G02C 7/027

- • • {-considering wearer's parameters}

G02C 7/028

- • • {-Special mathematical design techniques}

U G02C 7/04

- • Contact lenses for the eyes (disinfection or sterilisation of contact lenses [A61L 12/00](#))

- U G02C 7/041 . . . {bifocal; multifocal}
- G02C 7/042 {-Simultaneous type}
- G02C 7/043 {-Translating type}
- G02C 7/044 {-Annular configuration, e.g. pupil tuned}
- G02C 7/045 {-Sectorial configuration}
- G02C 7/046 . . . {-Contact lenses having an iris pattern}
- G02C 7/047 . . . {-Contact lens fitting; Contact lenses for orthokeratology; Contact lenses for specially shaped corneae}
- G02C 7/048 . . . {-Means for stabilising the orientation of lenses in the eye}
- G02C 7/049 . . . {-Contact lenses having special fitting or structural features achieved by special materials or material structures}
- G02C 7/06 . . . bifocal; -multifocal; { progressive-([G02C 7/041](#) takes precedence)}
- G02C 7/061 . . . {-Spectacle lenses with progressively varying focal power}
- G02C 7/063 {-Shape of the progressive surface}
- G02C 7/065 {-Properties on the principal line}
- G02C 7/066 {-Shape, location or size of the viewing zones}
- G02C 7/068 {-Special properties achieved by the combination of the front and back surfaces}
- U G02C 7/08 . . . Auxiliary lenses; Arrangements for varying focal length
- G02C 7/081 {-Ophthalmic lenses with variable focal length}
- G02C 7/083 {-Electrooptic lenses}
- G02C 7/085 {-Fluid-filled lenses, e.g. electro-wetting lenses}
- G02C 7/086 . . . {-Auxiliary lenses located directly on a main spectacle lens or in the immediate vicinity of main spectacles}
- G02C 7/088 . . . {-Lens systems mounted to spectacles}
- U G02C 7/10 . . . Filter, e.g. for facilitating adaptation of the eyes to the dark; Sunglasses
- G02C 7/102 . . . {-Photochromic filters}
- G02C 7/104 . . . {-having spectral characteristics for purposes other than sun-protection}
- G02C 7/105 . . . {-having inhomogeneously distributed colouring}
- G02C 7/107 . . . {-Interference colour filters}
- G02C 7/108 . . . {-Colouring materials}
- U **G02C 11/00** **Non-optical adjuncts; Attachment thereof ([G02C 7/16](#) takes precedence)**
- G02C 11/10 . . . {-Electronic devices other than hearing aids}
- G02C 11/12 . . . {-Side shields for protection of the eyes}
- U **G02C 13/00** **Assembling (producing spectacle frames from plastics or from substances in a plastic state [B29D 12/02](#)); Repairing; Cleaning (disinfection or sterilisation of contact lenses [A61L 12/00](#))**
- G02C 13/001 . . . {-Assembling; Repairing}
- G02C 13/003 . . . {-Measuring during assembly or fitting of spectacles}
- G02C 13/006 . . . {-Devices specially adapted for cleaning spectacles frame or lenses}
- G02C 13/008 . . . {-Devices specially adapted for cleaning contact lenses}

Project: N/A (G02F)**G02F**

DEVICES OR ARRANGEMENTS, THE OPTICAL OPERATION OF WHICH IS MODIFIED BY CHANGING THE OPTICAL PROPERTIES OF THE MEDIUM OF THE DEVICES OR ARRANGEMENTS FOR THE CONTROL OF THE INTENSITY, COLOUR, PHASE, POLARISATION OR DIRECTION OF LIGHT, e.g. SWITCHING, GATING, MODULATING OR DEMODULATING; TECHNIQUES OR PROCEDURES FOR THE OPERATION THEREOF; FREQUENCY-CHANGING; NON-LINEAR OPTICS; OPTICAL LOGIC ELEMENTS; OPTICAL ANALOGUE/DIGITAL CONVERTERS (-optical transfer means between sensing member and indicating or recording part in connection with measuring [G01D 5/26](#) ; devices in which mathematical operations are carried out with optical elements [G06E 3/00](#) , { [G06E 3/001](#) } ; electrical signal transmission systems using optical means to convert the input signal [G08C 19/36](#) ; information-recording by electric or magnetic means and reproducing by sensing optical properties [G11B 11/00](#) ; static stores using optical elements [G11C 13/04](#) ; transmission systems employing electromagnetic waves other than radio waves, e.g. light, infra-red radiation, [H04B 10/00](#) ; optical multiplex systems [H04J 14/00](#) ; pictorial communication, e.g. television [H04N](#))

WARNING

The following IPC group is not used in the CPC scheme.

Subject matter covered by these groups is classified in the following CPC groups:

- [G02F 1/13357](#) covered by [G02F 1/1336](#) and subgroups

G02F 1/00

Devices or arrangements for the control of the intensity, colour, phase, polarisation or direction of light arriving from an independent light source, e.g. switching, gating, or modulating; Non-linear optics (-thermometers using change of colour or translucency [G01K 11/12](#) ; using changes in fluorescence [G01K 11/32](#) ; light guide devices [G02B 6/00](#) ; optical devices or arrangements using movable or deformable elements for controlling light independent of the light source [G02B 26/00](#) ; control of light in general [G05D 25/00](#) ; visible signalling systems [G08B 5/00](#) ; indicating arrangements for variable information by selection or combination of individual elements [G09F 9/00](#) ; control arrangements or circuits for visual indicators other than cathode-ray tubes [G09G 3/00](#) ; control of light sources [H01S 3/10](#) , [H05B 33/08](#) , [H05B 35/00](#) to [H05B 43/00](#) ; { photochromic filters [G02B 5/23](#) ; optical logic elements [G02F 3/00](#) })

NOTE

This group covers only :

- devices or arrangements, e.g. cells, the optical operation of which is modified by changing the optical properties of the medium of the devices or arrangements by the influence or control of physical parameters, e.g. electric fields, electric current, magnetic fields, sound or mechanical vibrations, stress or thermal effects;

- devices or arrangements in which the electric or magnetic field component of the light beams influences the optical properties of the medium, i.e. non-linear optics;

- control of light by electromagnetic waves, e.g. radio waves,
or by electrons or other elementary particles.

- U G02F 1/0009
 - {Materials therefor}
 - NOTE
 - [G02F 1/0009](#) and subgroups contain mostly non-patent literature
- U G02F 1/0018
 - • {Electro-optical materials}
- G02F 1/0027
 - • • {with ferro-electric properties (-domain inversion in ferro-electric materials [G02F 1/3558](#) ; ferro-electric materials in general [H01G 7/02-](#))}
- G02F 1/0036
 - • {Magneto-optical materials (-magnetic materials in general [H01F-](#))}
- G02F 1/0045
 - • {Liquid crystals as far as the physical properties are concerned (-chemical composition and properties of liquid crystals [C09K 19/00-](#))}
- G02F 1/0063
 - • {Optical properties e.g. absorption, reflection, non-linear effects, birefringence (-non linear optics in general [G02F 1/35-](#))}
- G02F 1/009
 - • {Thermal properties (-thermometers using change of colour or translucency [G01K 11/12](#) ; radiation pyrometry [G01J 5/00-](#))}
- G02F 1/01
 - for the control of the intensity, phase, polarisation or colour (-[G02F 1/29](#) , [G02F 1/35](#) take precedence; polarising elements per se [G02B 5/30](#) ; static storage per se [G11C](#); image tube screens acting as light valves by shutter operation [H01J 29/12](#) ; such screens acting by discoloration [H01J 29/14](#) ; { projection arrangements for television image reproduction, e.g. using eidophor [H04N 5/74](#) ; recording by light [G11B 7/00](#) to [G11B 11/00](#))}
- G02F 1/0102
 - • {Constructional details (-[G02F 1/1306](#) , [G02F 1/133](#) take precedence-)}
- G02F 1/0105
 - • • {Illumination devices (-for liquid crystal cells [G02F1/13357](#) ; for display devices for electronic time pieces [G04G 9/0041-](#))}
- G02F 1/0107
 - • • {Gaskets, spacers, sealing of the cell; Filling and closing of the cell (-for liquid crystal cells [G02F 1/1339](#) , [G02F 1/1341](#) ; for electrochromic or electrolytic cells [G02F 1/161-](#))}
- G02F 1/011
 - • {in optical waveguides (-[G02F 1/0134](#) , [G02F 1/01708](#) , [G02F 1/025](#) , [G02F 1/035](#) , [G02F 1/0508](#) , [G02F 1/0553](#) , [G02F 1/065](#) , [G02F 1/073](#) , [G02F 1/095](#) , [G02F 1/125](#) , [G02F 1/1326](#) , [G02F 1/225](#) take precedence; optical waveguides in general [G02B 6/00-](#))}
- G02F 1/0121
 - • {Operation of the device; Circuit arrangements not otherwise provided for (-[G02F 1/0327](#) , [G02F 1/0516](#) , [G02F 1/076](#) , [G02F 1/092](#) , [G02F 1/113](#) , [G02F 1/13306](#) , [G02F 1/163](#) take precedence-)}
- G02F 1/0126
 - • {by another light beam, i.e. opto-optical modulation (-[G02F 1/01716](#) , [G02F 1/0338](#) , [G02F 1/0533](#) , [G02F 1/0541](#) , [G02F 1/0558](#) , [G02F 1/135](#) , [G02F 1/293](#) take precedence-)}
- U G02F 1/0128
 - • {based on electro-mechanical, magneto-mechanical, elasto-optic effects}
- G02F 1/0131
 - • • {based on elasto-optic, i.e. photoelastic effect, e.g. mechanically induced birefringence (-acousto-optic devices [G02F 1/11-](#))}
- G02F 1/0136
 - • {for the control of polarisation, e.g. state of polarisation (SOP) control, polarisation scrambling, TE-TM mode conversion or separation (-[G02F 1/0353](#) takes precedence-)}
- G02F 1/0147
 - • {based on thermo-optic effects (-[G02F 1/132](#) takes precedence; tenebrescent compositions [C09K 9/00](#) ; radiation pyrometry [G01J 5/00](#) ; thermometers using change of colour or translucency [G01K 11/12-](#))}
- G02F 1/015
 - • based on semiconductor elements with at least one potential jump barrier, e.g. PN, PIN junction (-[G02F 1/03](#) takes precedence-)
- U G02F 2001/0155
 - • • {modulating the optical absorption}

- G02F 2001/0157 . . . {by electro-absorption effects (*FK, Stark, QCSE*)}(~~FK, Stark, QCSE~~)
- G02F 1/025 . . . in an optical waveguide structure (~~G02F 1/017~~ , { [G02F 1/2257](#) }take precedence)
- G02F 1/03 . . . based on ceramics or electro-optical crystals, e.g. exhibiting Pockels effect or Kerr effect (~~G02F 1/061~~ takes precedence-)
- G02F 1/0305 . . . {Constructional arrangements (~~G02F 1/0327~~ to [G02F 1/05](#) take precedence-)}
- G02F 1/0327 . . . {Operation of the cell; Circuit arrangements (~~G02F 1/05~~ takes precedence-)}
- G02F 1/0333 . . . {addressed by a beam of charged particles e.g. directed to an adjacent layer exhibiting secondary emission or bombardment-induced conductivity effect (~~G02F 1/05~~ takes precedence; electrography, electrophotography [G03G](#) ; screens for cathode ray tubes acting as light valves [H01J 29/12](#)-)}
- G02F 1/0338 . . . {structurally associated with a photoconductive layer or having photo-refractive properties (~~G02F 1/05~~ takes precedence-)}
- G02F 1/0344 . . . {controlled by a high-frequency electromagnetic wave component in an electric waveguide (~~G02F 1/0356~~ , [G02F 1/05](#) , [G02F 1/2255](#) , [G02F 1/3134](#) take precedence-)}
- G02F 1/05 . . . with ferro-electric properties (~~G02F 1/035~~ , [G02F 1/055](#) take precedence; { domain inversion in ferro-electric materials [G02F 1/3558](#) ; ferro-electric digital stores [G11C 11/22](#) })
- G02F 1/0525 . . . {addressed by a beam of charged particles, e.g. directed to an adjacent layer exhibiting secondary emission or bombardment-induced conductivity effect (-electrography, electrophotography [G03G](#) ; screens for cathode-ray tubes acting as light valves [H01J 29/12](#)-)}
- G02F 1/0541 . . . {using photo-refractive effects (-holography [G03H](#) ; electro-optical digital static stores using an interference pattern [G11C 13/044](#)-)}
- G02F 1/055 . . . the active material being a ceramic (~~G02F 1/035~~ takes precedence-)
- G02F 1/061 . . . based on electro-optical organic material (~~G02F 1/07~~ , { [G02F 1/13](#) }take precedence)
- U G02F 1/09 . . . based on magneto-optical elements, e.g. exhibiting Faraday effect
- G02F 1/093 . . . {used as non-reciprocal devices, e.g. optical isolators, circulators (~~G02F 1/0955~~ takes precedence-)}
- G02F 1/11 . . . based on acousto-optical elements, e.g. using variable diffraction by sound or like mechanical waves ({ elasto-optic effect without wave propagation [G02F 1/0131](#) ; } acousto-optical deflection [G02F 1/33](#)-)}
- G02F 1/116 . . . {using an optically anisotropic medium, wherein the incident and the diffracted light waves have different polarizations, e.g. acousto-optic tunable filter (AOTF)(~~G02F 1/125~~ takes precedence-)}
- G02F 1/13 . . . based on liquid crystals, e.g. single liquid crystal display cells (-liquid crystal materials [C09K 19/00](#)-)
- G02F 1/1306 . . . {Details (not used, see sub-groups)}
- G02F 1/1309 . . . {Repairing; Testing (-testing of optical apparatus [G01M 11/00](#) ; electronic testing of displays or display drivers, e.g. of LCDs, [G09G 3/006](#)-)}
- G02F 1/132 . . . {Thermal activation of liquid crystals exhibiting a thermo-optic effect (-thermometers using change of colour or translucency of liquid crystals [G01K 11/165](#) ; thermally addressed liquid crystal elements in a matrix [G09G 3/3603](#)-)}
- G02F 1/133 . . . Constructional arrangements; Operation of liquid crystal cells; Circuit arrangements (arrangements or circuits for control of liquid crystal elements in a{segment display or a}matrix, not structurally associated with these elements,{ respectively [G09G 3/18](#) and } [G09G 3/36](#)-)

- G02F 1/13306 {Circuit arrangements or driving methods for the control of single liquid crystal cells (-[G02F 1/132](#) , [G02F 1/133382](#) take precedence-)}
- G02F 1/1333 Constructional arrangements; {Manufacturing methods} (-[G02F 1/135](#) , [G02F 1/136](#) take precedence-)
- U G02F 1/133308 {LCD panel immediate support structure, e.g. front and back frame or bezel}
- G02F 2001/133325 {Method of assembling (-[G02F 2201/465](#) takes precedence-)}
- G02F 1/13334 {Plasma addressed liquid crystal cells [PALC]} (-plasma panels [H01J 17/49](#)-)}
- G02F 1/133345 {Insulating layers (-[G02F 1/1335](#) , [G02F 1/1337](#) , [G02F 1/135](#) , [G02F 1/136](#) take precedence-)}
- G02F 1/133348 {Charged-particles, e.g. electron-beam, addressed liquid crystals cells (-screen for cathode ray tubes acting as light valves [H01J 29/12](#) ; electrography, electrophotography [G03G](#)-)}
- G02F 1/133362 {Optically addressed liquid crystal cells (-[G02F 1/135](#) takes precedence-)}
- G02F 1/133365 {Cells in which the active layer comprises a liquid crystalline polymer (-liquid crystalline polymers in general [C09K 19/38](#)-)}
- G02F 1/13338 {Input devices, e.g. touch-panels (-specially adapted as input devices to computers [G06F 3/033](#) ; touch-panels per se [G06K 11/06](#) , keyboard switches per se [H01H 13/70](#)-)}
- G02F 1/1334 based on polymer dispersed liquid crystals, e.g. microencapsulated liquid crystals{-compositions [C09K 19/544](#)-)}
- U G02F 1/1335 Structural association of optical devices, e.g. polarisers, reflectors or illuminating devices, with the cell
- G02F 1/133504 {Diffusing, scattering, diffracting elements (-associated to illuminating devices [G02F1/13357](#)-)}
- G02F 1/133509 {Filters, e.g. light shielding masks (-optical filters [G02B 5/20](#)-)}
- G02F 1/133512 {Light shielding layers, e.g. black matrix (-[G02F 1/136209](#) takes precedence-)}
- G02F 1/133514 {Colour filters (-luminescent elements [G02F 1/133617](#)-)}
- G02F 1/133516 {Methods of making thereof, e.g. printing, electro-deposition, photolithography (-photomechanical production of textured or patterned surfaces [G03F](#)-)}
- G02F 1/133526 {Lenses, e.g. micro-lenses, Fresnel lenses (-lenses in general [G02B 3/00](#)-)}
- G02F 1/133528 {Polarisers (-polarisers per se [G02B 5/30](#)-)}
- G02F 1/133533 {Colour selective polarisers (-[G02F 1/1347](#) takes precedence-)}
- G02F 1/133536 {Reflective polarizers (-[G02F 1/13362](#) takes precedence-)}
- G02F 1/133553 {Reflecting elements (-associated to illuminating devices [G02F1/13357](#)-)}
- G02F 1/1336 {Illuminating devices (-in general [F21V](#); associated with display devices for electronic watches [G04G 9/0041](#)-)}
- WARNING**
Groups [G02F 1/1336](#) - [G02F 1/133621](#) dos not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [G02F 1/1336](#) - [G02F 1/133621](#) : [G02F 1/13357](#)
- G02F 1/133615 {Edge-illuminating devices, i.e. illuminating from the side (-[G02B 6/0001](#) takes precedence-)}

- G02F 1/13362 {providing polarised light, e.g. by converting a polarisation component into another one (-optical systems for polarising [G02B 27/28-](#))}
- G02F 1/133621 {providing coloured light (-[G02F 1/133617](#) , [G02F 1/133533](#) take precedence-)}
- U G02F 1/1337 Surface-induced orientation of the liquid crystal molecules, e.g. by alignment layers
- G02F 1/133703 {by introducing organic surfactant additives into the liquid crystal material (-[C09K 19/56](#) takes precedence-)}
- G02F 1/13378 {by treatment of the surface, e.g. embossing, rubbing, light irradiation (-[G02F 1/133711](#) , [G02F 1/133734](#) , [G02F 1/133753](#) take precedence-)}
- G02F 1/1339 Gaskets; Spacers,{also spacers with conducting properties (electric line connectors [H01R](#))}; Sealing of the cell
- G02F 1/13394 {spacers regularly patterned on the cell substrate, e.g. walls, pillars (-[G02F 1/133377](#) takes precedence-)}
- G02F 1/1341 Filling or closing of the cell{(-[G02F 1/133365](#) , [G02F 1/1334](#) take precedence-)}
- G02F 1/1343 Electrodes{(-reflective electrodes [G02F 1/133553-](#))}
- G02F 1/134309 {characterised by their geometrical arrangement (-[G09F 9/302](#) takes precedence-)}
- U G02F 1/1345 Conductors connecting electrodes to cell terminals
- G02F 1/13452 {Conductors connecting driver circuitry and terminals of panels (-[H01L 21/00](#) takes precedence; electrical details inside the cell [G02F 1/133](#) ; -)}
- G02F 1/13454 {Drivers integrated on the active matrix substrate (-[G02F 1/136277](#) takes precedence-)}
- G02F 1/1347 Arrangement of liquid crystal layers or cells in which the final condition of one light beam is achieved by the addition of the effects of two or more layers or cells{(-colour projection displays with liquid crystal valves [H04N 9/3197-](#))}
- G02F 1/13471 {in which all the liquid crystal cells or layers remain transparent, e.g. FLC, ECB, DAP, HAN, TN, STN, SBE-LC cells (-[G02F 1/13475](#) takes precedence-)}
- G02F 1/13475 {in which at least one liquid crystal cell or layer is doped with a pleochroic dye, e.g. GH-LC cell (-[G02F 1/13476](#) takes precedence-)}
- G02F 1/135 Liquid crystal cells structurally associated with a photoconducting or a ferro-electric layer, the properties of which can be optically or electrically varied{(-[G02F 1/133348](#) takes precedence-)}
- G02F 1/136 Liquid crystal cells structurally associated with a semi-conducting layer or substrate, e.g. cells forming part of an integrated circuit (-[G02F 1/135](#) takes precedence-)}
- G02F 1/1362 Active matrix addressed cells{(-[G02F 1/134336](#) , [G02F 1/134363](#) take precedence-)}
- G02F 1/1365 in which the switching element is a two-electrode device{(-[G02F 1/136277](#) takes precedence-)}
- G02F 1/1368 in which the switching element is a three-electrode device{(-[G02F 1/136277](#) takes precedence-)}
- U G02F 1/137 characterised by a particular electro- or magneto-optical effect, e.g. field-induced phase transition, orientation effect, guest-host interaction, dynamic scattering

- G02F 1/13725 {based on guest-host interaction ([-G02F 1/13762](#) , [G02F 1/13737](#) , take precedence-)}
- G02F 1/13731 {based on a field-induced phase transition ([-G02F 1/13781](#) takes precedence-)}
- G02F 2001/13756 {the liquid crystal selectively assuming a light-scattering state ([-G02F 1/1334](#) , [G02F 1/13718](#) take precedence-)}
- G02F 1/13762 {containing luminescent or electroluminescent additives (-luminescent materials in general [C09K 11/00](#) ; compositions of liquid crystals comprising additives [C09K 19/52](#) to [C09K 19/603](#) ; electroluminescent light sources [H05B 33/00](#)-)}
- G02F 1/13781 {using smectic liquid crystals ([-G02F 1/141](#) takes precedence-)}
- G02F 2001/13787 {Hybrid alignment cells ([-G02F 1/1393](#) takes precedence-)}
- U G02F 1/139 based on orientation effects in which the liquid crystal remains transparent
- G02F 1/1391 {Bistable or multi-stable liquid crystal cells ([-G02F 1/141](#) takes precedence-)}
- G02F 1/1393 {the birefringence of the liquid crystal being electrically controlled, e.g. ECB-, DAP-, HAN-, PI-LC cells ([-G02F 1/1396](#) , [G02F 1/141](#) take precedence-)}
- G02F 1/1396 {the liquid crystal being selectively controlled between a twisted state and a non-twisted state, e.g. TN-LC cell ([-G02F 1/141](#) takes precedence-)}
- G02F 1/15 based on electrochromic elements({-electrochromic materials [C09K 9/00](#)-)}
- G02F 1/1523 {based on solid inorganic materials, e.g. transition metal compounds, e.g. in combination with a liquid or solid electrolyte ([-G02F 1/1506](#) takes precedence-)}
- G02F 1/1525 {characterised by a particular ion transporting layer, e.g. electrolyte ([-H01M 6/18](#) , [H01M 10/08](#) take precedence-)}
- U G02F 1/153 Constructional arrangements
- U G02F 1/155 Electrodes
- G02F 2001/1552 {Inner electrode, e.g. the electrochromic layer being sandwiched between the inner electrode and the support substrate---- this group, now to be changed, should already been created by implementation of a previous DOC14 (prior to the one referred to above)----}
- G02F 1/17 based on variable absorption elements ([-G02F 1/015](#) to [G02F 1/167](#) take precedence; { tenebrescent compositions [C09K 9/00](#) })
- G02F 1/174 {based on absorption band-shift, e.g. Stark - or Franz-Keldysh effect ([-G02F 1/015](#) , [G02F 1/178](#) take precedence-)}
- G02F 1/178 {based on pressure effects ([-G02F 1/195](#) takes precedence-)}
- G02F 1/19 based on variable reflection or refraction elements ([-G02F 1/015](#) to [G02F 1/167](#) take precedence-)
- G02F 1/195 {by using frustrated reflection (-digital reflection using controlled total internal reflection [G02F 1/315](#)-)}
- G02F 1/23 for the control of the colour ([-G02F 1/03](#) to [G02F 1/21](#) take precedence-)
- G02F 1/29 for the control of the position or the direction of light beams, i.e deflection ({ optical coupling means [G02B 6/26](#) ; optical-mechanical scanning in general [G02B 26/10](#) } ; static stores with electric or magnetic read-in and optical read-out [G11C](#); lasers provided with means to change the location from which, or the direction in which, laser radiation is emitted [H01S 3/101](#)-)}
- G02F 1/292 {by controlled diffraction or phased-array beam steering (-controlled diffraction for optical switching [G02F 1/31](#)-)}

- U G02F 1/295 • • {Analog deflection from or}in an optical waveguide structure]
- G02F 1/2955 • • • {by controlled diffraction or phased-array beam steering (-controlled diffraction for optical waveguide switching [G02F 1/313](#)-)}
- G02F 1/31 • • Digital deflection,{i.e. optical switching} (-[G02F 1/33](#) takes precedence-)
- U G02F 1/313 • • • in an optical waveguide structure
- G02F 1/3132 • • • • {of directional coupler type (-all-optical modulation, gating or switching using a non-linear directional coupler [G02F 1/3521](#)-)}
- G02F 1/33 • • Acousto-optical deflection devices{(-circuit or control arrangements therefor [G02F 1/113](#)-)}
- G02F 1/35 • Non-linear optics (-optical bistable devices [G02F 3/02](#) ; lasers using stimulated Brillouin or Raman effect [H01S 3/30](#)-)
- G02F 1/3501 • • {Constructional arrangements of non-linear optical devices, e.g. shape of non-linear crystals (-constructional arrangements of electro-optic devices [G02F 1/0305](#)-)}
- G02F 1/3511 • • {Self-focusing or self-trapping of light; Light-induced birefringence; Induced optical Kerr-effect (-photorefractive effects of electro-optic crystals [G02F 1/0338](#) , [G02F 1/0541](#) , of ceramics [G02F 1/0558](#) ; opto-optical modulation [G02F 1/0126](#) ; opto-optical deflection [G02F 1/293](#)-)}
- G02F 1/3515 • • {All-optical modulation, gating, switching, e.g. control of a light beam by another light beam (-[G02F 1/353](#) , [G02F 1/37](#) , [G02F 1/39](#) take precedence-)}
- G02F 1/3523 • • {Non-linear absorption changing by light e.g. bleaching (-laser Q-switching using bleachable media [H01S 3/113](#)-)}
- G02F 1/3526 • • {using two-photon emission or absorption processes (-Raman effect [H01S 3/30](#)-)}
- G02F 1/353 • • {Frequency conversion, i.e. wherein a light beam with frequency components different from those of the incident light beams is generated (-second harmonic generation [G02F 1/37](#) ; optical parametric generation or amplification [G02F 1/39](#) ; transferring the modulation of modulated light [G02F 2/004](#) ; optical pumping of a laser by another laser [H01S 3/094](#) ; nonlinear optical devices inside a laser cavity [H01S 3/108](#)-)}
- G02F 1/3534 • • • {Three-wave interaction, e.g. sum-difference frequency generation (-[G02F 1/3532](#) takes precedence-)}
- U G02F 1/3536 • • • {Four-wave interaction}
- G02F 1/3538 • • • • {for optical phase conjugation (-[H01S 3/10076](#) takes precedence-)}
- G02F 1/365 • • in an optical waveguide structure (-[G02F 1/377](#) , { [G02F 1/395](#) }take precedence)
- G02F 1/37 • • for second-harmonic generation{(-[G02F 1/3532](#) takes precedence-)}
- U G02F 1/377 • • • in an optical waveguide structure
- G02F 1/3775 • • • • {with a periodic structure, e.g. domain inversion, for quasi-phase-matching (QPM)(-[G02F 1/383](#) takes precedence-)}
- G02F 1/39 • • for parametric generation or amplification of light, infra-red or ultra-violet waves ({ [G02F 1/3532](#) takes precedence; } electrical parametric amplifiers [H03F 7/00](#)-)}
- G02F 2/00** **Demodulating light; Transferring the modulation of modulated light; Frequency-changing of light (-[G02F 1/35](#) takes precedence; photoelectric detecting or measuring devices [G01J](#), [H01J 40/00](#) , [H01L 31/00](#) ; demodulating laser arrangements {e.g. switching, gating} [H01S 3/10](#) ; demodulation or transference of modulation of modulated electro-magnetic waves in general [H03D 9/00](#)-)**
- G02F 2/002 • {using optical mixing (-homodyne, heterodyne systems [H04B10/148](#)-)}

- G02F 2/02 · Frequency-changing of light, e.g. by quantum counters (~~luminescent materials~~ [C09K 11/00](#))
- G02F 3/00** **Optical logic elements** (**{ optical computing [G06E](#) }** ; **electric pulse generators using opto-electronic devices as active elements [H03K 3/42](#) ; logic circuits using opto-electronic devices [H03K 19/14](#)**); **Optical bistable devices**
- U G02F 3/02 · Optical bistable devices
- G02F 3/022 · · {based on electro-, magneto- or acousto-optical elements (~~G02F 3/028 takes precedence~~)}
- G02F 3/024 · · {based on non-linear elements, e.g. non-linear Fabry-Perot cavity (~~G02F 3/028 takes precedence~~)}
- G02F 2201/00** **Constructional arrangements not provided for in groups [G02F 1/00](#) to [G02F 7/00](#)**
- G02F 2413/00** **Indexing scheme related to [G02F 1/13363](#) , i.e. to birefringent elements, e.g. for optical compensation, characterised by the number, position, orientation or value of the compensation plates**

Project: N/A (G03B)

- G03B 7/00** **Control of exposure by setting shutters, diaphragms, or filters, separately or conjointly (~~measuring intensity of light G01J; control systems in general G05 control of exposure in television cameras by means of circuitry for compensating for variation in the brightness of the object H04N 5/235~~)**
- N G03B 7/01 · with selection of either manual or automatic mode
- G03B 7/08 · Control effected solely ~~by response to built-in light-sensitive device~~ *on the basis of the response*, to the intensity of *the* light received by the camera, *of a built-in light-sensitive device*
- G03B 7/0805 · · ~~{Control circuits Setting of priority modes (G03B 7/10 takes precedence)}~~
- N G03B 7/0807 · · {Control circuits ([G03B 7/10](#) takes precedence)}
- WARNING**
Group [G03B 7/0807](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [G03B 7/081](#) - [G03B 7/091](#).
- Until reclassification is complete, groups [G03B 7/0807](#), [G03B 7/081](#) and [G03B 7/091](#) should be considered in order to perform a complete search.*

Project: RP0066 (G03B)

- G03B 7/081 · · Analogue circuits
- WARNING**
Group [G03B 7/081](#) is incomplete pending reclassification of documents from group [G03B 7/0807](#).
- Until reclassification is complete, groups [G03B 7/0807](#) and [G03B 7/081](#) should be considered in order to perform a complete search.*
- G03B 7/087 · · for control of both exposure time and aperture ~~{see provisionally also G03B 7/081}~~
- WARNING**
Group [G03B 7/087](#) is incomplete pending reclassification of documents from group [G03B 7/081](#).

Until reclassification is complete, groups G03B 7/081 and G03B 7/087 should be considered in order to perform a complete search.

- G03B 7/089
- • for storage of exposure value in mirror reflex cameras ~~{see provisionally also G03B 7/081}~~

WARNING

Group G03B 7/089 is incomplete pending reclassification of documents from group G03B 7/081.

Until reclassification is complete, groups G03B 7/081 and G03B 7/089 should be considered in order to perform a complete search.

- G03B 7/091
- • Digital circuits

WARNING

Group G03B 7/091 is incomplete pending reclassification of documents from group G03B 7/0807.

Until reclassification is complete, groups G03B 7/0807 and G03B 7/091 should be considered in order to perform a complete search.

- G03B 7/097
- • for control of both exposure time and aperture ~~{see provisionally also G03B 7/091}~~

WARNING

Group G03B 7/097 is incomplete pending reclassification of documents from group G03B 7/091.

Until reclassification is complete, groups G03B 7/091 and G03B 7/097 should be considered in order to perform a complete search.

Project: N/A (G03B)

- U G03B 7/099 • • Arrangement of photoelectric elements in or on the camera
- D G03B 7/09916 • • • {in the camera}
- D G03B 7/09925 • • • • {FTL measuring}
- N G03B 7/0993 • • • in the camera
- D G03B 7/09933 • • • • • {in mirror-reflex cameras (G03B 7/09991 takes precedence)}
- D G03B 7/09941 • • • • • {using the mirror as sensorlight reflecting or transmitting member}
- D G03B 7/0995 • • • • • {using the mirror as sensor}
- D G03B 7/09958 • • • • • {using the film or shutter as sensorlight reflecting member}
- D G03B 7/09966 • • • • • {the sensor being mounted in, before, or behind the porro-prism}
- N G03B 7/0997 • • • • Through the lens [TTL] measuring
- N G03B 7/09971 • • • • • {in mirror-reflex cameras (G03B 7/09979 takes precedence)}
- N G03B 7/09972 • • • • • {using the mirror as sensor light reflecting or transmitting member}
- N G03B 7/09973 • • • • • {using the mirror as sensor}
- N G03B 7/09974 • • • • • {using the film or shutter as sensor light reflecting member}
- D G03B 7/09975 • • • • • {with a movable light-measuring element}
- N G03B 7/09976 • • • • • {the sensor being mounted in, before, or behind the porro-prism}
- N G03B 7/09977 • • • • • {with a movable light-measuring element}
- N G03B 7/09978 • • • • • {Protection against viewer backlight or integration of the viewer light into the measured light}
- N G03B 7/09979 • • • • • {Multi-zone light measuring}

- D G03B 7/09983 {Protection against viewer backlight or integration of the viewer light into the measured light}
- D G03B 7/09991 {Multi-zone light measuring}
- G03B 7/16 in accordance with both the intensity of the flash source and the distance of the flash source from *the* object, e.g. in accordance with *the* "guide number" of *the* flash bulb and the focusing of the camera
- N G03B 7/17 Selection of modes in flash units by exposure control arrangements
- N G03B 7/30 Safety arrangements for control of exposure
- U G03B 11/00 Filters or other obturators specially adapted for photographic purposes (filters per se G02B { G02B 5/20})**
- G03B 11/04 {Hoods or caps for eliminating unwanted light from lenses, viewfinders or focusing aids}
- WARNING
Groups [G03B 11/041](#) to [G03B 11/048](#) are not complete pending reclassification; see also [G03B 11/04](#)
- G03B 11/041 {Lens caps as separate accessory (accessories in general [G03B 17/56](#))}
- G03B 11/043 {Protective lens closures or lens caps built into cameras}
- G03B 11/045 {Lens hoods or shields}
- G03B 11/046 {for viewfinders or eyepieces}
- G03B 11/048 {Hoods or caps not provided for in groups [G03B 11/041](#) to [G03B 11/046](#)}
- U G03B 15/00 Special procedures for taking photographs; Apparatus therefor**
- U G03B 15/02 Illuminating scene
- U G03B 15/03 Combinations of cameras with lighting apparatus; Flash units
- U G03B 15/04 Combinations of photographic apparatus with non-electronic flash apparatus; Non-electronic flash units ({control of the photographic apparatus according to the flash apparatus characteristics [G03B 7/16](#); test apparatus for flash [G03B 43/00](#);} light sources using a charge of combustible material [F21K 5/00](#); ignition circuits [H05B 43/02](#))
- U G03B 15/041 {Separatable flash apparatus; Means for mounting the flash apparatus on the photographic apparatus}
- G03B 15/0426 {Mounting means comprising longitudinal slide and incorporated contacts (*for multiple lamps*)}~~{for multiple lamps}~~
- U G03B 17/00 Details of cameras or camera bodies; Accessories therefor (lens hoods or caps G03B 11/04)**
- U G03B 17/56 Accessories (camera cases [A45C 11/38](#); { lens caps [G03B 11/041](#); stands or trestles as support for apparatus or articles placed thereon [F16M 11/00](#); means for attachment of apparatus allowing quick-release [F16M 11/041](#); means for supporting on, or holding steady relative to a person [F16M 13/04](#); tripods [F16M 11/24](#); tripods with telescopic legs [F16M 11/32](#); monopod or tripod having a central telescopic column [F16M 11/28](#); heads or undercarriages for supporting an object and allowing movement thereof [F16M 11/043](#) to [F16M 11/14](#) or [F16M 11/2007](#) to [F16M 11/24](#)})
- WARNING
Groups [G03B 17/561](#) to [G03B 17/568](#) are not complete pending reclassification; see also [G03B 17/56](#)
- G03B 17/561 {Support related camera accessories}
- G03B 17/563 {Camera grips, handles (means in general for steadying hand-held apparatus [F16M 13/00](#))}

- G03B 17/565 · · {-Optical accessories, e.g. converters for close-up photography, tele-convertors, wide-angle convertors}
- G03B 17/566 · · {-Accessory clips, holders, shoes to attach accessories to camera (if integral part of camera body [G03B 17/02](#))}
- G03B 17/568 · · {-Camera accessories not provided in groups [G03B 17/561](#) to [G03B 17/566](#)}

Project: RP0066 (G03B)**G03B 21/00**

Projectors or projection-type viewers; -Accessories therefor (devices for changing pictures [G03B 23/00](#); Zoetropes [G03B 25/00](#); photographic printing apparatus [G03B 27/00](#); arrangements for obtaining special effects on stages or in circuses or in arenas [F21W 2111/06](#); optical projection comparators [G01B 9/08](#); projection microscopes [G02B 21/36](#)){ laser projectors using scanning devices [H04N 9/3129](#); interactive projectors, e.g. whiteboards, with input means to control the projection [G06F 3/00](#); optical distortion correction, e.g. keystone [G03B 21/14](#); projection devices comprising an electronic spatial light modulator and peculiar thereto [H04N 5/74](#) or [H04N 9/31](#)}

WARNING

Groups [G03B 21/001](#) to [G03B 21/008](#) are **not complete pending a reorganisation; see also** *incomplete pending reclassification of documents from group [G03B 21/00](#)*.

Until reclassification is complete, groups [G03B 21/00](#) and [G03B 21/001](#) to [G03B 21/008](#) should be considered in order to perform a complete search.

Project: N/A (G03B)

- G03B 21/001 · {-Slide projectors}
- G03B 21/003 · {-Cine-projectors}
- G03B 21/005 · {-Projectors using an electronic spatial light modulator but not peculiar thereto}
- G03B 21/006 · · {-using LCD's}
- G03B 21/008 · · {-using micro-mirror devices}

Project: RP0066 (G03B)**G03B 21/14**

- Details

WARNING

Groups [G03B 21/142](#) to [G03B 21/147](#) are **not complete pending a reorganisation; see also** *incomplete pending reclassification of documents from group [G03B 21/14](#)*.

Until reclassification is complete, groups [G03B 21/14](#) and [G03B 21/142](#) to [G03B 21/147](#) should be considered in order to perform a complete search.

Project: N/A (G03B)

- G03B 21/142 · · {-Adjusting of projection optics}
- G03B 21/145 · · {-Housing details, e.g. position adjustments thereof}
- G03B 21/147 · · {-Optical correction of image distortions, e.g. keystone}

Project: RP0066 (G03B)

- G03B 21/20 • • Lamp houses (condensers per se [G02B](#))

WARNING

Groups G03B 21/2006 to G03B 21/2093 are not complete pending a reorganisation; see also G03B 21/20

Project: N/A (G03B)

- G03B 21/2006 • • • {-characterised by the light source}
- G03B 21/2013 • • • • {-Plural light sources}
- G03B 21/202 • • • • {-Incandescent light sources}
- G03B 21/2026 • • • • {-Gas discharge type light sources, e.g. arcs}
- G03B 21/2033 • • • • {-LED or laser light sources}
- G03B 21/204 • • • • • {-using secondary light emission, e.g. luminescence or fluorescence
(using different colours [G03B 33/00](#); if related to video signals
[H04N 9/3197](#))}
- G03B 21/2046 • • • {-Positional adjustment of light sources}
- G03B 21/2053 • • • {-Intensity control of illuminating light (controlled by video signal processing
[H04N 5/74](#) or [H04N 9/31](#))}
- G03B 21/206 • • • {-Control of light source other than position or intensity}
- G03B 21/2066 • • • {-Reflectors in illumination beam (in projection beam [G03B 21/28](#))}
- G03B 21/2073 • • • {-Polarisers in the lamp house (peculiar to electronic spatial light modulators
[H04N 9/3197](#))}
- G03B 21/208 • • • {-Homogenising, shaping of the illumination light}
- G03B 21/2086 • • • {-Security or safety means in lamp houses}
- G03B 21/2093 • • • {-Details of lamp houses not provided in groups [G03B 21/2006](#) to
[G03B 21/2086](#)}
- U G03B 21/54 • Accessories
- U G03B 21/56 • • Projection screens
- G03B 21/567 • • • {-for colour projection ([G03B 21/58](#), [G03B 21/60](#) take precedence)}

Project: RP0066 (G03B)

- U G03B 21/58 • • • collapsible, e.g. foldable; of variable area
- G03B 21/585 • • • • {-Inflatable screens}

WARNING

~~Not complete pending a reorganisation; see also Group [G03B 21/585](#) is incomplete pending reclassification of documents from group [G03B 21/58](#).~~

Until reclassification is complete, groups [G03B 21/58](#) and [G03B 21/585](#) should be considered in order to perform a complete search.

Project: N/A (G03B)

- G03B 21/60 • • • {-~~Characterised~~*characterised* by the nature of the surface}
- G03B 21/602 • • • • {-Lenticular *screens* ([G03B 21/625](#) takes precedence)}
- G03B 21/604 • • • • {-~~Polarised~~*Polarised screens*}
- G03B 21/606 • • • • {-~~For~~*for* relief projection}

Project: RP0066 (G03B)

G03B 21/608 {Fluid screens}

WARNING

Not complete pending a reorganisation; see also Group [G03B 21/608](#) is incomplete pending reclassification of documents from group [G03B 21/60](#).

Until reclassification is complete, groups [G03B 21/60](#) and [G03B 21/608](#) should be considered in order to perform a complete search.

Project: N/A (G03B)

U G03B 21/62 Translucent screens

G03B 21/625 {Lenticular translucent screens}

U G03B 27/00 Photographic printing apparatus (film-strip handling [G03B 1/00](#))

U G03B 27/72 . Controlling or varying light intensity, spectral composition, or exposure time in photographic printing apparatus (exposure meters per se [G01J](#); control of light intensity in general [G05D 25/00](#))

G03B 27/725 . {Optical projection devices wherein the contrast is controlled electrically (*e.g. cathode ray tube masking*)}(~~e.g. cathode ray tube masking~~)

G03B 27/727 . {Optical projection devices wherein the contrast is controlled optically (*e.g. uniform exposure, two colour exposure on variable contrast sensitive material*)}(~~e.g. uniform exposure, two colour exposure on variable contrast sensitive material~~)

U G03B 42/00 Obtaining records using waves other than optical waves; Visualisation of such records by using optical means (investigating or analysing materials using electromagnetic or sonic waves [G01N](#); using radar, sonar or analogous techniques [G01S](#); {holography [G03H](#)})

U G03B 42/02 . using X-rays (measurement of X-radiation [G01T](#); X-ray apparatus, circuits therefor [H05G 1/00](#))

U G03B 42/04 . . Holders for X-ray films

G03B 42/042 . . . {for dental applications (see also [A61B 6/14](#)); ~~(individual packages for X-ray film [G03C 3/003](#))~~}

Project: N/A (G03C)

G03C

PHOTOSENSITIVE MATERIALS FOR PHOTOGRAPHIC PURPOSES (for photomechanical purposes [G03F](#)); PHOTOGRAPHIC PROCESSES, e.g. CINE, X-RAY, COLOUR, STEREO-PHOTOGRAPHIC PROCESSES; AUXILIARY PROCESSES IN PHOTOGRAPHY (photographic processes characterised by the use or manipulation of apparatus classifiable per se in subclass [G03B](#), see [G03B](#); photomechanical production of textured or patterned surfaces [G03F](#); electrophotography, magnetography [G03G](#))

NOTE

In this subclass, the following expressions are used with the meanings indicated :

- "photosensitive compositions" covers photosensitive substances, e.g. silverhalides, and, if applicable, binders or additives;
- "photosensitive materials" covers the photosensitive

compositions, e.g. emulsions, the bases carrying them,
and,
if applicable, auxiliary layers.

WARNING

The following IPC group is not used in the CPC scheme.

Subject matter covered by this group is classified in the following CPC group:

- [G03C 9/08](#) covered by [G03F 7/0037](#)

- G03C 1/00** **Photosensitive materials (-photosensitive materials for multicolour processes [G03C 7/00](#) ; for diffusion transfer processes [G03C 8/00](#) ; photosensitive glass [C03C 4/04](#)-)**
- G03C 1/002 • {containing microcapsules (-with photopolymerisable compositions [G03F 7/002](#)-)}
- G03C 1/005 • Silver halide emulsions; Preparation thereof; Physical treatment thereof; Incorporation of additives therein (catalytic amounts of silver halide in dry silver systems{or thermographic systems using noble metal compounds} [G03C 1/494](#)-)
- G03C 1/015 • • Apparatus or processes for the preparation of emulsions (-coating, drying [G03C 1/74](#)-){(-[G03C 1/07](#) takes precedence; special processes for tabular grains [G03C 1/0051](#)-)}
- G03C 1/025 • • Physical treatment of emulsions, e.g. by ultrasonics, refrigeration, pressure (-coating, drying [G03C 1/74](#)-)
- G03C 1/06 • • with non-macromolecular additives (-[G03C 1/047](#) takes precedence; { combination of dyes [G03C 1/29](#) })
- U G03C 1/08 • • • Sensitivity-increasing substances
- G03C 1/09 • • • • Noble metals or mercury; Salts or compounds thereof; Sulfur, selenium or tellurium, or compounds thereof, e.g. for chemical sensitising (-[G03C 1/34](#) , [G03C 1/35](#) take precedence-)
- G03C 1/10 • • • • Organic substances{(-[G03C 1/061](#) , [G03C 1/067](#) take precedence-)}
- U G03C 1/30 • • • Hardeners
- G03C 1/307 • • • • {Macromolecular substances (-polysaccharides [G03C 1/303](#)-)}
- G03C 1/32 • • • • Matting agents{ see also [G03C 1/95](#)-}
- G03C 1/36 • • • • Desensitisers (-direct positive emulsions [G03C 1/485](#)-)
- G03C 1/40 • • • • Dyestuffs not covered by the groups [G03C 1/08](#) to [G03C 1/38](#) or [G03C 1/42](#)
- G03C 1/43 • • • • Processing agents or their precursors, not covered by groups [G03C 1/07](#) to [G03C 1/42](#)
- G03C 1/46 • • having more than one photosensitive layer{(-[G03F 7/0952](#) takes precedence-)}
- G03C 1/494 • Silver salt compositions other than silver halide emulsions; Photothermographic systems {Thermographic systems using noble metal compounds}
- U G03C 1/498 • • Photothermographic systems, e.g. dry silver
- U G03C 1/49836 • • • {Additives}
- U G03C 1/49845 • • • • {Active additives, e.g. toners, stabilisers, sensitisers}
- G03C 1/49854 • • • • • {Dyes or precursors of dyes (-for diffusion-transfer [G03C 8/10](#) , [G03C 8/4013](#)-)}
- G03C 1/50 • Compositions containing noble metal salts other than silver salts, as photosensitive substances{(-thermographic systems using noble metal compounds [G03C 1/494](#)-)}
- G03C 1/52 • Composition containing diazo compounds as photosensitive substances (-[G03C 1/64](#) takes precedence-)

- G03C 1/675
 - Compositions containing polyhalogenated compounds as photosensitive substances (for photopolymerisable or photocrosslinkable compositions [G03F 7/028](#) , covered by [G03C 1/72](#)-)
- G03C 1/695
 - Compositions containing azides as the photosensitive substances (for photopolymerisable or photocrosslinkable compositions [G03F 7/008](#)-)
- G03C 1/705
 - Compositions containing chalcogenides, metals or alloys thereof, as photosensitive substances, e.g. photodope systems (used as photoresist [G03F 7/004](#)-)
- G03C 1/72
 - Photosensitive compositions not covered by the groups [G03C 1/005](#) to [G03C 1/705](#)
- U G03C 1/73
 - • containing organic compounds
- G03C 1/733
 - • • {with macromolecular compounds as photosensitive substances, e.g. photochromic (photodegradable or photocrosslinkable compositions [G03F 7/004](#)-)}
- G03C 1/74
 - Applying photosensitive compositions to the base; Drying processes therefor (G03C 1/496 takes precedence-)
- U G03C 1/76
 - Photosensitive materials characterised by the base or auxiliary layers
- G03C 1/7614
 - • {Cover layers; Backing layers; Base or auxiliary layers characterised by means for lubricating, for rendering anti-abrasive or for preventing adhesion (characterised by the inert particulate additive [G03C 1/95](#)-)}
- G03C 1/7642
 - • {the base being of textile or leather (G03C 11/12 takes precedence-)}
- G03C 1/795
 - • the base being of macromolecular substances (G03C 1/775 takes precedence-)
- G03C 1/815
 - • characterised by means for filtering or absorbing ultraviolet light, e.g. optical bleaching (for photoprinting [G03C 5/10](#) ; for intensifying X-ray images [G03C 5/17](#)-)
- U G03C 1/825
 - • characterised by antireflection means or visible-light filtering means, e.g. antihalation
- G03C 1/83
 - • • Organic dyestuffs therefor{ polymeric dyes [G03C 1/835](#)-}
- G03C 1/95
 - • rendered opaque or writable, e.g. with inert particulate additives (G03C 1/775 takes precedence-)
- G03C 3/00**

Packages of films for inserting into cameras, e.g. roll-films, film-packs; Wrapping materials for light-sensitive plates, films or papers, e.g. materials characterised by the use of special dyes, printing inks, adhesives (wrapping materials in general [B65D](#)-)
- G03C 5/00**

Photographic processes or agents therefor; Regeneration of such processing agents (multicolour processes or agents therefor [G03C 7/00](#) ; diffusion-transfer processes or agents therefor [G03C 8/00](#) ; stereo-photographic processes [G03C 9/00](#) ; photomechanical processes [G03F](#)-)
- G03C 5/08
 - Photoprinting (G03C 5/18 takes precedence-); Processes and means for preventing photoprinting
- U G03C 5/12
 - Cinematographic processes of taking pictures or printing
- G03C 5/14
 - • combined with sound-recording (sound-recording in general [G11B](#)-)
- U G03C 5/16
 - X-ray, infra-red, or ultra-violet ray processes
- G03C 5/17
 - • using screens to intensify X-ray images (X-ray conversion screens [G21K 4/00](#)-)
- G03C 5/26
 - Processes using silver-salt-containing photosensitive materials or agents therefor (physical development [G03C 5/58](#)-)
- G03C 5/262
 - • {using materials covered by groups [G03C 1/42](#) and [G03C 1/43](#)-}

- G03C 5/263
 - • {with an exterior influence, e.g. ultrasonics, electrical or thermal means (~~G03C 5/262~~ takes precedence; dry silver systems [G03C 1/498](#)-)}
- U G03C 5/264
 - • {Supplying of photographic processing chemicals; Preparation or packaging thereof}
- G03C 5/265
 - • • {of powders, granulates, tablets (~~G03C 5/267~~ takes precedence-)}
- G03C 5/266
 - • • {of solutions or concentrates (~~G03C 5/267~~ takes precedence-)}
- G03C 5/268
 - • {Processing baths not provided for elsewhere, e.g. pre-treatment, stop, intermediate or rinse baths (~~colour processing G03C 7/3046~~-)}
- G03C 5/29
 - • Development processes or agents therefor (~~G03C 5/38~~ , [G03C 5/50](#) take precedence-)
- U G03C 5/30
 - • • Developers
- G03C 5/3028
 - • • • {Heterocyclic compounds (~~G03C 5/3021~~ takes precedence-)}
- G03C 5/305
 - • • Additives other than developers(~~G03C 5/264~~ takes precedence-)}
- G03C 5/3056
 - • • • {Macromolecular additives (~~G03C 5/261~~ takes precedence-)}
- G03C 5/38
 - • Fixing; Developing-fixing; Hardening-fixing (~~bleach-fixing G03C 5/44~~-)
- U G03C 5/395
 - • Regeneration of photographic processing agents other than developers; Replenishers therefor
- G03C 5/3952
 - • • {Chemical, mechanical or thermal methods, e.g. oxidation, precipitation, centrifugation (~~microseparation techniques using membranes [G03C 5/3956](#)~~-)}
- G03C 5/3956
 - • • {Microseparation techniques using membranes, e.g. reverse osmosis, ion exchange, resins, active charcoal (~~G03C 5/3954~~ takes precedence-)}
- G03C 5/40
 - • Chemically transforming developed images (~~G03C 5/50~~ takes precedence-)
- G03C 5/42
 - • • Reducing; Intensifying{ using couplers [G03C 7/30](#)}
- G03C 5/50
 - • Reversal development; Contact processes (~~G03C 5/315~~ , [G03C 8/00](#) take precedence-)
- G03C 5/56
 - Processes using photosensitive compositions covered by the groups [G03C 1/64](#) to [G03C 1/72](#) or agents therefor (~~G03C 5/58~~ takes precedence-)
- G03C 5/58
 - Processes for obtaining metallic images by vapor deposition or physical development (~~images obtained by photomechanical means, e.g. by etching [G03F](#)~~-)
- G03C 7/00**
 - Multicolour photographic processes or agents therefor; Regeneration of such processing agents; Photosensitive materials for multicolour processes (~~diffusion transfer processes [G03C 8/00](#)~~-)**
- U G03C 7/04
 - Additive processes using colour screens; Materials therefor; Preparing or processing such materials
- U G03C 7/06
 - • Manufacture of colour screens
- U G03C 7/10
 - • • with regular areas of colour, e.g. bands, lines, dots
- G03C 7/12
 - • • • by photo-exposure(~~photomechanical production of optical colour artifacts such as colour screens, for purposes other than for additive colour photography [G03F 7/0007](#)~~-)}
- G03C 7/18
 - Processes for the correction of the colour image in subtractive colour photography (~~using coloured couplers [G03C 7/333](#)~~-)
- U G03C 7/22
 - Subtractive cinematographic processes; Materials therefor; Preparing or processing such materials
- G03C 7/24
 - • combined with sound-recording (~~sound recording in general [G11B](#)~~-)
- G03C 7/26
 - Silver halide emulsions for subtractive colour processes (~~G03C 7/28~~ to [G03C 7/30](#) take precedence-)

- U G03C 7/30
- Colour processes using colour-coupling substances; Materials therefor; Preparing or processing such materials
- G03C 7/305
- • Substances liberating photographically active agents, e.g. development-inhibiting releasing couplers (~~G03C 7/388~~ takes precedence; { in combination with other additives or included in a specific colour photographic material [G03C 7/3003](#) ; in combination with other couplers [G03C 7/3225](#) })
- U G03C 7/30541
- • • {characterised by the released group}
- G03C 7/30558
- • • • {Heterocyclic group (~~G03C 7/30552~~ takes precedence)}
- G03C 7/32
- • Colour coupling substances (~~G03C 7/305~~ , [G03C 7/388](#) take precedence; { in combination with other additives or included in a specific colour photographic material [G03C 7/3003](#) ; two-equivalent couplers [G03C 7/30517](#) })
- G03C 7/34
- • • Couplers containing phenols (~~G03C 7/327~~ , [G03C 7/333](#) take precedence)
- G03C 7/36
- • • Couplers containing compounds with active methylene groups (~~G03C 7/327~~ , [G03C 7/333](#) take precedence)
- U G03C 7/38
- • • • in rings
- G03C 7/381
- • • • • {Heterocyclic compounds (~~G03C 7/384~~ takes precedence)}
- G03C 7/388
- • Processes for the incorporation in the emulsion of substances liberating photographically active agents or colour-coupling substances; Solvents therefor{(-incorporation of additives other than couplers [G03C 1/005](#)-)}
- G03C 7/392
- • Additives (~~G03C 7/30~~ to [G03C 7/32](#) take precedence)
- G03C 7/39208
- • • {Organic compounds (~~macromolecular additives [G03C 7/396](#)~~-)}
- G03C 7/39232
- • • • {with an oxygen-containing function (~~G03C 7/39216~~ takes precedence)}
- G03C 7/39236
- • • • {with a function having at least two elements among nitrogen, sulfur or oxygen (~~G03C 7/39216~~ takes precedence)}
- G03C 7/39292
- • • • {Dyes (~~G03C 1/12~~ , [G03C 1/83](#) take precedence)}
- G03C 7/39296
- • • {Combination of additives (~~combination with couplers [G03C 7/3003](#)~~-)}
- G03C 7/396
- • • Macromolecular additives(~~G03C 7/388~~ takes precedence)}
- G03C 7/407
- • Development processes or agents therefor{ [G03C 7/3244](#) takes precedence}
- G03C 7/42
- • Bleach-fixing or agents therefor {Desilvering processes}
- G03C 7/46
- Subtractive processes not covered by the group [G03C 7/26](#); Materials therefor; Preparing or processing such materials
- U G03C 8/00 Diffusion transfer processes or agents therefor; Photosensitive materials for such processes**
- U G03C 8/02
- Photosensitive materials characterised by the image-forming section
- G03C 8/08
- • the substances transferred by diffusion consisting of organic compounds (~~G03C 8/04~~ takes precedence)
- U G03C 8/24
- Photosensitive materials characterised by the image-receiving section
- G03C 8/26
- • Image-receiving layers (~~G03C 8/52~~ takes precedence)
- G03C 8/32
- • Development processes or agents therefor (~~G03C 8/18~~ takes precedence)
- G03C 8/34
- • Containers for the agents (~~G03C 8/48~~ , [G03B 17/50](#) take precedence)
- G03C 8/40
- • Development by heat {Photo-thermographic processes}
- G03C 8/4006
- • {using materials covered by the groups [G03C 8/04](#) to [G03C 8/06](#)}
- G03C 8/4013
- • {using photothermographic silver salt systems, e.g. dry silver (~~G03C 1/4989~~ takes precedence)}
- G03C 8/404
- • • {Photosensitive layers (~~G03C 1/498~~ takes precedence)}
- G03C 8/408
- • • {Additives or processing agents not provided for in groups [G03C 8/402](#) to [G03C 8/4046](#)}

G03C 11/00 **Auxiliary processes in photography (-characterised by the apparatus used [G03D 15/00-](#))**

G03C 11/24 · Removing emulsion from waste photographic material; Recovery of photosensitive {or other} substances (-electrolytic recovery of metals [C25C 1/00-](#))

G03C 2200/00 **Details (not used)**

G03C 2200/38 · Lippmann (*fine grain*) *emulsion*(*fine-grain*)*emulsion*

Project: N/A (G03F)**U G03F 1/00**

Originals for photomechanical production of textured or patterned surfaces, e.g., masks, photo-masks, reticles; Mask blanks or pellicles therefor; Containers specially adapted therefor; Preparation thereof

NOTE

In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place

WARNING

Groups [G03F 1/0007-G03F 1/16](#) are no longer used for the classification of documents as of January 1, 2012. The backfile of these groups is being reclassified into groups [G03F 1/20-G03F 1/92](#) as follows: [G03F 1/0007-G03F 1/0092](#) and [G03F 1/08-G03F 1/16](#) into groups [G03F 1/20-G03F 1/86](#); [G03F 1/02](#) into [G03F 1/88](#); [G03F 1/04](#) into [G03F 1/90](#); [G03F 1/06](#) into [G03F 1/92](#). Until reclassification is complete, groups [G03F 1/0007-G03F 1/16](#) and [G03F 1/20-G03F 1/92](#) should be considered in order to perform a complete search.

- U G03F 1/0015 · {by drawing, writing, e.g. on a photosensitive surface, or by engraving, e.g. using a stylus; using a typewriter; using chemical copy sheet}
- G03F 1/003 · · {the masking pattern being obtained by thermal means, e.g. by laser ablation (-thermal transfer from a ribbon, e.g. [G03F 1/0023-](#))}
- G03F 1/08 · Originals having inorganic imaging layers, e.g. chrome masks (-[G03F 1/12](#) takes precedence; { X-Ray absorbers [G03F 1/148](#) })
- U G03F 1/14 · Originals characterised by structural details, e.g. supports, cover layers, pellicle rings
- G03F 1/144 · · {Auxiliary patterns; Corrected patterns, e.g. proximity correction, grey level masks (-[G03F 1/0046](#) , [G03F 1/146](#) , [G03F 9/00](#) take precedence-)}
- G03F 1/50 · Mask blanks not covered by [G03F 1/20](#) - [G03F 1/34-](#); Preparation thereof
- G03F 1/68 · Preparation processes not covered by groups [G03F 1/20](#) - [G03F 1/50](#)

G03F 3/00 **Colour separation; Correction of tonal value (-photographic copying apparatus in general [G03B-](#))**

- U G03F 3/10 · Checking the colour or tonal value of separation negatives or positives
- G03F 3/101 · · {-Colour or tonal value checking by non-photographic means or by means other than using non-impact printing methods or duplicating or marking methods covered by [B41M 5/00-](#)}
- G03F 3/108 · · {-using a non-impact printing method, e.g. ink jet, using duplicating or marking methods covered by [B41M 5/00](#) , e.g. by ablation or by thermographic means-}

G03F 5/00 **Screening processes; Screens therefor{-plates or light sensitive layers with incorporated screen [G03F 7/004-](#)}**

- G03F 5/02 · by projection methods (-cameras [G03B](#)-)
- G03F 7/00 Photomechanical, e.g. photolithographic, production of textured or patterned surfaces, e.g. printing surfaces; Materials therefor, e.g. comprising photoresists; Apparatus specially adapted therefor (-using photoresist structures for special production processes, see the relevant places, e.g. [B44C](#), [H01L](#), e.g. [H01L 21/00](#) , [H05K](#)-)**
- G03F 7/004 · Photosensitive materials (-[G03F 7/12](#) , [G03F 7/14](#) take precedence-)
- G03F 7/0041 · · {providing an etching agent upon exposure (-[G03F 7/075](#) takes precedence; photolytic halogen compounds [G03F 7/0295](#)-)}
- G03F 7/0042 · · {with inorganic or organometallic light-sensitive compounds not otherwise provided for, e.g. inorganic resists (-[G03F 7/075](#) takes precedence-)}
- G03F 7/0043 · · · {Chalcogenides; Silicon, germanium, arsenic or derivatives thereof; Metals, oxides or alloys thereof (-[G03F 7/0044](#) takes precedence-)}
- G03F 7/0046 · · {with perfluoro compounds, e.g. for dry lithography (-[G03F 7/0048](#) takes precedence-)}
- G03F 7/008 · · Azides (-[G03F 7/075](#) takes precedence-)
- G03F 7/012 · · · Macromolecular azides; Macromolecular additives, e.g. binders{(-[G03F 7/0085](#) takes precedence-)}
- G03F 7/016 · · Diazonium salts or compounds (-[G03F 7/075](#) takes precedence-)
- G03F 7/021 · · · Macromolecular diazonium compounds; Macromolecular additives, e.g. binders{ [G03F 7/0166](#) takes precedence-}
- G03F 7/022 · · Quinonediazides (-[G03F 7/075](#) takes precedence-)
- G03F 7/023 · · · Macromolecular quinonediazides; Macromolecular additives, e.g. binders{(-[G03F 7/0226](#) takes precedence-)}
- G03F 7/025 · · Non-macromolecular photopolymerisable compounds having carbon-to-carbon triple bonds, e.g. acetylenic compounds (-[G03F 7/075](#) takes precedence-)
- G03F 7/027 · · Non-macromolecular photopolymerisable compounds having carbon-to-carbon double bonds, e.g. ethylenic compounds (-[G03F 7/075](#) takes precedence-)
- U G03F 7/028 · · · with photosensitivity-increasing substances, e.g. photoinitiators
- G03F 7/031 · · · · Organic compounds not covered by group [G03F 7/029](#)
- G03F 7/038 · · Macromolecular compounds which are rendered insoluble or differentially wettable (-[G03F 7/075](#) takes precedence; macromolecular azides [G03F 7/012](#) ; macromolecular diazonium compounds [G03F 7/021](#)-)
- G03F 7/039 · · Macromolecular compounds which are photodegradable, e.g. positive electron resists (-[G03F 7/075](#) takes precedence; macromolecular quinonediazides [G03F 7/023](#)-)
- G03F 7/04 · · Chromates (-[G03F 7/075](#) takes precedence-)
- G03F 7/06 · · Silver salts (-[G03F 7/075](#) takes precedence-)
- G03F 7/07 · · · used for diffusion transfer{(-[G03F 7/063](#) takes precedence-)}
- U G03F 7/075 · · Silicon-containing compounds
- G03F 7/0754 · · · {Non-macromolecular compounds containing silicon-to-silicon bonds (-[G03F 7/0752](#) takes precedence-)}
- G03F 7/0755 · · · {Non-macromolecular compounds containing Si-O, Si-C or Si-N bonds (-[G03F 7/0752](#) takes precedence-)}
- G03F 7/0757 · · · {Macromolecular compounds containing Si-O, Si-C or Si-N bonds (-[G03F 7/0752](#) takes precedence-)}
- G03F 7/085 · · Photosensitive compositions characterised by adhesion-promoting non-macromolecular additives (-[G03F 7/075](#) takes precedence-)

- G03F 7/09
 - • characterised by structural details, e.g. supports, auxiliary layers (-supports for printing plates in general [B41N](#)-)
- G03F 7/095
 - • • having more than one photosensitive layer (-[G03F 7/075](#) takes precedence-)
- G03F 7/11
 - • • having cover layers or intermediate layers, e.g. subbing layers(-[G03F 7/091](#) to [G03F 7/093](#) , [B41N 3/03](#) take precedence-)}
- G03F 7/16
 - Coating processes; Apparatus therefor (-applying coatings to base materials in general [B05](#) ; applying photosensitive compositions to base for photographic purposes [G03C 1/74](#)-)
- G03F 7/167
 - • {from the gas phase, by plasma deposition (-[G03F 7/2035](#) takes precedence-)}
- G03F 7/20
 - Exposure; Apparatus therefor (-photographic printing apparatus for making copies [G03B 27/00](#)-)
- G03F 7/2051
 - • {Exposure without an original mask, e.g. using a programmed deflection of a point source, by scanning, by drawing with a light beam, using an addressed light or corpuscular source (-[G03F 7/70](#) takes precedence-)}
- G03F 7/2053
 - • • {using a laser (-ablative removal [B41C](#)-)}
- G03F 7/213
 - • Exposing with the same light pattern different positions of the same surface at the same time{ [G03F 7/70](#) takes precedence-}
- G03F 7/22
 - • Exposing sequentially with the same light pattern different positions of the same surface{ [G03F 7/70](#) takes precedence-}
- G03F 7/24
 - • Curved surfaces{ [G03F 7/70](#) takes precedence-}
- G03F 7/26
 - Processing photosensitive materials; Apparatus therefor (-[G03F 7/12](#) to [G03F 7/24](#) take precedence-)
- G03F 7/28
 - • for obtaining powder images (-[G03F 3/10](#) takes precedence-)
- G03F 7/36
 - • Imagewise removal not covered by groups [G03F 7/30](#) to [G03F 7/34](#) , e.g. using gas streams, using plasma
- G03F 7/38
 - • Treatment before imagewise removal, e.g. prebaking{(-[G03F 7/265](#) takes precedence-)}
- U G03F 7/42
 - • Stripping or agents therefor

NOTE
Stripping involving the use of a combination of means, e.g. plasma and radiation, is classified in group [G03F 7/42](#) only
- G03F 7/422
 - • • {using liquids only (-[G03F 7/421](#) takes precedence-)}
- U G03F 7/70
 - {Exposure apparatus for microlithography}
- U G03F 7/70008
 - • {Production of exposure light, i.e. light sources}
- G03F 7/70016
 - • • {by discharge lamps (-discharge lamps per se [H01J 61/00](#)-)}
- G03F 7/70025
 - • • {by lasers (-lasers per se [H01S 3/00](#)-)}
- G03F 7/70033
 - • • {by plasma EUV sources (-plasma EUV sources per se [H05G 2/00](#)-)}
- G03F 7/7005
 - • • {by multiple sources{(-addressable array sources specially adapted to produce patterns [G03F 7/70391](#)-)}
- U G03F 7/70058
 - • {Mask illumination systems}
- G03F 7/70125
 - • • {Use of illumination settings tailored to particular mask patterns (-details of setting means [G03F 7/70091](#)-)}
- G03F 7/70141
 - • • {Illumination system adjustment, alignment during assembly of illumination system (-alignment of mask with workpiece [G03F 9/70](#)-)}
- U G03F 7/70216
 - • {Systems for imaging mask onto workpiece}
- G03F 7/70258
 - • • {Projection system adjustment, alignment during assembly of projection system (-alignment of mask with workpiece [G03F 9/70](#)-)}

- G03F 7/70283 . . . {Masks or their effects on the imaging process, e.g. Fourier masks, greyscale masks, holographic masks, phase shift masks, phasemasks, lenticular masks, multiple masks, tilted masks, tandem masks (-masks per se [G03F 1/14](#)-)}
- G03F 7/70308 . . . {Optical correction elements, filters and phase plates for manipulating e.g. intensity, wavelength, polarization, phase, image shift (-filters per se [G02B 5/20](#)-)}
- NOTE
- Wavelength or polarisation control is further classified in groups [G03F 7/70566](#) , [G03F 7/70575](#)
- G03F 7/70341 . . . {Immersion (-chemical composition of immersion liquids [G03F 7/2041](#)-)}
- U G03F 7/70375 . . . {Imaging systems not otherwise provided for, e.g. multiphoton lithography; Imaging systems comprising means for converting one type of radiation into another type of radiation, systems comprising mask with photo-cathode}
- G03F 7/70383 . . . {Direct write, i.e. pattern is written directly without the use of a mask by one or multiple beams (-"maskless" lithography using a programmable mask [G03F 7/70291](#)-)}
- G03F 7/70391 {Addressable array sources specially adapted to produce patterns, e.g. addressable LED arrays (-array sources for exposure apparatus comprising a mask [G03F 7/7005](#) ; illumination setting using programmable means in exposure apparatus comprising a mask [G03F 7/70116](#)-)}
- G03F 7/704 {Scanned exposure beam, e.g. raster-, rotary- and vector scanning (-mask projection exposure involving relative movement of patterned beam and workpiece during imaging [G03F 7/70358](#)-)}
- U G03F 7/70425 . . . {Imaging strategies, e.g. for increasing throughput, printing product fields larger than the image field, compensating lithography- or non-lithography errors, e.g. proximity correction, mix-and-match, stitching, double patterning}
- G03F 7/70433 . . . {Layout for increasing efficiency, for compensating imaging errors, e.g. layout of exposure fields, {; Use of mask features for increasing efficiency, for compensating imaging errors (-circuit design per se [G06F 17/5068](#) ; designing or making of mask [G03F 1/14](#)-)}
- G03F 7/7045 . . . {Hybrid exposure, i.e. combining different types of exposure, e.g. projection, proximity, direct write, interferometric, uv, x-ray, particle beam (-constructional details [G03F 7/70991](#)-)}
- G03F 7/70466 . . . {Multiple exposures, e.g. combination of fine and coarse exposures, double patterning, multiple exposures for printing a single feature, mix-and-match (-stitching [G03F 7/70475](#)-)}
- G03F 7/70483 . . . {Information management, control, testing, and wafer monitoring, e.g. pattern monitoring (-detection arrangements [G03F 7/7085](#)-)}
- U G03F 7/7055 . . . {Exposure light control, in all parts of the microlithographic apparatus, e.g. pulse length control, light interruption}
- G03F 7/70558 {Dose control, i.e. achievement of a desired dose (-determination of the required dose [G03F 7/70625](#)-)}
- G03F 7/70591 . . . {Testing optical components (-testing of optical mirrors [G01M 11/005](#) ; testing of lenses [G01M 11/02](#) ; stray light transmission [G03F 7/70941](#)-)}
- G03F 7/706 {Aberration measurement (-aberration measurement in general [G01M 11/0242](#)-)}
- G03F 7/70616 . . . {Wafer pattern monitoring, i.e. measuring printed patterns or the aerial image at the wafer plane (-optical metrology tools per se [G01B 11/02](#) and [G01B 9/04](#)-)}

- G03F 7/70633 {Overlay (-alignment between mask and wafer prior to exposure [G03F 9/70-](#))}
- G03F 7/70641 {Focus (-focus measurement prior to exposure [G03F 9/7026-](#))}
- G03F 7/7065 {Defect inspection (-defect inspection apparatus per se [G06T 7/0004](#) , [G01N 21/956-](#))}
- G03F 7/70666 {using aerial image (-aerial image measurement tools for mask inspection [G03F 1/0092-](#))}
- U G03F 7/70691 . . {Handling of masks or wafers}
- G03F 7/707 {Chucks, e.g. chucking or un-chucking operations (-chucks for workpiece processing tools [H01L 21/683](#) or [H01L 21/687](#) depending on the type of chucking-)}
- G03F 7/70708 {being electrostatic; Electrostatically deformable vacuum chucks (-electrostatic chucks for workpiece processing tools [H01L 21/6831-](#))}
- G03F 7/70716 {Stages (-stages for workpiece processing tools [H01L 21/682-](#))}
- G03F 7/70758 {Drive means, e.g. actuator, motor (-lens or mirror actuators [G03F 7/70825-](#))}
- G03F 7/70775 {Position control (-interferometers per se [G01B 9/02](#) ; encoders per se [G01D 5/00](#) ; alignment of mask with workpiece [G03F 9/70-](#))}
- U G03F 7/708 . . . {Construction of apparatus, e.g. environment, hygiene aspects or materials}
- G03F 7/70808 {Construction details, e.g. housing, load-lock, seals, windows for passing light in- and out of apparatus (-load-lock chambers for workpiece processors in general [H01L 21/67201-](#))}
- G03F 7/70816 {Bearings (-fluid bearings per se [F16C 32/06-](#))}
- G03F 7/70825 {Mounting of individual elements, e.g. mounts, holders or supports (-mounts or supports for projection- and illumination system and stages on base-plate or ground [G03F 7/70833](#) ; workpiece and mask holders [G03F 7/707-](#))}
- G03F 7/70833 {Mounting of optical systems, e.g. mounting of illumination system, projection system or stage systems on base-plate or ground (-mounting of individual elements of said systems [G03F 7/70825-](#))}
- G03F 7/70858 {Environment aspects, e.g. pressure of beam-path gas, temperature (-pollution aspects [G03F 7/70916-](#))}
- U G03F 7/7095 {Materials, e.g. materials for housing, stage or other support having particular properties, e.g. weight, strength, conductivity, thermal expansion coefficient}
- G03F 7/70958 {Optical materials and coatings, e.g. with particular transmittance, reflectance (-details of optical elements [G03F 7/70316-](#))}
- G03F 7/70991 {Connection with other apparatus, e.g. multiple exposure stations, particular arrangement of exposure apparatus and pre-exposure and/ or post-exposure apparatus, shared apparatus, e.g. having shared radiation source, shared mask or workpiece stage, shared base-plate, utilities e.g. cable, pipe or wireless arrangements for data, power, fluids, vacuum (-apparatus for processing a workpiece in a plurality of work-stations including at least one lithography chamber [H01L 21/67225-](#))}
- G03F 9/00** **Registration or positioning of originals, masks, frames, photographic sheets or textured or patterned surfaces, e.g. automatically (-[G03F 7/22](#) takes precedence; preparation of photographic masks [G03F 1/00](#) ; within photographic printing apparatus for making copies [G03B 27/00-](#))**
- G03F 9/70 {for microlithography (-measuring printed patterns for monitoring overlay [G03F 7/70633](#) or focus [G03F 7/70641](#) ; projection system adjustment [G03F 7/70258](#) ; position control [G03F 7/70775-](#))}

- U G03F 9/7003 · · {Alignment type or strategy, e.g. leveling, global alignment}
- G03F 9/7038 · · · {Alignment for proximity or contact printer (-proximity or contact printers per se [G03F 7/7035](#)-)}
- G03F 9/7042 · · · {Alignment for lithographic apparatus using patterning methods other than those involving the exposure to radiation, e.g. by stamping or imprinting (-non-exposure lithographic processes per se [G03F 7/0002](#)-)}
- G03F 9/7073 · · {Alignment marks and their environment (-marks specific to masks [G03F 1/42](#) ; marks specific to molds or stamps [G03F 7/0002](#) ; overlay marks [G03F7/20T22](#) ; marks applied to semiconductor devices [H01L 23/544](#)-)}

Project: N/A (G03G)

G03G

ELECTROGRAPHY; ELECTROPHOTOGRAPHY; MAGNETOGRAPHY (-information storage based on relative movement between record carrier and transducer [G11B](#); static stores with means for writing-in or reading-out information [G11C](#); recording of television signals [H04N 5/76](#)-)

NOTES

This subclass covers:

- the production of permanent directly-visible pictures in conformity with an original picture or document, using an intermediate imagewise distribution of an electric or magnetic quantity, such as a charge pattern, an electric conductivity pattern, or a magnetic pattern;
- the production of permanent directly-visible pictures using an intermediate imagewise distribution of an electric or magnetic quantity, when the origin and the way of generating said intermediate distribution are not relevant.

This subclass does not cover:

- use of electric signals for the transmission of the picture information from the original to the reproduction, i.e. pictorial communication, which is covered by subclass [H04N](#);
- production of pictures by heat patterns exclusively, not using an electrostatic or magnetic pattern, which is covered by group [B41M 5/00](#) ;
- production of prints by transferring ink from a printing form to a printing surface, without physical contact and using the force of an electrostatic field, which is covered by subclass [B41M](#);
- selective printing mechanisms characterised by the selective supply of electric current, or the selective application of magnetism or radiation, to a printing material or impression-transfer material, which are

covered by groups [B41J 2/385](#) , [B41J 2/435](#)

G03G 5/00

Recording members for original recording by exposure, e.g. to light, to heat, to electrons; Manufacture thereof; Selection of materials therefor (-recording surfaces for measuring apparatus [G01D 15/34](#) ; photosensitive materials for photographic purposes [G03C](#)-)

- G03G 5/02
 - Charge-receiving layers (-[G03G 5/153](#) takes precedence-)
 - U G03G 5/04
 - • Photoconductive layers; Charge-generation layers or charge-transporting layers; Additives therefor; Binders therefor
 - U G03G 5/043
 - • • Photoconductive layers characterised by having two or more layers or characterised by their composite structure
 - G03G 5/047
 - • • • characterised by the charge-generation layer or charge transport layer{[G03G 5/0433](#) and [G03G 5/0436](#) take precedence-}
 - G03G 5/06
 - • • characterised by the photoconductive material being organic
- NOTE**
In groups [G03G 5/06](#) to [G03G 5/0698](#) , in the absence of an indication to the contrary, an invention is classified in the last appropriate place
- U G03G 5/07
 - • • • Polymeric photoconductive materials
 - G03G 5/071
 - • • • • {obtained by reactions only involving carbon-to-carbon unsaturated bonds (-[G03G 5/078](#) takes precedence-)}
 - G03G 5/075
 - • • • • {obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds (-[G03G 5/078](#) takes precedence-)}
 - U G03G 5/08
 - • • characterised by the photoconductive material being inorganic
 - U G03G 5/082
 - • • • and not being incorporated in a bonding material, e.g. vacuum deposited
 - G03G 5/08285
 - • • • • {Carbon-based (-in admixture with Si [G03G 5/08214](#)-)}
 - G03G 5/08292
 - • • • • {Germanium-based (-in admixture with Si [G03G 5/08214](#)-)}
 - G03G 5/09
 - • • Sensitisors or activators, e.g. dyestuffs (-[G03G 5/12](#) takes precedence-)
 - U G03G 5/10
 - Bases for charge-receiving or other layers
 - G03G 5/101
 - • {Paper bases (-[G03G 5/102](#) , [G03G 5/104](#) , [G03G 5/105](#) take precedence-)}
 - G03G 5/14
 - Inert intermediate or cover layers for charge-receiving layers (-[G03G 5/04](#) takes precedence-)

G03G 7/00

Selection of materials for use in image-receiving members, i.e. for reversal by physical contact; Manufacture thereof (-photosensitive materials for photographic purposes [G03C](#)-)

U G03G 9/00

Developers

- U G03G 9/08
 - with toner particles
- G03G 9/0821
 - • {characterised by physical parameters (-magnetic parameters [G03G 9/083](#)-)}
- G03G 9/0825
 - • {characterised by their structure; characterised by non-homogeneous distribution of components (-microcapsular toners [G03G 9/093](#)-)}
- U G03G 9/083
 - • Magnetic toner particles
- G03G 9/0839
 - • • {Treatment of the magnetic components; Combination of the magnetic components with non-magnetic materials (-[G03G 9/0834](#) takes precedence-)}
- U G03G 9/087
 - • Binders for toner particles
- G03G 9/08784
 - • • {-Macromolecular material not specially provided for in a single one of groups [G03G 9/08702](#) to [G03G 9/08775](#)-}
- U G03G 9/097
 - • Plasticisers; Charge controlling agents

- G03G 9/09733 · · · {Organic compounds (~~G03G 9/08782~~ takes precedence)}
- G03G 9/09775 · · · · {containing atoms other than carbon, hydrogen or oxygen (~~G03G 9/09741~~ to ~~G03G 9/09766~~ take precedence)}
- G03G 9/16 · Developers not provided for in groups [G03G 9/06](#) to [G03G 9/135](#) , e.g. solutions, aerosols
- G03G 13/00 Electrographic processes using a charge pattern (~~G03G 15/00~~ , ~~G03G 16/00~~ , ~~G03G 17/00~~ take precedence)**
- NOTE
Group [G03G 15/00](#) also deals with processes in so far as they are characterised by the use or manipulation of apparatus classifiable per se in group [G03G 15/00](#) and therefor takes precedence
- G03G 13/01 · for multicoloured copies{(-colour correction on photography [G03B 27/725](#) ; picture communication systems [H04N 1/46](#))}
- G03G 13/02 · Sensitising, i.e. laying-down a uniform charge{(-devices for corona discharge per se [H01T 19/00](#)-)}
- U G03G 13/04 · Exposing, i.e. imagewise exposure by optically projecting the original image on a photoconductive recording material
- G03G 13/045 · · Charging or discharging distinct portions of the charge pattern on the recording material, e.g. discharging non-image areas, contrast enhancement (~~G03G 13/34~~ , ~~G03G 15/36~~ , ~~G03G 21/06~~ take precedence-)
- G03G 13/05 · Imagewise charging, i.e. laying-down a charge in the configuration of an original image using a modulated stream of charged particles, e.g. of corona ions, modulated by a photoconductive control screen bearing a charge pattern or by optically activated charging means{(-using charging means controlled by electric image signals [B41J](#)-)}
- G03G 13/22 · Processes involving a combination of more than one step according to groups [G03G 13/02](#) to [G03G 13/20](#) (~~G03G 13/01~~ takes precedence-)
- G03G 15/00 Apparatus for electrographic processes using a charge pattern (~~G03G 16/00~~ , ~~G03G 17/00~~ take precedence; { xerographic printers for data processors per se [G06K 15/14](#) })**
- G03G 15/01 · For producing multicoloured copies{(-colour correction in photography [G03C](#) ; colour correction in printing plate production-)}
- U G03G 15/0142 · · {Structure of complete machines}
- U G03G 15/0147 · · · {using a single reusable electrographic recording member}
- U G03G 15/0152 · · · · {onto which the monocolour toner images are superposed before common transfer from the recording member}
- G03G 15/0168 · · · · · {single rotation of recording member to produce multicoloured copy (~~G03G 15/0163~~ takes precedence-)}
- G03G 15/0173 · · · · · {plural rotations of recording member to produce multicoloured copy, e.g. rotating set of developing units (~~G03G 15/0163~~ takes precedence-)}
- U G03G 15/0178 · · · {using more than one reusable electrographic recording member, e.g. one for every monocolour image}
- G03G 15/0189 · · · · {primary transfer to an intermediate transfer belt (~~G03G 15/0184~~ takes precedence-)}
- G03G 15/0194 · · · · {primary transfer to the final recording medium (~~G03G 15/0184~~ takes precedence-)}
- G03G 15/02 · for laying down a uniform charge, e.g. for sensitising; Corona discharge devices (~~G03G 15/14~~ takes precedence-)

- G03G 15/0258
- {provided with means for the maintenance of the charging apparatus, e.g. cleaning devices, ozone removing devices [G03G 15/0225](#) , [G03G 15/0291](#) takes precedence-}
- U G03G 15/04
- for exposing, i.e. imagewise exposure by optically projecting the original image on a photoconductive recording material
- NOTE
- The original image is obtained by direct optical projection or received from other sources, e.g. by computer modified or generated image data, by scanning , e.g. digital copiers
- G03G 15/04018
- {Image composition, e.g. adding or superposing informations on the original image (-composition of facsimile picture signals [H04N 1/387-](#))}
- G03G 15/04036
- {Details of illuminating systems, e.g. lamps, reflectors (-lamp housings for copying cameras, reflex exposure lighting [G03B 27/542-](#))}
- G03G 15/04045
- • {for exposing image information provided otherwise than by directly projecting the original image onto the photoconductive recording material, e.g. digital copiers (-[G03G 15/041](#) , [G03G 15/043](#) take precedence-)}
- WARNING
- Groups [G03G 15/04054](#) to [G03G 15/04081](#) are not complete pending reorganisation. See also [G03G 15/04](#) , [G03G 15/04036](#), [G03G 15/043](#) , [G03G 15/0435](#) and [G03G 15/326](#)
- G03G 15/0409
- {Details of projection optics (-for projection printing apparatus [G03B 27/522-](#))}
- G03G 15/043
- • with means for controlling illumination or exposure (-[G03G 15/041](#) takes precedence-)
- G03G 15/045
- • with means for charging or discharging distinct portions of the charge pattern on the recording material, e.g. for contrast enhancement or discharging non-image areas (-[G03G 15/36](#) , [G03G 21/06](#) take precedence-)
- G03G 15/05
- for imagewise charging, e.g. photoconductive control screen, optically activated charging means (-charging means controlled by electric image signals [B41J-](#))
- U G03G 15/06
- for developing
- U G03G 15/08
- • using a solid developer, e.g. powder developer
- G03G 15/0805
- • • {on a brush (-[G03G 15/09](#) takes precedence-)}
- G03G 15/0806
- • • {on a donor element, e.g. belt, roller (-complete developer unit [G03G 15/0896-](#))}
- U G03G 15/0822
- • • {Arrangements for preparing, mixing, supplying or dispensing developer}
- U G03G 15/0832
- • • • {Arrangements for supplying new toner; Toner cartridges}
- G03G 15/0836
- • • • • {Toner cartridges having a longitudinal rotational axis, around which at least one part is rotated when mounting or using the cartridge (-[G03G 15/0834](#) takes precedence-)}
- G03G 15/0841
- • • • • {Toner cartridges using a peelable sealing film (-resealing used developer units before refilling [G03G 15/0894-](#))}
- U G03G 15/0865
- • • • {Arrangements for supplying new developer}
- WARNING
- Groups [G03G 15/0877](#) to [G03G 15/0893](#) are not complete pending reorganisation. See also [G03G 15/0832](#) - [G03G 15/0843](#)
- U G03G 15/0867
- • • • • {cylindrical developer cartridges, e.g. toner bottles for the developer replenishing opening}
- G03G 15/087
- • • • • • {Developer cartridges having a longitudinal rotational axis, around which at least one part is rotated when mounting or using the cartridge (-[G03G 15/0834](#) takes precedence-)}

- U G03G 15/0877 {Arrangements for metering and dispensing developer from a developer cartridge into the development unit}
 - U G03G 15/0881 {Sealing of developer cartridges}
 - G03G 15/0882 {by a peelable sealing film (~~-re~~resealing used developer units before refilling: [G03G 15/0894](#)-)}
 - G03G 15/0896 . . . {Arrangements or disposition of the complete developer unit or parts thereof not provided for by groups [G03G 15/08](#) to [G03G 15/0894](#)}
 - G03G 15/0898 {for preventing toner scattering during operation, e.g. seals (~~-sealing the donor member [G03G 15/0817](#) ; sealing the magnetic brush [G03G 15/0942](#)-)}~~
 - U G03G 15/09 . . . using magnetic brush
 - G03G 15/0907 {with bias voltage (~~-[G03G 15/065](#) takes precedence-~~)}
 - U G03G 15/10 . . using a liquid developer
 - U G03G 15/101 . . . {for wetting the recording material}
 - G03G 15/102 {for differentially wetting the recording material (~~-developers for differentially wetting [G03G 9/18](#)-)}~~
 - G03G 15/107 . . . {Condensing developer fumes (~~-[G03G 15/11](#) takes precedence-~~)}
 - U G03G 15/14 . . for transferring a pattern to a second base
 - U G03G 15/16 . . of a toner pattern, e.g. a powder pattern, {e.g. magnetic transfer}
 - G03G 15/1605 . . . {using at least one intermediate support (~~-[G03G 15/1625](#) takes precedence-~~)}
 - G03G 15/169 . . . {with means for preconditioning the toner image before the transfer (~~-[G03G 15/095](#) and [G03G 15/11](#) take precedence-~~)}
 - U G03G 15/20 . . for fixing, e.g. by using heat
 - U G03G 15/2003 . . {using heat}
 - U G03G 15/2014 . . . {using contact heat}
 - G03G 15/2017 {Structural details of the fixing unit in general, e.g. cooling means, heat shielding means (~~-[G03G 15/2053](#) takes precedence-~~)}
- WARNING**
Groups [G03G 15/2017](#) to [G03G 15/205](#) are not complete pending reorganisation. See also [G03G 15/2064](#) - [G03G 15/2089](#)
- U G03G 15/2039 {with means for controlling the fixing temperature}
 - G03G 15/205 {specially for the mode of operation, e.g. standby, warming-up, error (~~-[G03G 15/2046](#) takes precedence-~~)}
 - G03G 15/22 . . involving the combination of more than one step according to groups [G03G 13/02](#) to [G03G 13/20](#) (~~-[G03G 15/01](#) takes precedence-~~)
 - U G03G 15/23 . . specially adapted for copying both sides of an original or for copying on both sides of a recording or image-receiving material
 - U G03G 15/231 . . . {Arrangements for copying on both sides of a recording or image-receiving material}
 - U G03G 15/232 {using a single reusable electrographic recording member}
 - U G03G 15/234 {by inverting and refeeding the image receiving material with an image on one face to the recording member to transfer a second image on its second face, e.g. by using a duplex tray; Details of duplex trays or inverters}
 - G03G 15/237 {the image receiving member being in form of a continuous web (~~-[G03G 15/235](#) takes precedence-~~)}
 - G03G 15/26 . . in which the charge pattern is obtained by projection of the entire image, i.e. whole-frame projection (~~-[G03G 15/04](#) takes precedence-~~)

- G03G 15/28
 - • in which projection is obtained by line scanning (~~G03G 15/04 takes precedence~~)
- G03G 15/32
 - • in which the charge pattern is formed dotwise, {e.g. by a thermal head} (~~G03G 15/04 , G03G 15/05 , G03G 15/34 take precedence~~)
- G03G 15/50
 - {Machine control of apparatus for electrographic processes using a charge pattern, e.g. regulating different parts of the machine, multimode copiers, microprocessor control (~~sequencing control G03G 21/14~~)}
- U G03G 15/5033
 - • {by measuring the photoconductor characteristics, e.g. temperature, or the characteristics of an image on the photoconductor}
- G03G 15/5041
 - • • {Detecting a toner image, e.g. density, toner coverage, using a test patch (~~G03G 15/553 takes precedence~~)}

WARNING
Groups [G03G 15/5041](#) to [G03G 15/505](#) are not complete, pending reorganisation. See also [G03G 15/5033](#)
- U G03G 15/55
 - {Self-diagnostics; Malfunction or lifetime display}
- U G03G 15/553
 - • {Monitoring or warning means for exhaustion or lifetime end of consumables, e.g. indication of insufficient copy sheet quantity for a job}
- G03G 15/556
 - • • {for toner consumption, e.g. pixel counting, toner coverage detection, toner density measurement (~~detectors G03G 15/0831~~)}

WARNING
Group [G03G 15/556](#) is not complete. See also [G03G 15/55](#) - [G03G 15/553](#)
- G03G 15/60
 - {Apparatus which relate to the handling of originals (for photographic purposes in general [G03B](#))}
- G03G 15/605
 - • {Holders for originals or exposure platens (for photographic purposes in general [G03B](#))}
- G03G 15/65
 - {Apparatus which relate to the handling of copy material (handling sheets or webs in general [B65H](#); for photographic purposes in general [G03B](#))}
- U G03G 15/6502
 - • {Supplying of sheet copy material; Cassettes therefor}
- G03G 15/6508
 - • • {Automatic supply devices interacting with the rest of the apparatus, e.g. selection of a specific cassette (~~matching the image with the size of the copy material G03G 15/5095~~)}
- U G03G 15/6517
 - • {Apparatus for continuous web copy material of plain paper, e.g. supply rolls; Roll holders therefor}
- G03G 15/6526
 - • • {Computer form folded [CFF]; continuous web, e.g. having sprocket holes or perforations}}
- G03G 15/6529
 - • {Transporting (~~G03G 15/6555 takes precedence~~)}
- G03G 15/6532
 - • {Removing a copy sheet from a xerographic drum, band or plate (removing sheets from printing cylinders [B65H29/6](#))}
- U G03G 15/6588
 - • {characterised by the copy material, e.g. postcards, large copies, multi-layered materials, coloured sheet material}
- G03G 15/6591
 - • • {characterised by the recording material, e.g. plastic material, OHP, ceramics, tiles, textiles (~~details transferring the toner pattern onto particular materials G03G 15/1625~~)}

WARNING
Groups [G03G 15/6591](#) to [G03G 15/6594](#) are not complete, pending reorganisation. See also [G03G 15/6588](#)
- G03G 15/75
 - {Details relating to xerographic drum, band or plate, e.g. replacing, testing} (~~electrographic recording members per se G03G 5/00~~)}
- G03G 15/751
 - • {relating to drum (~~G03G 15/757 takes precedence~~)}

- G03G 15/754 · · {relating to band, e.g. tensioning (~~-G03G 15/757 takes precedence-~~)}
- G03G 16/00** **Electrographic processes using deformation of thermoplastic layers (~~-layers for surface-deformation imaging G03G 5/022-~~); Apparatus therefor(~~-shaping of plastic objects with thermoplastic memory effect B29C 61/00 ; digital stores using thermoplastic elements G11C 11/46 ; television signal recording using deformable thermoplastic recording medium H04N 5/82-~~)}**
- U G03G 17/00** **Electrographic processes using patterns other than charge patterns, e.g. an electric conductivity pattern; Processes involving a migration, e.g. photoelectrophoresis, photoelectrosology; Processes involving a selective transfer, e.g. electrophoto-adhesive processes; Apparatus essentially involving a single such process**
- G03G 17/005 · {Radiation field photography, e.g. Kirlian photography, colour-discharge photography (~~-recording electrical waveforms in general G01R 13/04 , e.g. G01R 13/12 to G01R 13/14-~~)}
- G03G 17/10 · using migration imaging, e.g. photoelectrosology (~~-G03G 17/04 takes precedence-~~)
- G03G 21/00** **Arrangements not provided for by groups G03G 13/00 to G03G 19/00 , e.g. cleaning, elimination of residual charge**
- U G03G 21/0005** · {for removing solid developer or debris from the electrographic recording medium}
- G03G 21/0035 · · {using a brush; Details of cleaning brushes, e.g. fibre density (~~-G03G 21/0064 takes precedence; magnetic brushes G03G 21/0047-~~)}
- G03G 21/0047 · · {using electrostatic or magnetic means; Details thereof, e.g. magnetic pole arrangement of magnetic devices (~~-G03G 21/0064 takes precedence-~~)}
- G03G 21/0058 · · {using a roller or a polygonal rotating cleaning member; Details thereof, e.g. surface structure (~~-G03G 21/0064 takes precedence-~~)}
- U G03G 21/16** · Mechanical means for facilitating the maintenance of the apparatus, e.g. modular arrangements
- U G03G 21/1604** · · {Arrangement or disposition of the entire apparatus}
- U G03G 21/1623** · · · {Means to access the interior of the apparatus}
- G03G 21/1628 · · · · {Clamshell type (~~-G03G 21/1638 takes precedence-~~)}
- G03G 21/1633 · · · · {using doors or covers (~~-G03G 21/1638 takes precedence-~~)}
- G03G 21/1661 · · {means for handling parts of the apparatus in the apparatus (~~-G03G 21/1604 , G03G 21/1642 take precedence-~~)}
- U G03G 21/18** · · using a processing cartridge, {whereby the process cartridge comprises at least two image processing means in a single unit}
- WARNING
Groups [G03G 21/1803](#) to [G03G 21/1896](#) are not complete pending reorganisation. See also this group
- U G03G 21/1803** · · · {Arrangements or disposition of the complete process cartridge or parts thereof}
- G03G 21/1814 · · · · {Details of parts of process cartridge, e.g. for charging, transfer, cleaning, developing (**G021/18C6** takes precedence)}
- U G03G 21/1817** · · · · {having a submodular arrangement}
- G03G 21/1821 · · · · · {means for connecting the different parts of the process cartridge, e.g. attachment, positioning of parts with each other, pressure/distance regulation (~~-G03G 21/1825 takes precedence-~~)}

- G03G 21/1828 {Prevention of damage or soiling, e.g. mechanical abrasion (~~-G03G 21/1839 takes precedence-~~)}
- U G03G 21/1839 {Means for handling the process cartridge in the apparatus body}
- G03G 21/1842 {for guiding and mounting the process cartridge, positioning, alignment, locks (~~-G03G 21/1864 and G03G 21/1871 take precedence-~~)}
- G03G 21/20 . Humidity or temperature control {also ozone evacuation; Internal apparatus environment control}
- G03G 2215/00 Apparatus for electrophotographic processes (not used)**
- G03G 2215/00025 . Machine control, e.g. regulating different parts of the machine (not used)
- G03G 2215/00071 . . by measuring the photoconductor or its environmental characteristics (not used)
- G03G 2215/00088 . . by using information from an external support (not used)
- U G03G 2215/00172 . relative to the original handling
- U G03G 2215/00177 . . for scanning
- G03G 2215/00181 . . . concerning the original's state of motion (not used)
- G03G 2215/00206 . . Original medium (not used)
- G03G 2215/00354 . . Specific document handling machines (not used)
- G03G 2215/00362 . relating to the copy medium handling (not used)
- U G03G 2215/00367 . . The feeding path segment where particular handling of the copy medium occurs, segments being adjacent and non-overlapping. Each segment is identified by the most downstream point in the segment, so that for instance the segment labelled "Fixing device" is referring to the path between the "Transfer device" and the "Fixing device"(not used)
- G03G 2215/00379 . . . Copy medium holder (not used)
- G03G 2215/00417 . . . Post-fixing device (not used)
- G03G 2215/00426 Post-treatment device adding qualities to the copy medium product (~~-G03G 2215/00421 takes precedence-~~)
- G03G 2215/0043 Refeeding path (~~-G03G 2215/00421 takes precedence-~~)
- G03G 2215/00443 . . Copy medium (not used)
- G03G 2215/00535 . . Stable handling of copy medium (not used)
- G03G 2215/00658 . . . Brush (~~-G03G 2215/00654 takes precedence-~~)
- G03G 2215/00687 . . . Handling details (not used)
- G03G 2215/00717 . . . Detection of physical properties (not used)
- G03G 2215/00886 . . Sorting or discharging (not used)
- G03G 2215/00919 . . Special copy medium handling apparatus (not used)
- G03G 2215/00953 . Electrographic recording members (not used)
- G03G 2215/00978 . Details relating to power supplies (not used)
- G03G 2215/01 . for producing multicoloured copies (not used)
- G03G 2215/0151 . . characterised by the technical problem (not used)
- G03G 2215/019 . . Structural features of the multicolour image forming apparatus (not used)
- U G03G 2215/04 . Arrangements for exposing and producing an image
- U G03G 2215/0402 . . Exposure devices
- G03G 2215/0421 . . . Plurality of devices for producing the image (*excluding dedicated erasing means*)(~~excluding dedicated erasing means~~)
- G03G 2215/0426 . . Editing of the image, e.g. adding or deleting (~~-correction, i.e. changing or enhancing the image G03G 2215/0429-~~)
- U G03G 2215/0429 . . Changing or enhancing the image

- U G03G 2215/0431 . . . Producing a clean non-image area, i.e. avoiding show-around effects
- G03G 2215/0434 Parameters defining the non-image area to be cleaned (not used)
- G03G 2215/0468 . . . Image area information changed (*default is the charge image*)(~~default is the charge image~~)
- U G03G 2215/06 . . Developing structures, details
- U G03G 2215/0602 . . Developer
- NOTE
- Indexing codes of group [G03G 2215/0602](#) and subgroups can be followed by additional symbols preceded by a "," sign and relating to additional characteristics.
- U G03G 2215/0604 . . . solid type
- U G03G 2215/0614 one-component
- G03G 2215/0617 contact development (*i.e. the developer layer on the donor member contacts the latent image carrier*)(~~i.e. the developer layer on the donor member contacts the latent image carrier~~)
- G03G 2215/0619 non-contact (*flying development*)(~~flying development~~)
- G03G 2215/0624 plural systems represented (*e.g. in a multicolour device or for optimising photo line development*)(~~e.g. in a multicolour device or for optimising photo line development~~)
- G03G 2215/0626 . . . liquid type (*at developing position*)(~~at developing position~~)
- U G03G 2215/0634 . . Developing device
- NOTE
- Indexing codes of group [G03G 2215/0634](#) and subgroups can be followed by additional symbols preceded by a "," sign and relating to additional characteristics.
- U G03G 2215/0636 . . . Specific type of dry developer device
- G03G 2215/0641 Without separate supplying member (*i.e. with developing housing sliding on donor member*)(~~i.e. with developing housing sliding on donor member~~)
- G03G 2215/08 . . Details of powder developing device not concerning the development directly (not used)
- U G03G 2215/0802 . . Arrangements for agitating or circulating developer material
- G03G 2215/0808 . . . Donor member rotation direction (not used)
- G03G 2215/0816 . . . Agitator type (not used)
- G03G 2215/0836 . . . Way of functioning of agitator means (not used)
- U G03G 2215/0855 . . Materials and manufacturing of the developing device
- G03G 2215/0858 . . . Donor member (not used)
- U G03G 2215/16 . . Transferring device, details
- G03G 2215/1604 . . Main transfer electrode (not used)
- U G03G 2215/20 . . Details of the fixing device or process
- NOTE
- Indexing codes of group [G03G 2215/20](#) can be followed by additional symbols preceded by a "+" sign and relating to additional characteristics. The indexing codes have the meaning as indicated below.
- +H Using heat to fix
- +P Using pressure to fix
- +P1 where the pressure is changed
- +P1A being adapted to the current toner-carrying

medium treated (e.g. duplex copy, colour copy, OHP sheet, envelope)
+PlB compensating for temperature or other technical condition variations (e.g. sheet skewing) occurring
+PlC when being in a non-fixing or waiting mode
+PlM for maintenance purpose or abnormal situations
(e.g. power cut-off)

- G03G 2215/2003 . . Structural features of the fixing device (not used)
- G03G 2215/207 . . Type of toner image to be fixed (not used)

G03G 2221/00 Processes not provided for by group [G03G 2215/00](#) , e.g. cleaning or residual charge elimination

- U G03G 2221/0026 . Cleaning of foreign matter, e.g. paper powder, from imaging member
- G03G 2221/0031 . . Type of foreign matter (not used)
- U G03G 2221/16 . Mechanical means for facilitating the maintenance of the apparatus, e.g. modular arrangements and complete machine concepts
- G03G 2221/1648 . . using seals, e.g. to prevent scattering of toner (light shields for the photoreceptor [G03G 2221/1609](#)-)

Project: N/A (G03H)

- U **G03H 1/00 Holographic processes or apparatus using light, infra-red or ultra-violet waves for obtaining holograms or for obtaining an image from them; Details peculiar thereto**
- G03H 1/0005 . {-Adaptation of holography to specific applications (holographic optical element [G02B 5/32](#); holographic scanner [G02B 26/106](#); recognition using holographic mask [G06K 9/76](#); holographic memories [G11B 7/0065](#), [G11C 13/042](#))}
- U G03H 1/02 . Details { of features involved during the holographic process; Replication of holograms without interference recording}
- G03H 1/0236 . . {-Form or shape of the hologram when not registered to the substrate, e.g. trimming the hologram to alphanumeric shape (substrates bearing a hologram [G03H 1/0272](#))}
- G03H 1/024 . . {-Hologram nature or properties}
- G03H 1/0244 . . . {-Surface relief holograms (replicating hologram without interference recording [G03H 1/0276](#))}
- G03H 1/0248 . . . {-Volume holograms}
- G03H 1/0252 . . {-Laminate comprising a hologram layer}
- G03H 1/0256 . . . {-having specific functional layer}
- G03H 1/0272 . . {-Substrate bearing the hologram}
- G03H 1/0276 . . {-Replicating a master hologram without interference recording (surface relief holograms [G03H 1/0244](#))}
- G03H 1/028 . . . {-by embossing}
- U G03H 1/04 . Processes or apparatus for producing holograms ([G03H 1/26](#) takes precedence)
- G03H 1/0402 . . {-Recording geometries or arrangements ([G03H 1/0443](#), [G03H 1/0476](#), [G03H 1/16](#) take precedence)}
- G03H 1/0404 . . . {-In-line recording arrangement}

- G03H 1/0406
 - • • {-Image plane or focused image holograms, i.e. an image of the object or holobject is formed on, in or across the recording plane}
- G03H 1/0408
 - • • {-Total internal reflection [TIR] holograms, e.g. edge lit or substrate mode holograms}
- G03H 1/041
 - • • {-Optical element in the object space affecting the object beam, not otherwise provided for}
- G03H 1/0443
 - • {-Digital holography, i.e. recording holograms with digital recording means (holobject computation [G03H 1/0866](#))}
- G03H 1/0465
 - • {-Particular recording light; Beam shape or geometry ([G03H 1/06](#) takes precedence)}
- G03H 1/0476
 - • {-Holographic printer ([G03H 1/268](#) takes precedence)}
- G03H 1/0486
 - • {-Improving or monitoring the quality of the record, e.g. by compensating distortions, aberrations}
- G03H 1/0493
 - • {-Special holograms not otherwise provided for, e.g. conoscopic, referenceless holography}
- U G03H 1/08
 - • Synthesising holograms, { i.e. holograms synthesized from objects or objects from holograms}(using electric digital computers [G06F](#); [G06T](#))
- G03H 1/0808
 - • • {-Methods of numerical synthesis, e.g. coherent ray tracing [CRT], diffraction specific}
- G03H 1/0841
 - • • {-Encoding method mapping the synthesized field into a restricted set of values representative of the modulator parameters, e.g. detour phase coding}
- G03H 1/0866
 - • • {-Digital holographic imaging, i.e. synthesizing holobjects from holograms}
- G03H 1/0891
 - • • {-Processes or apparatus adapted to convert digital holographic data into a hologram ([G03H 1/2294](#) takes precedence)}
- U G03H 1/18
 - • Particular processing of hologram record carriers, e.g. for obtaining blazed holograms {(photographic processing in general [G03C](#), [G03D](#))}
- G03H 1/181
 - • • {-Pre-exposure processing, e.g. hypersensitisation}
- G03H 1/182
 - • • {-Post-exposure processing, e.g. latensification}
- U G03H 1/20
 - • Copying holograms by holographic { i.e. optical} means
- G03H 1/202
 - • • {-Contact copy when the reconstruction beam for the master H1 also serves as reference beam for the copy H2}
- U G03H 1/22
 - Processes or apparatus for obtaining an optical image from holograms ([G03H 1/26](#) to [G03H 1/34](#) take precedence)
- G03H 1/2202
 - • {-Reconstruction geometries or arrangements}
- G03H 1/2205
 - • • {-using downstream optical component}
- G03H 1/2249
 - • {-Holobject properties}
- G03H 1/2286
 - • {-Particular reconstruction light ([G03H 1/24](#) takes precedence); Beam properties}
- G03H 1/2294
 - • {-Addressing the hologram to an active spatial light modulator}
- U G03H 1/26
 - Processes or apparatus specially adapted to produce multiple { sub-} holograms or to obtain images from them, e.g. multicolour technique
- G03H 1/2645
 - • {-Multiplexing processes, e.g. aperture, shift, or wavefront multiplexing}
- G03H 1/265
 - • • {-Angle multiplexing; Multichannel holograms ([G03H 1/268](#) takes precedence)}
- G03H 1/268
 - • {-Holographic stereogram}
- U **G03H 2270/00** **Substrate bearing the hologram (not used, see subgroups)**
- U G03H 2270/10
 - Composition

G03H 2270/11

- Crystal or glass ([G03H 2270/55](#) takes precedence-)

Project: N/A (G04B)**U G04B 1/00**

Driving mechanisms {driving mechanisms for Turkish time [G04B 19/22](#); driving mechanisms in the hands [G04B 45/043](#); driving mechanisms for phonographic apparatus [G11B 19/00](#); springs, driving weight engines [F03G](#); driving mechanisms for cinematography [G03B 1/00](#); driving mechanisms; driving mechanisms for time fuses for missiles [F42C](#); driving mechanisms for toys [A63H 29/00](#)}

U G04B 1/10

- with mainspring {(synchronous motors with power reserve [G04C 15/0054](#); springs in general [F16F](#))}

U G04B 1/14

- Mainsprings; Bridles therefor (mainsprings with bridles [G04B 1/18](#); alloys [C22C](#); springs in general [F16F](#)){constructions for compensation of changes in the motive power of the mainspring [G04B 1/22](#); construction of the hairspring [G04B 17/066](#); arrangements facilitating the removal of the mainspring [G04B 33/14](#)}

G04B 1/145

- {Composition and manufacture of the springs (compositions and manufacture of components, wheels, spindles, pivots, or the like [G04B 13/026](#); compositions of component escapements [G04B 15/14](#); composition and manufacture of hairsprings [G04B 17/066](#); compensation for the effects of variations of temperature of springs using alloys, especially for hairsprings [G04B 17/227](#); materials for bearings of clockworks [G04B 31/00](#); iron and steel alloys [C22C](#); heat treatment and chemical or mechanical treatment for control of the structure [C21D 8/00](#); non-ferrous alloys [C22C](#) and [B22F](#))}

U G04B 1/16

- Barrels; Arbors; Barrel axles (arrangements facilitating the removal of the mainspring [G04B 33/14](#))

G04B 1/165

- {Spring cylinder with friction transmission to the gearing (*especially for Roskopf clockworks*)(*especially for Roskopf clockworks*); friction clutch between spring and spring cylinder [G04B 1/185](#)}

U G04B 1/22

- Compensation of changes in the motive power of the mainspring (by mechanical shaping of the mainspring [G04B 1/14](#)){automatic regulation of the pendulum [G04B 18/003](#); of the regulator [G04B 19/28](#)}

G04B 1/225

- {with the aid of an interposed power-accumulator (*secondary spring*) which is always tensioned (*secondary spring*) which is always tensioned (winding up several mainsprings or driving weights simultaneously [G04B 3/008](#))}

U G04B 1/26

- driven by liquids or gases; Liquid or gaseous drives for mechanically-controlled secondary clocks {winding up by pneumatic means [G04B 3/12](#); winding up automatically by wind power [G04B 5/203](#); winding up by electro-thermal or electro-pneumatic arrangements [G04C 1/003](#); thermo-electric or thermo-pneumatic driving mechanisms [G04C 3/18](#)}

G04B 1/265

- {Clockwork systems working therewith (winding up electrical or mechanical clocks [G04C 1/006](#); electrical clockwork installations [G04C 13/00](#))}

U G04B 5/00

Automatic winding up {normal winding up by hand or mechanically [G04B 3/00](#); automatic winding in combination with hand winding [G04B 7/00](#); electrical winding of mechanical clockworks [G04C 1/00](#); advertising by making use of vibrations or shocks of land vehicles [G09F 21/045](#)}

U G04B 5/02

- by self-winding caused by the movement of the watch {bearings, suspensions for oscillating weights [G04B 5/18](#); mechanisms for transformation of an oscillating movement into a rotating movement in only one direction [G04B 11/00](#)}

U G04B 5/16

- Construction of the weights

- G04B 5/165
- • • {-Weights consisting of several parts (diverse weights which are movable in more than one plane [G04B 5/187](#))}
- U G04B 11/00** **Click devices; Stop clicks; Clutches {mechanisms for winding up by hand [G04B 3/00](#); automatic winding up [G04B 5/00](#); clutches in general, class 111}**
- G04B 11/006
- {Clutch mechanism between two rotating members with transfer of movement in only one direction (*free running devices*)}~~{free running devices}~~
- U G04B 13/00** **Gearwork {Gearwork for driving the hands [G04B 19/02](#); calibers [G04B 33/00](#); dispositions and components for transmission in general [F16H](#)}**
- U G04B 13/02**
- Wheels; Pinions; Spindles; Pivots (bearings [G04B 31/00](#)){ chain wheels, spindles for chain wheels, also chains and driving weights [G04B 1/08](#)}
- WARNING
Groups [G04B 13/021](#)-[G04B 13/028](#) are not complete pending reorganisation, see also [G04B 13/026](#)
- G04B 13/021
- • {-elastic fitting with a spindle, axis or shaft}
- G04B 13/022
- • • {-with parts made of hard material, e.g. silicon, diamond, sapphire, quartz and the like}
- G04B 13/023
- • • {-allowing rotational slipping when a threshold torque is exceeded}
- G04B 13/025
- • {-with elastic means between the toothing and the hub of a toothed wheel}
- G04B 13/026
- • {-Assembly and manufacture (assembly and manufacture of springs [G04B 1/145](#); machines and tools for the manufacture of chain wheels for clocks [G04D 3/00](#); component parts and manufacture of the escape wheel [G04B 15/14](#); steel alloys [C22C 33/00](#) to [C22C 38/00](#); manufacture of pinions from synthetic material [B29](#); non-ferrous alloys [C22C](#); pinions manufactured by milling and planing [B23F](#))}
- WARNING
This group is no longer used for the classification of new documents as from March 1, 2011. The backlog of this group is being reclassified to subgroups of [G04B 13/02](#)
- G04B 13/027
- • {-planar toothing: shape and design (adjusting the backlash of the arbors [G04B 35/00](#))}
- G04B 13/028
- • {-wheels in which the teeth are conic, contrate, etc; also column wheels construction (start-stop mechanisms with column wheels [G04F 7/0847](#))}
- U G04B 17/00** **Mechanisms for stabilising frequency {(for setting frequency [G04B 18/00](#); magnetic [G04C 5/005](#); in striking mechanisms [G04B 21/06](#); stopping and regulating of the running [G04B 23/023](#); electrically driven mechanical regulation [G04C 3/165](#); electrical and thermo-electric regulating mechanisms [G04C 5/00](#))}**
- U G04B 17/04**
- Oscillators acting by spring tension
- G04B 17/045
- • {-with oscillating blade springs (mechanical oscillations maintained by electro-magnetic means, e.g. tuning forks [G04C 3/10](#))}
- U G04B 17/06**
- • Oscillators with hairsprings, e.g. balance {electrically driven balances [G04C 3/04](#); contacts actuated by a balance [G04C 13/065](#)}
- G04B 17/063
- • • {-Balance construction (balances with frequency adjustment screw [G04B 18/006](#); balances with temperature compensation [G04B 17/222](#); balancing devices [G04B 17/28](#))}

- G04B 17/066
- • • {-Manufacture of the spiral spring (locking of the spiral spring by the regulating lever [G04B 18/026](#); spiral spring with temperature compensation [G04B 17/227](#); fixation of the spiral spring on the collet [G04B 17/32](#); mainspring [G04B 1/14](#))}
- U G04B 17/20
- Compensation of mechanisms for stabilising frequency
- U G04B 17/22
- • for the effect of variations of temperature { alloys with small expansion coefficient [C21C](#), [C22C](#); adjustment of the regulator dependant on adjustment of the hands [G04B 18/028](#); depending on the difference in time with a comparison clockwork [G04C 11/007](#)}
- G04B 17/225
- • • {-with pendulums (construction of pendulums [G04B 17/02](#); setting frequency on the pendulum [G04B 18/003](#))}
- U G04B 18/00**
- Mechanisms for setting frequency {(for stabilising frequency [G04B 17/00](#))}**
- G04B 18/003
- {-by displacement of devices carried by the pendulum or by adjusting the pendulum length (pendulums and suspension [G04B 17/02](#); self- adjustment of the regulating lever [G04B 18/028](#), [G04B 17/22](#), [G04C 11/007](#); adjusting the stroke of the pendulum [G04B 18/04](#); time indicating by acoustic means [G04B 21/00](#); synchronisation with a standard clock [G04C 11/007](#); metronome with a variable length [G04F 5/027](#))}
- U G04B 19/00**
- Indicating the time by visual means {(indicating the time optically by electric means [G04C 17/00](#), e.g.) by electric lamps [G04C 17/02](#); display arrangements in general [G09F](#))}**
- U G04B 19/02
- Back-gearing arrangements between gear train and hands {transmissions in general [G04B 13/00](#)}
- G04B 19/025
- • {-for simultaneous indicating on several dials (indicating means allowing simultaneous indication [G04B 19/048](#); with several separate dials [G04B 19/08](#); extra hands for indicating different local apparent times [G04B 19/23](#); with several clockworks [G04B 37/0083](#))}
- U G04B 19/22
- Arrangements for indicating different local apparent times; Universal time pieces {(indicating by means of numbers or signs disposed on moving devices [G04B 19/20](#); illumination of dials or hands [G04B 19/30](#); combination with a terrestrial globe in general [G04B 47/02](#); electronic time-zone watches [G04G 9/0076](#))}
- G04B 19/221
- • {-mechanisms for correcting the hours hand only, i.e. independently for minutes and seconds hands}
- WARNING
Not complete pending reclassification; see also [G04B 19/22](#)
- G04B 19/223
- • {-with rotary disc, rotary bezel, or rotary dial}
- WARNING
Not complete pending reclassification; see also [G04B 19/22](#)
- G04B 19/225
- • • {-driving mechanism for the bezel}
- WARNING
Not complete pending reclassification; see also [G04B 19/22](#)
- G04B 19/226
- • {-three-dimensionally shaped, e.g. terrestrial globes, cylinders and the like}
- WARNING
Not complete pending reclassification; see also [G04B 19/22](#)

- G04B 19/228
- • {-with linear time graduation}
- WARNING
Not complete pending reclassification; see also [G04B 19/22](#)
- U G04B 19/23
- • by means of additional hands or additional pairs of hands {(simultaneous indication on several dials [G04B 19/025](#); indicating devices giving several simultaneous indications [G04B 19/048](#))}
- G04B 19/235
- • • {-mechanisms for correcting the additional hand or hands (time setting [G04B 27/00](#))}
- WARNING
Not complete pending reclassification; see also [G04B 19/23](#)
- U G04B 19/24
- Clocks or watches with date {or week-day} indicators, {i.e. calendar clocks or watches}; Clockwork calendars {(combination of the clockwork with an independently settable calendar [G04B 47/00](#))}
- U G04B 19/243
- • characterised by the shape of the date indicator
- G04B 19/24346
- • • {band-shaped ([G04B 19/24306](#) takes precedence; for electrically driven timepieces [G04C 17/0016](#)-)}
- G04B 19/257
- • • drum-shaped {or three-dimensional shaped-([G04B 19/24306](#) takes precedence; for electrically driven timepieces [G04C 17/0083](#))}
- U G04B 19/28
- Adjustable guide marks or pointers for indicating determined points of time {inscriptions or pictures moved by hand [G04B 45/003](#)}
- U G04B 19/283
- • {on rotatable rings, i.e. bezel (for graduations on the bezels [G04B 19/18](#))}
- G04B 19/286
- • • {-with locking means to prevent undesired rotations in both directions}
- WARNING
Not complete pending reclassification; see also [G04B 19/283](#)
- U **G04B 21/00**
- Indicating the time by acoustic means (at preselected times [G04B 23/00](#); by electro-acoustic means [G04C 21/04](#); { indicating the time by means other than acoustically, or by combined means [G04B 25/00](#); indicating the time by visual means [G04B 19/00](#), [G04C 17/00](#); acoustic signalling arrangements [G08B 3/00](#))}**
- G04B 21/005
- {Periodical acoustic signalling arrangements ([G04B 21/02](#) takes precedence); -adjustment of the frequency by setting the length of the pendulum [G04B 18/003](#); metronomes [G04F 5/02](#))}
- U **G04B 23/00**
- Arrangements producing acoustic signals at preselected times {(indicating the time by optical means [G04B 19/00](#), [G04C 17/00](#); indicating the time by acoustic means [G04B 21/00](#); indicating the time by means other than acoustic or optical, or by a combination of means [G04B 25/00](#); acoustic time signals produced electrically [G04C 21/00](#); coin-freed alarm clocks [G07F 17/0007](#); acoustic signalling means [G08B 3/00](#))}**
- U G04B 23/02
- Alarm clocks (electrically released alarm signals [G04C 21/00](#)){waking up by electric lamps [G04C 19/02](#); by other means [G04B 25/005](#); alarm clocks with electric contacts [G04C 23/06](#)}
- G04B 23/021
- • {*Controls (winding up the alarm; {Controls (winding up the alarm; adjusting and indicating the waking time) adjusting and indicating the waking time)*}
- U **G04B 37/00**
- Cases {Cases with a special shape [G04B 45/0069](#); ornamentation of the case [G04B 47/04](#); cartridges [A45C 11/00](#) to [A45C 11/38](#)}**
- U G04B 37/0008
- {for pocket watches and wrist watches}
- G04B 37/0016
- • {with folding cover or folding bottom (*hinge without spring*)}{~~hinge without spring~~}

- G04B 37/0033
 - • {with cover or bottom which can slide or turn (*without a spring action*)}(~~without a spring action~~)
- G04B 37/005
 - • {with cover or protection device which can be completely removed, either by lifting off or by sliding, or by turning (*protection covers, protection cases also against humidity*)}(~~protection covers, protection cases also against humidity~~)
- U G04B 37/04
 - Mounting the clockwork in the case; Shock absorbing mountings
- U G04B 37/0427
 - • {Mountings relative to pocket and wrist watches allowing a rocking movement about a hinge or any other movement (covers and protective cases which may be removed completely either by direct removal or by sliding or turning [G04B 37/005](#); ornamentation and interchangeable parts of cases, modifying the external appearance of the clockwork [G04B 47/046](#))}
- G04B 37/0436
 - • • {-Clockwork movements coming out without springs, for allowing time reading or winding}
- G04B 37/0454
 - • • {Free standing watches (*montre chevalet*)}(~~montre chevalet~~)
- U G04B 37/06
 - Forming the passage for the winding stem through the case; Divided winding stems {watertight protection means for the winding stem [G04B 37/10](#); fixing the knob to the case [G04B 37/1466](#); winding and setting the hands with the winding stem with clutch wheel [G04B 27/04](#), with rocking bar [G04B 27/06](#)}
- G04B 37/066
 - • {Divided stem (*tige brisee*)}(~~tige brisee~~)(normal winding stems [G04B 3/041](#))
- U G04B 37/12
 - Cases for special purposes, e.g. watch combined with ring, watch combined with button (watch guards or protectors [A45C 11/10](#), [A45C 11/12](#); watches combined with cosmetic powder containers [A45D 33/30](#)){domed dial [G04B 19/10](#); calibers in which the clockwork is disposed on different planes [G04B 33/08](#); means for fixing watches on items of clothing [G04B 37/1433](#); cases having means for fixing onto a normal bracelet [G04B 37/1486](#); cases giving special affects due to their particular shape [G04B 45/0069](#); watches combined with various objects and therefore having a specially shaped case [G04B 47/00](#)}
- G04B 37/127
 - • {-used as containers or cartridges (means for incorporating a battery in the case [G04G 17/00](#))}
- U G04B 37/14
 - Suspending devices, supports or stands for time-pieces insofar as they form part of the case {(wrist watch straps, fastening means therefor [A44C 5/00](#); display stands **54G14K**)}
- G04B 37/1406
 - • {Means for fixing the clockwork pieces on other objects (*possibly on walls*)}(~~possibly on walls~~)
- U G04B 37/1486
 - • {Arrangements for fixing to a bracelet (building watches into bracelets (montre marquise) [G04B 37/12](#); arrangements for hanging pocket- or other watches on chains [G04B 37/1446](#))}
- G04B 37/1493
 - • • {by means of a feather spring (*Barette á ressort*)}(~~Barette á ressort~~)
- U G04B 37/22
 - Materials or processes of manufacturing pocket watch or wrist watch cases {machines or tools for the manufacture of clockwork cases [G04D 3/0064](#), [G04D 3/0097](#), [G04D 3/029](#); decoration or tools therefor [G04B 45/0076](#)}
- G04B 37/221
 - • {-Wear resistant cases}

WARNING
This group is no longer used for the classification of new documents as from March 1, 2011. The backlog of this group is being reclassified to other subgroups of [G04B 37/22](#)
- G04B 37/223
 - • {-metallic cases coated with a nonmetallic layer}

WARNING
Not complete pending reclassification; see also [G04B 37/22](#)
- G04B 37/225
 - • {-Non-metallic cases}

- U G04B 45/00** Time pieces of which the indicating means or cases provoke special effects, e.g. aesthetic effects (ornamental shaping of dials [G04B 19/10](#)) {{lubrication of clockwork bearings [G04B 31/008](#); special effects and pictures in general [B44F](#)}}
- G04B 45/0069 • {-Cases and fixed parts with a special shape (movable parts with a special shape [G04B 45/0061](#); decoration in general, and methods of manufacture thereof [G04B 45/0076](#); cases in general [G04B 37/00](#); combination with genuine utensils or mounting therein [G04B 47/00](#))}
- U G04B 47/00** Time-pieces combined with other articles which do not interfere with the running or the time-keeping of the time-piece ({ clockwork cases for special purposes [G04B 37/12](#); clocks with magnifying glass built in the face [G04B 39/00](#); time-pieces in which parts or cases produce special effects, e.g. aesthetic effects, [G04B 45/00](#), particularly with inscriptions or pictures moved by hand [G04B 45/003](#), with specially shaped cases or parts [G04B 45/0069](#); combination of} writing or drawing implements with devices for indicating time [B43K 29/087](#); combined with cameras, projectors, or photographic printing apparatus [G03B 29/00](#))
- U G04B 47/04 • with attached ornaments or amusement apparatus {decorated cases see [G04B 45/00](#)}
- G04B 47/048 • • {-Clockwork combined with toys (devices for teaching clock reading [G09B 19/12](#); indicating play time [G07C 1/28](#))}
- U G04B 47/06 • with attached measuring instruments, e.g. pedometer, barometer, thermometer or compass {in combination with a tachometer which winds up the clockwork [G04B 5/206](#)}
- G04B 47/061 • • {-calculating scales for indicating relationship between quantity and time (indicating or recording of quantity-time ratios [G01D](#); meters for measuring average speed, measuring speed by chronograph [G01P](#); slide rules and calculating wheels [G06G](#))}
- G04B 47/063 • • {-measuring physiological quantities, e.g. pedometers, heart-rate sensors, blood pressure gauges and the like}
- WARNING
Not complete pending reclassification; see also [G04B 47/06](#) and [G04B 47/061](#)
- G04B 47/066 • • {-with a pressure sensor}
- WARNING
Not complete pending reclassification; see also [G04B 47/06](#) and [G04B 47/061](#)
- G04B 47/068 • • {-with a thermometer}
- WARNING
Not complete pending reclassification; see also [G04B 47/06](#) and [G04B 47/061](#)

Project: N/A (G04D)

- U G04D 1/00** Gripping, holding, or supporting devices {stands in general [F16M](#); for instruments [G01D 11/30](#), [B01L](#)}
- U G04D 1/005 • {for non-automatic assembly, with automatic transport between workbenches}
- G04D 1/0057 • • {-Conveyor belts or chains (in general [B65G](#))}
- G04D 1/0064 • • {-Turntables or plates (carousels) (in general [B65G 47/00](#))}

- U G04D 3/00 Watchmakers` or watch-repairers` machines or tools for working materials {metal working in general class B23}**
- U G04D 3/0002 · {for mechanical working other than with a lathe (lathes for watchmakers [G04D 3/02](#))}
 - G04D 3/0061 · {for components for protecting the mechanism against external influences (construction thereof [G04B 37/00](#), [G04B 43/00](#))}
- U G04D 7/00 Measuring, counting, calibrating, testing or regulating apparatus {measuring devices and calibers in general G01B; counters in general H03K}**
- U G04D 7/08 · for balance wheels
 - U G04D 7/082 · · {for balancing}
 - U G04D 7/085 · · · {by removing material from the balance wheel itself}
 - G04D 7/087 · · · · {Automatic devices therefor (*balancing and loading or removing carried out automatically*)}(~~balancing and loading or removing carried out automatically~~)}
 - U G04D 7/12 · Timing devices for clocks or watches for comparing the rate of the oscillating member with a standard {supporting devices for clocks with built-in recording apparatus [G04D 1/063](#); measuring short time intervals [G04F 10/00](#); frequency measuring in general [H04B](#), [G01R](#)}
 - U G04D 7/1207 · · {only for measuring}
 - G04D 7/1235 · · · {for the control mechanism only (*found from outside the clockwork*)}(~~found from outside the clockwork~~)}
 - U G04D 7/1257 · · {wherein further adjustment devices are present}
 - G04D 7/1271 · · · {for the control mechanism only (*from outside the clockwork*)}(~~from outside the clockwork~~)}

Project: N/A (G04F)

- U G04F 5/00 Apparatus for producing preselected time intervals for use as timing standards (generating clock signals for electric digital computers G06F 1/04; regulating frequency in general H03C, H03L)**
- U G04F 5/02 · Metronomes {periodic signalisation by acoustic signals in general [G04B 21/005](#)}
 - G04F 5/025 · · {Electronic metronomes }{rhytem generation for electrophonic musical instruments [G10H 1/36](#)}
 - U G04F 5/14 · using atomic clocks
 - G04F 5/145 · · {using Coherent Population Trapping}
- U G04F 7/00 Apparatus for measuring unknown time intervals by mechanical means**
- U G04F 7/04 · using a mechanical oscillator
- WARNING
The subgroups of **G04F/04** are not complete pending reclassification; see also this group
- U G04F 7/06 · · running only during the time interval to be measured, e.g. stop-watch
 - G04F 7/062 · · · {with reset mechanisms}
 - G04F 7/065 · · · {with start-stop control arrangements}
 - G04F 7/067 · · · · {with a single push-button or actuation member for start-stop and reset}
 - U G04F 7/08 · Watches or clocks with stop devices, e.g. chronograph
 - G04F 7/0804 · · · {with reset mechanisms}

- G04F 7/0809 {-with single hammers, i.e. one hammer acts on each counter}
 - G04F 7/0814 {-with double hammer , i.e. one hammer acts on two counters}
 - G04F 7/0819 {-with triple hammer, i.e. one hammer acts on three counters}
 - G04F 7/0823 . . . {-with couplings between the chronograph mechanism and the base movement}
 - G04F 7/0828 {-acting in the plane of the movement}
 - G04F 7/0833 {-acting perpendicular to the plane of the movement}
 - G04F 7/0838 {-involving a tilting movement}
 - G04F 7/0842 . . . {-with start-stop control mechanisms}
 - G04F 7/0847 {-with column wheel}
 - G04F 7/0852 {-with member having a rotational two-way movement, e.g. navette}
 - G04F 7/0857 {-with single push-button or actuation member for start-stop and reset}
 - G04F 7/0861 {-actuated by other than push-buttons, e.g. bezel or lever}
 - G04F 7/0866 . . . {-Special arrangements}
 - G04F 7/0871 {-with multiple chronograph functions, i.e. to count multiple running times (alternate time counting [G07C](#))}
 - G04F 7/0876 {-Split-time function e.g. rattrappante}
 - G04F 7/088 {-with display of fraction of seconds, e.g. foudroyante}
 - G04F 7/0885 {-Modular constructions involving interchangeability with one or more chronograph modules on a single base movement}
 - G04F 7/089 {-indicating measured time by other than hands; e.g. numbered bands, drums, discs or sheet (current time indication other than by hand [G04B 19/20](#))}
 - G04F 7/0895 {-with a separate barrel for the chronograph functions (barrel in a separable module [G04F 7/0885](#))}
- U G04F 10/00 Apparatus for measuring unknown time intervals by electric means { timing devices for clocks or watches for comparing the rate of the oscillating member with a standard [G04D 7/12](#); radar systems, analogous systems [G01S 7/00](#); measuring frequency [G01R 23/00](#); measuring phase angle [G01R 25/00](#)}**
- G04F 10/005 . {-Time-to-digital converters [TDC]} (analog-to-digital converters with intermediate conversion to time or phase [H03M 1/50](#), [H03M 1/60](#))}
- WARNING
This group is not complete pending reclassification; see also groups [G04F 10/04](#) and [G04F 10/06](#)

Project: N/A (G04G)

- U G04G 5/00 Setting, i.e. correcting or changing, the time-indication (radio-controlled time-pieces [G04R](#))**
- G04G 5/002 . {-brought into action by radio}
- WARNING
This group is no longer used for the classification of new documents as from September 1, 2012. The backlog of this group is being continuously reclassified to subgroups of [G04R](#)
- U G04G 5/04 . by setting each of the displayed values, e.g. date, hour, independently
 - G04G 5/041 . {-Correction of the minutes counter in function of the seconds' counter position at zero adjustment of the latter}

- U G04G 5/043
- {using commutating devices for selecting the value, e.g. hours, minutes, seconds, to be corrected}
- WARNING
Not complete, see also [G04G 5/04](#)
- G04G 5/048
- • {by using a separate register into which the correct setting of the selected time-counter is introduced which is thereafter transferred to the time-counter to be reset}
- G04G 17/00** **Structural details ; -Housings (constructional details of radio-controlled time-pieces, e.g. antennas [G04R 60/00](#))**
- U G04G 21/00** **Input or output devices integrated in time-pieces**
- U G04G 21/02
- Detectors of external physical values, e.g. temperature
- G04G 21/025
- {for measuring physiological data}
- U G04G 99/00** **Subject matter not provided for in other groups of this subclass**
- G04G 99/003
- {Pulse shaping; Amplification}
- G04G 99/006
- {Electronic time-pieces using a micro-computer, e.g. for multi-function clocks}

Project: N/A (G05B)

- U G05B 19/00** **Programme-control systems (specific applications see the relevant places, e.g. [A47L 15/46](#); clocks with attached or built-in means operating any device at a preselected time interval [G04C 23/00](#); marking or sensing record carriers with digital information [G06K](#); information storage [G11](#); time or time-programme switches which automatically terminate their operation after the programme is completed [H01H 43/00](#))**
- U G05B 19/02
- electric
- U G05B 19/18
- • Numerical control (NC), i.e. automatically operating machines, in particular machine tools, e.g. in a manufacturing environment, so as to execute positioning, movement or co-ordinated operations by means of programme data in numerical form ([G05B 19/418](#) takes precedence)
- G05B 19/188
- • {characterised by special applications and not provided for in the relevant subclasses, (e.g. *making dies, filament winding*)}~~(e.g. making dies, filament winding)~~
- U G05B 23/00** **Testing or monitoring of control systems or parts thereof (monitoring of programme-control systems [G05B 19/048](#), [G05B 19/406](#))**
- U G05B 23/02
- Electric testing or monitoring
- WARNING
As from June 1st, 2011 documents of this group are being continuously reclassified to its subgroups]
- G05B 23/0205
- {by means of a monitoring system capable of detecting and responding to faults}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0208
- • {characterized by the configuration of the monitoring system}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)

- G05B 23/021
- • • {-adopting a different treatment of each operating region or a different mode of the monitored system, e.g. transient modes; different operating configurations of monitored system}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0213
- • • {-Modular or universal configuration of the monitoring system, e.g. monitoring system having modules that may be combined to build monitoring program; monitoring system that can be applied to legacy systems; adaptable monitoring system; using different communication protocols}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0216
- • • {-Human interface functionality, e.g. monitoring system providing help to the user in the selection of tests or in its configuration}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0218
- • • {-characterised by the fault detection method dealing with either existing or incipient faults}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0221
- • • {-Preprocessing measurements, e.g. data collection rate adjustment; Standardization of measurements; Time series or signal analysis, e.g. frequency analysis or wavelets; Trustworthiness of measurements; Indexes therefor; Measurements using easily measured parameters to estimate parameters difficult to measure; Virtual sensor creation; De-noising; Sensor fusion; Unconventional preprocessing inherently present in specific fault detection methods like PCA-based methods}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0224
- • • {-Process history based detection method, e.g. whereby history implies the availability of large amounts of data}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0227
- • • • {-Qualitative history assessment, whereby the type of data acted upon e.g. waveforms, images or patterns, is not relevant, e.g. rule based assessment; if-then decisions}
- WARNING
Not complete pending the completion of a reclassification; see also [G05B 23/02](#)

- G05B 23/0229 {-knowledge based, e.g. expert systems; genetic algorithms}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0232 {-based on qualitative trend analysis, e.g. system evolution}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0235 {-based on a comparison with predetermined threshold or range , e.g. "classical methods", carried out during normal operation; threshold adaptation or choice; when or how to compare with the threshold}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0237 {-based on parallel systems, e.g. comparing signals produced at the same time by same type systems and detect faulty ones by noticing differences among their responses}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/024 {-Quantitative history assessment, e.g. mathematical relationships between available data; Functions therefor; Principal component analysis [PCA]; -Partial least square [PLS]; -Statistical classifiers, e.g. Bayesian networks, linear regression or correlation analysis; -Neural networks]
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0243 {-model based detection method, e.g. first-principles knowledge model}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0245 {-based on a qualitative model, e.g. rule based; if-then decisions}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0248 {-Causal models, e.g. fault tree; digraphs; qualitative physics}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0251 {-Abstraction hierarchy, e.g. "complex systems" i.e. system is divided in subsystems, subsystems are monitored and results are combined to decide on status of whole system}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)

- G05B 23/0254 {-based on a quantitative model, e.g. mathematical relationships between inputs and outputs; functions: observer, Kalman filter, residual calculation, Neural Networks}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0256 {-injecting test signals and analyzing monitored process response, e.g. injecting the test signal while interrupting the normal operation of the monitored system; superimposing the test signal onto a control signal during normal operation of the monitored system}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0259 . . . {-characterized by the response to fault detection}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0262 {-Confirmation of fault detection, e.g. extra checks to confirm that a failure has indeed occurred}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0264 {-Control of logging system, e.g. decision on which data to store; time-stamping measurements}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0267 {-Fault communication, e.g. human machine interface [HMI]}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/027 {-Alarm generation, e.g. communication protocol; Forms of alarm}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0272 {-Presentation of monitored results, e.g. selection of status reports to be displayed; Filtering information to the user}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0275 {-Fault isolation and identification, e.g. classify fault; estimate cause or root of failure}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)

- G05B 23/0278 {-Qualitative, e.g. if-then rules; Fuzzy logic; Lookup tables; Symptomatic search; FMEA}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0281 {-Quantitative, e.g. mathematical distance; Clustering; Neural networks; Statistical analysis}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0283 {-Predictive maintenance, e.g. involving the monitoring of a system and, based on the monitoring results, taking decisions on the maintenance schedule of the monitored system; Estimating remaining useful life [RUL]} (preventive maintenance, i.e. planning maintenance according to the available resources without monitoring the system **G06Q 10/00C**)
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0286 {-Modifications to the monitored process, e.g. stopping operation or adapting control}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0289 {-Reconfiguration to prevent failure, e.g. usually as a reaction to incipient failure detection}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0291 {-Switching into safety or degraded mode, e.g. protection and supervision after failure}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0294 {-Optimizing process, e.g. process efficiency, product quality}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0297 {-Reconfiguration of monitoring system, e.g. use of virtual sensors; change monitoring method as a response to monitoring results }
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)

Project: N/A (G05D)

G05D

SYSTEMS FOR CONTROLLING OR REGULATING NON-ELECTRIC VARIABLES (-for continuous casting of metals [B22D 11/16](#) ; valves per se [F16K](#); sensing non-electric variables, see the relevant subclasses of [G01](#); for regulating electric or magnetic variables [G05F](#))

NOTES

This subclass does not cover features of general applicability to regulating systems, e.g. anti-hunting arrangements, which are covered by subclass [G05B](#).

In this subclass, the following term is used with the meaning indicated:

- "systems" includes self-contained devices such as speed governors, pressure regulators.

Control systems specially adapted for particular apparatus, machines or processes are classified in the subclasses for the apparatus, machines or processes, provided that there is specific provision for control or regulation relevant to the special adaptation, either at a detailed level, (e.g. [A21B 1/40](#) : "for regulating temperature in bakers` ovens") or at a general level, (e.g. [B23K 9/095](#) : "for automatic control of welding parameters in arc welding"). Otherwise, classification is made in the most appropriate place in this subclass. The following are lists of places where there is specific provision of the kind referred to above. Where such provision is at a detailed level, the places have been grouped according to the main groups of this subclass. Where the provision is at a general level (e.g. of a kind appropriate to more than one of the main groups specified in the lists, or to main groups [G05D 27/00](#) or [G05D 29/00](#)), the places are listed under the title "General References". Places related to [G05D 1/00](#)

A01B 69/00	Agricultural machines or implements
A63H 17/36	Toy vehicles
B60V 1/11	Air-cushion vehicles
B62D 1/00	Steering controls of motor vehicles or trailers,
	i.e. means for initiating a change of direction
B62D 6/00	Arrangements for automatically controlling the steering depending on driving conditions
B62D 55/116	Chassis of endless-tracked vehicles
B63H 25/00	Marine steering; control of waterborne vessels
B64C 13/00	to B64C 15/00 Controlling aircraft
B64D25/11	Controlling attitude or direction of aircraft ejector seats
B64G 1/24	Cosmonautic vehicles
F41G 7/00	Self-propelled missiles
F42B 15/01	Guided missiles
F42B 19/01	Marine torpedoes
	Places related to G05D 3/00
A43D 119/00	Footwear manufacture
B21K 31/00	Tool carriers in forging or pressing
B23B 39/26	Pattern-controlled boring or drilling tools
B23D 1/30	, B23D 3/06 , B23D 5/04
	Planing or slotting machines controlled by copying device
B23H 7/18	Electrode to workpiece spacing in electric discharge and electrochemical machining

[B23K 26/02](#) Workpiece in laser welding or cutting
[B23K 37/04](#) Workpiece in welding
[B23K 37/06](#) Molten metal in welding
[B23Q 5/20](#) Spindles in machine tools
[B23Q 15/00](#) , [B23Q 16/00](#) Tool or work position in machine tools
[B23Q 35/00](#) Tools controlled by pattern or master model
[B24B 17/00](#) Grinding controlled by patterns, drawings, magnetic tape or the like
[B24B 47/22](#) Starting position in grinding
[B30B 15/24](#) Actuating members in presses
[B62D 55/116](#) Chassis of tracked vehicles
[B65H 23/18](#) Web-advancing mechanisms
[E02F 3/43](#) Dippers or buckets in dredgers
[F15B 9/00](#) Fluid-pressure servomotors with follow-up action
[F24J 2/38](#) Tracking of solar heat collectors
[G03F 9/00](#) Photomechanical production of patterned or textured surfaces
[G11B 5/588](#) Rotating heads in information storage systems
[G21C 7/12](#) Movement of control elements in nuclear reactors

Places related to [G05D 5/00](#)

[A24B 7/14](#) Tobacco cutting
[B05C 11/02](#) Thickness of coating of fluent material on surface
[B21B 37/16](#) Thickness, width, diameter or other transverse dimensions of the products of metal-rolling mills
[C03B 18/04](#) Dimension of glass ribbon
[D21F 7/06](#) Thickness of layer in paper making

Places related to [G05D 7/00](#)

[A45D 20/26](#) Air in hair drying helmets
[A61M 5/168](#) Flow of media to the human body
[B03C 3/36](#) Gases or vapour in electrostatic separators
[B05C 11/10](#) Fluent material in coating devices
[B67D 1/12](#) Dispensing beverages on draught
[B67D 7/28](#) Transferring liquids
[C10K 1/28](#) Gas purifiers
[E21B 21/08](#) Flushing boreholes
[E21B 43/12](#) Obtaining liquids from wells
[F01D 17/00](#) Flow in non-positive-displacement machines or systems
[F01M 1/16](#) Lubrication arrangements
[F01P 7/00](#) Coolant flow in cooling devices
[F02C 9/16](#) ,
[F02C 9/50](#) Gas-turbine working fluid
[F16L 55/027](#) Throttle passages in pipes
[F24F 11/00](#) Air-flow or supply of heating or cooling

fluids in air treatment arrangements
[F26B 21/12](#) Air or gas flow in dryers
[G01G 11/08](#) Continuous flow weighing apparatus
[G21D 3/14](#) Coolant in nuclear power plant
Places related to [G05D 9/00](#)
[B01D 21/34](#) Liquid level in sedimentation
arrangements
[B41L 27/04](#) Ink level in printing, manifolding
or
duplicating arrangements
[F22D 5/00](#) Feed water for boilers
[H01J 1/10](#) , [H01J 13/14](#) Liquid pool
electrodes in electric discharge
tubes or lamps Places related to
[G05D 11/00](#)
[B01D 21/32](#) Density in sedimentation
arrangements
[B01F 15/04](#) Mixers
[B24C 7/00](#) Abrasive blasts
[B28C 7/00](#) Mixtures of clays or cements
[B65G 53/66](#) Bulk material conveyers
[F02K 3/075](#) Flow ratio in jet-propulsion plants
Places related to [G05D 13/00](#)
[B21C 1/12](#) Drum speed in metal drawing
[B23Q 15/00](#) Cutting velocity of tool or work
[B30B 15/20](#) Ram speed in presses
[B60K 31/00](#) Setting or limiting speed of
vehicles
[B60L 15/00](#) Electrically-propelled vehicles
[B64D 31/08](#) Cruising speed of aircraft
[D01D 1/09](#) Feed rate in manufacture of
artificial
filaments, threads, fibres, bristles or
ribbons
[D01G 15/36](#) Carding machines
[D02H 13/14](#) Warping, beaming or leasing machines
[D03D 51/16](#) Cyclically varying speed of looms
[G01N 30/32](#) Speed of fluid carrier in chemical
analysis
[G11B 15/46](#) Filamentary or web record carriers or
heads
for such carriers in information storage
systems
[G11B 19/28](#) Non-filamentary, non-web record carriers,
or
heads for such carriers in information storage
systems Places related to
[G05D 15/00](#)
[B25D 9/26](#) Portable percussive tools
[B30B 15/22](#) Ram pressure in presses
[B65H 59/00](#) Tension in filamentary material
{ [B65H 23/00](#) , [B65H 59/00](#) }
Tension in webs, tapes, filamentary material
[B66D 1/50](#) Rope, cable or chain tension
[D03D 49/04](#) Tension in looms
[D05B 47/04](#) Tension in sewing machines
[D21F 3/06](#) Pressure in paper-making machines
[F26B 13/12](#) Drying fabrics
[F26B 21/10](#) Pressure in dryers
[G11B 15/43](#) Record carrier tension in
information

[H05B 6/68](#) Dielectric, induction or microwave heating

[H05G 1/36](#) Anode of X-ray tube Places related to [G05D 25/00](#)

[B41B 21/08](#) Photographic composing machines

[H01S 3/10](#) ,

[H05B 33/08](#) ,

[H05B 35/00](#) to

[H05B 43/00](#) Lasers and other light sources

General references

[A01J 5/007](#) Milking machines

[B23K 9/095](#) Welding parameters

[B23Q 35/00](#) Copying

[B24B 17/00](#) ,

[B24B 49/00](#) Grinding or polishing

[B24C 7/00](#) Abrasive blasts

[B67D 1/12](#) Dispensing beverages on draught

[G03G 21/20](#) Electrographic, electrophotographic or magnetographic processes

[H02P 5/00](#) to

[H02P 9/00](#) Dynamo-electric motors or generators

G05D 1/00

Control of position, course or altitude of land, water, air, or space vehicles, e.g. automatic pilot (-steering applicable only to other than landborne vehicles, e.g. three-dimensional steering applicable to both aircraft and submarines [B60K](#) ; construction or disposition of steering means on land vehicles [B62](#) , on waterborne vessels [B63](#) ; manual or automatic control of aircraft, e.g. using automatic pilot or radiated signal [B64C](#) ; radio navigation systems or analogous systems using other waves [G01S](#)-)

- U G05D 1/0011 • {associated with a remote control arrangement}
- G05D 1/0016 • {characterised by the operator's input device (-input arrangements for computing systems in general [G06F 3/00](#)-)}
- G05D 1/0022 • {characterised by the communication link (-data switching networks in general [H04L 12/00](#)-)}
- G05D 1/0027 • {involving a plurality of vehicles, e.g. fleet or convoy travelling (-traffic control systems for road vehicles [G08G 1/00](#) ; for marine craft [G08G 3/00](#) ; for aircraft [G08G 5/00](#) ; fleet control of land vehicles from a control room [G05D 1/0297](#)-)}
- G05D 1/0038 • {by providing the operator with simple or augmented images from one or more cameras located onboard the vehicle, e.g. tele-operation (-images analyzed by a computer and used for automatic navigation [G05D 1/0246](#)-)}
- G05D 1/0044 • {by providing the operator with a computer generated representation of the environment of the vehicle, e.g. virtual reality, maps (-maps used for automatic navigation [G05D 1/0274](#) ; flight directors [G01C 23/005](#)-)}
- G05D 1/0088 • {characterized by the autonomous decision making process, e.g. artificial intelligence, predefined behaviours (-using knowledge based models [G06N 5/00](#)-)}
- U G05D 1/02 • Control of position or course in two dimensions
- U G05D 1/021 • {specially adapted to land vehicles}

NOTE

This group covers control of position or course in two dimensions specially adapted for land vehicles, i.e. control systems to define a trajectory for a land vehicle, and to take suitable actions to make the vehicle follow said trajectory.

Relationships with other classification places.

Subclass [G01C](#) covers navigation in general, i.e. determining the position and course of land vehicles, ships, aircraft, and space vehicles.

Subclass [G01S](#) covers radio, sonar or lidar navigation systems, i.e. navigation by use of radio, acoustic or optical waves, or analogue arrangements using other electromagnetic waves.

Subclass [G08G](#) covers navigation systems for traffic control purposes, i.e. systems in which the navigation is not performed autonomously by or in the vehicle, but where the vehicles are guided by instructions transmitted to them.

Aspects of navigation systems that are important per se should also be classified in the relevant groups of [G01C](#) (see for example list under "Informative References" below).

Aspects of radio, sonar or lidar navigation systems that are important per se should also be classified in the relevant groups of [G01S](#) (see for example list under "Informative References" below).

Aspects of navigation systems for traffic purposes that are important per se should also be classified in the relevant groups of [G08G](#) (see for example list under "Informative References" below).

Informative References.

Attention is drawn to the following places, which could be of interest for search:

- navigation, i.e. determining the position and course of land vehicles, ships, aircraft, and space vehicles [G01C 21/00](#)
- measuring distance traversed on the ground by vehicles, e.g. using odometers [G01C 22/00](#)
- position-fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#)
- determining distance or velocity using waves and not using reflection or reradiation of waves [G01S 11/00](#)
- radar systems specially designed for traffic control [G01S 13/91](#)
- radar systems specially designed for for anti-collision purposes [G01S 13/93](#)
- sonar systems specially designed for for anti-collision purposes [G01S 15/93](#)
- lidar systems specially designed for for anti-collision purposes [G01S 17/93](#)
- traffic control systems for road vehicles [G08G 1/00](#)
- monitoring the location of fleet of vehicles in traffic control systems [G08G 1/127](#)
- anti-collision traffic control systems [G08G 1/16](#)

- G05D 1/0212
 - • • {with means for defining a desired trajectory (involving a plurality of land vehicles [G05D 1/0287](#)-)}
- G05D 1/0214
 - • • {in accordance with safety or protection criteria, e.g. avoiding hazardous areas (monitoring the location of vehicles within a certain area, e.g. forbidden or allowed areas, in traffic control systems for road vehicles [G08G 1/13](#)-)}
- G05D 1/0223
 - • • {involving speed control of the vehicle (vehicle fittings for automatically controlling, i.e. preventing speed from exceeding an arbitrarily established velocity or maintaining speed at a particular velocity, as selected by the vehicle operator [B60K 31/00](#)-)}
- G05D 1/0225
 - • • {involving docking at a fixed facility, e.g. base station or loading bay (parking aids [B62D 15/027](#)-)}
- G05D 1/0231
 - • • {using optical position detecting means (position-fixing by using electromagnetic waves other than radio waves, e.g. optical position detecting means [G01S 5/16](#)-)}

- G05D 1/0234 {using optical markers or beacons (~~-optical beacons per se G01S 1/70-~~)}
- G05D 1/0236 {in combination with a laser (~~-lasers per se H01S-~~)}
- G05D 1/0238 {using obstacle or wall sensors (~~-G05D 1/0246 and G05D 1/0289 take precedence; lidar systems designed for anti-collision purposes G01S 17/93-~~)}
- G05D 1/024 {in combination with a laser (~~-lasers per se H01S-~~)}
- G05D 1/0246 {using a video camera in combination with image processing means (~~-image data processing in general G06T ; video signal coding and transmission H04N-~~)}
- G05D 1/0248 {in combination with a laser (~~-lasers per se H01S-~~)}
- G05D 1/0251 {extracting 3D information from a plurality of images taken from different locations, e.g. stereo vision (~~-stereoscopic image analysis H04N 13/00 ; depth recovery from images G06T 7/0075-~~)}
- G05D 1/0253 {extracting relative motion information from a plurality of images taken successively, e.g. visual odometry, optical flow (~~-determining position or orientation from images G06T 7/004-~~)}
- G05D 1/0255 . . . {using acoustic signals, e.g. ultra-sonic signals (~~-sonar systems designed for anti-collision purposes G01S 15/93-~~)}
- G05D 1/0257 . . . {using a radar (~~-radar systems designed for anti-collision purposes between land vehicles or between land vehicle and fixed obstacles G01S 13/931-~~)}
- U G05D 1/0268 . . . {using internal positioning means}
- G05D 1/027 {comprising inertial navigation means, e.g. azimuth detector (~~-inertial navigation G01C 21/16 ; inertial navigation combined with non-inertial navigation instruments G01C 21/165-~~)}
- G05D 1/0272 {comprising means for registering the travel distance, e.g. revolutions of wheels (~~-measuring distance traversed on the ground by vehicles, e.g. using odometers G01C 22/00-~~)}
- G05D 1/0274 {using mapping information stored in a memory device (~~-navigation using map-matching G01C 21/30-~~)}
- G05D 1/0276 . . . {using signals provided by a source external to the vehicle (~~-involving a plurality of vehicles G05D 1/0287 ; automatically controlling vehicle speed responsive to externally generated signals B60K 31/0058-~~)}
- G05D 1/0287 . . . {involving a plurality of land vehicles, e.g. fleet or convoy travelling (~~-traffic control systems for road vehicles G08G 1/00 , particularly anticollision systems G08G 1/16-~~)}
- NOTE**
In this group, the following terms or expressions are used with the meaning indicated:
- fleet means a plurality of vehicles controlled in a coordinated manner or under unified control;
- convoy (or platooning) means a plurality of vehicles following an identical trajectory, said vehicles being separated by a predetermined distance maintained by a control system
- G05D 1/0289 {with means for avoiding collisions between vehicles (~~-vehicle fittings for automatically controlling speed including means for detecting potential obstacles B60K 31/0008 ; avoiding obstacles by action on the steering system B62D ; radar, sonar, lidar systems designed for anti-collision purposes G01S 13/93 , G01S 15/93 , G01S 17/93-~~)}
- G05D 1/0291 {Fleet control (~~-monitoring fleets in traffic control systems for road vehicles G08G 1/127 , G08G 1/127-~~)}
- G05D 1/03 . . . using near-field transmission systems, e.g. inductive-loop type (~~-G05D 1/021 and subgroups take precedence-~~)}

- G05D 1/10 · Simultaneous control of position or course in three dimensions (-G05D 1/12 takes precedence-)
- U G05D 1/101 · · {specially adapted for aircraft}
- G05D 1/104 · · · {involving a plurality of aircrafts, e.g. formation flying (-traffic control systems for aircraft G08G 5/00-)}
- G05D 1/105 · · · {specially adapted for unpowered flight, e.g. glider, parachuting, forced landing (-parachutes per se B64D 17/00-)}
- G05D 3/00 Control of position or direction (-G05D 1/00 takes precedence-)**
- U G05D 3/12 · using feedback
- U G05D 3/14 · · using an analogue comparing device
- G05D 3/16 · · · whose output amplitude can only take a number of discrete values (-G05D 3/18 takes precedence-)
- U G05D 5/00 Control of dimensions of material**
- G05D 5/02 · of thickness, e.g. of rolled material (-of specific materials B21B , B29C , B32B , C03B , D21F-)
- G05D 7/00 Control of flow (-level control G05D 9/00 ; ratio control G05D 11/00 ; of media to the human body A61M 5/168 ; weighing apparatus G01G-)**
- G05D 7/03 · with auxiliary non-electric power{(-G05D 7/005 takes precedence-)}
- G05D 7/06 · characterised by the use of electric means{(-G05D 7/005 takes precedence-)}
- U G05D 7/0617 · · {specially adapted for fluid materials}
- U G05D 7/0629 · · · {characterised by the type of regulator means}
- G05D 7/0635 · · · · {by action on throttling means (-G05D 7/0688 , G05D 7/0694 take precedence-)}
- G05D 7/0641 · · · · · {using a plurality of throttling means (-G05D 7/067 takes precedence-)}
- G05D 7/0658 · · · · · {the plurality of throttling means being arranged for the control of a single flow from a plurality of converging flows (-G05D 7/0652 takes precedence; ratio control G05D 11/13-)}
- G05D 7/0664 · · · · · {the plurality of throttling means being arranged for the control of a plurality of diverging flows from a single flow (-G05D 7/0652 takes precedence; ratio control G05D 11/13-)}
- G05D 7/067 · · · · · {characterised by free surface flow (-open channel water distribution systems E02B 13/00-)}
- G05D 7/0676 · · · · · {by action on flow sources (-G05D 7/0688 , G05D 7/0694 take precedence-)}
- G05D 7/0688 · · · · · {by combined action on throttling means and flow sources (-G05D 7/0694 takes precedence-)}
- G05D 7/0694 · · · · · {by action on throttling means or flow sources of very small size, e.g. microfluidics (-microvalves F16K 99/0001 ; micro-structural devices per se B81B-)}
- G05D 9/00 Level control, e.g. controlling quantity of material stored in vessel (-controlling level of liquid-pool electrode in electric discharge tubes and lamps H01J 1/10 , H01J 13/14-)**
- G05D 11/00 Ratio control (-control of chemical or physico-chemical variables, e.g. pH-value G05D 21/00 ; humidity control G05D 22/00 ; control of viscosity G05D 24/00 ; proportioning the ingredients for mixing clay or cement with other substances B28C 7/00-)**
- U G05D 11/02 · Controlling ratio of two or more flows of fluid or fluent material
- U G05D 11/13 · · characterised by the use of electric means

- G05D 11/131 . . . {by measuring the values related to the quantity of the individual components (-G05D 11/139 takes precedence-)}
- G05D 11/132 {by controlling the flow of the individual components (-G05D 11/133 takes precedence-)}
- G05D 11/135 . . . {by sensing at least one property of the mixture (-G05D 11/139 takes precedence-)}
- G05D 13/00 Control of linear speed; Control of angular speed; Control of acceleration or deceleration, e.g. of a prime mover (-synchronising telegraph receiver and transmitter H04L 7/00-)**
- U G05D 13/08 . without auxiliary power
- G05D 13/30 . . Governors characterised by fluid features in which the speed of a shaft is converted into fluid pressure (-transducers converting variations of physical quantities into fluid pressure variations F15B 5/00-)
- G05D 13/34 . with auxiliary non-electric power (-fluid-pressure converters F15B 3/00-)
- G05D 13/62 . characterised by the use of electric means, e.g. use of a tachometric dynamo, use of a transducer converting an electric value into a displacement{ electric motor control H02P-}
- G05D 13/64 . Compensating the speed difference between engines meshing by a differential gearing or the speed difference between a controlling shaft and a controlled shaft{ G05D 13/62 takes precedence-}
- G05D 16/00 Control of fluid pressure (-control of pressure in electric discharge tubes or lamps H01J e.g. H01J 7/14 ; control of pressure in electric incandescent lamps H01K 1/52)**
- G05D 16/02 . Modifications to reduce the effects of instability, e.g. due to vibrations, friction, abnormal temperature, overloading, unbalance (-vibration dampers F16F 7/00-)
- U G05D 16/20 . characterised by the use of electric means
- G05D 16/2006 . . {with direct action of electric energy on controlling means (-G05D 16/2093 takes precedence-)}
- U G05D 16/2013 . . . {using throttling means}
- U G05D 16/2026 {with a plurality of throttling means}
- G05D 16/2046 {the plurality of throttling means being arranged for the control of a single pressure from a plurality of converging pressures (-G05D 16/204 takes precedence-)}
- G05D 16/206 {the plurality of throttling means being arranged for the control of a plurality of diverging pressures from a single pressure (-G05D 16/204 takes precedence-)}
- G05D 16/208 . . . {using a combination of controlling means as defined in G05D 16/2013 and G05D 16/2066 (-G05D 16/2073 takes precedence-)}
- G05D 16/2086 . . {without direct action of electric energy on the controlling means (-G05D 16/2093 takes precedence-)}
- G05D 19/00 Control of mechanical oscillations, e.g. of amplitude, of frequency, of phase (-generating or transmitting mechanical vibrations B06B ; control of electric motors H02P-)**
- G05D 22/00 Control of humidity (-of tobacco products A24B 9/00 ; air conditioning F24F-)**

G05D 23/00 Control of temperature (~~automatic switching arrangements for electric heating apparatus H05B 1/02 ; controlling induction heating H05B 6/06 ; regulating temperature of anode of X-ray tube H05G 1/36~~)

NOTE

Within groups [G05D 23/01](#) to [G05D 23/32](#) , an invention is classified in the last appropriate place in the absence of an indication of the contrary

- U G05D 23/01 · without auxiliary power
- G05D 23/015 · · {~~with mechanical sensing element not covered by groups [G05D 23/02](#) and [G05D 23/12](#)~~}
- G05D 23/02 · · with sensing element expanding and contracting in response to changes of temperature (~~G05D 23/13 takes precedence~~)
- G05D 23/08 · · · with bimetallic element (~~valve arrangements adapted for mixing [F16K 11/00](#)~~)
- G05D 23/10 · · · · with snap-action elements (~~for valves [F16K 31/56](#)~~)
- U G05D 23/13 · · by varying the mixing ratio of two fluids having different temperatures
- G05D 23/1306 · · · {for liquids (~~G05D 23/1393 takes precedence~~)}
- G05D 23/138 · · · {for gases (~~G05D 23/1393 takes precedence~~)}
- G05D 23/1386 · · · {for steam and liquid (~~G05D 23/1393 takes precedence~~)}
- G05D 23/19 · characterised by the use of electric means{ [G05D 23/1393](#) takes precedence}
- G05D 23/1927 · · {using a plurality of sensors (~~G05D 23/1902 , [G05D 23/1917](#) , and [G05D 23/1919](#) take precedence~~)}
- G05D 23/20 · · with sensing elements having variation of electric or magnetic properties with change of temperature (~~G05D 23/13 takes precedence~~)
- G05D 23/2024 · · · {using a plurality of sensors (~~G05D 23/2002 , [G05D 23/2015](#) , [G05D 23/2017](#) take precedence~~)}
- U G05D 23/22 · · · the sensing element being a thermocouple
- G05D 23/2224 · · · · {using a plurality of sensors (~~G05D 23/2202 , [G05D 23/2215](#) , [G05D 23/2217](#) take precedence~~)}
- U G05D 23/24 · · · the sensing element having a resistance varying with temperature, e.g. a thermistor
- G05D 23/2434 · · · · {using a plurality of sensors (~~G05D 23/2403 , [G05D 23/2422](#) and [G05D 23/2424](#) take precedence~~)}
- U G05D 23/26 · · · the sensing element having a permeability varying with temperature
- G05D 23/2623 · · · · {using a plurality of sensors (~~G05D 23/2602 , [G05D 23/2615](#) , [G05D 23/2616](#) take precedence~~)}
- U G05D 23/275 · · with sensing element expanding, contracting, or fusing in response to changes of temperature
- G05D 23/27526 · · · {using a plurality of sensors (~~G05D 23/27502 , [G05D 23/27516](#) , [G05D 23/27518](#) take precedence~~)}
- G05D 23/30 · · Automatic controllers with an auxiliary heating device affecting the sensing element, e.g. for anticipating change of temperature (~~automatic controllers in general and not restricted to control of temperature [G05B](#)~~)

G05D 25/00

Control of light, e.g. intensity, colour, phase (-mechanically operable parts of lighting devices for the control of light [F21V](#) ; optical devices or arrangements using movable or deformable elements for controlling light independent of the light source [G02B 26/00](#) ; devices or arrangements, the optical operation of which is modified by changing the optical properties of the medium of the devices or arrangements for the control of light, circuit arrangements specially adapted therefor, control of light by electromagnetic waves, electrons or other elementary particles [G02F 1/00](#) ; circuit arrangements for controlling light sources [H01S 3/10](#) , [H05B 33/08](#) , [H05B 35/00](#) to [H05B 43/00](#))

Project: N/A (G05G)

U G05G 1/00

Controlling members, e.g. knobs or handles; Assemblies or arrangements thereof; Indicating position of controlling members ({ means for preventing, limiting or returning the movements of parts of a control mechanism [G05G 5/00](#); providing feel, e.g. means to create a counterforce [G05G 5/03](#); specially adapted for programme control [G05G 21/00](#); vibration damping [G05G 25/02](#);} joysticks [G05G 9/04](#); steering wheels for motor vehicles [B62D](#))

NOTE

Within this main group the first place priority rule is applied, i.e. at each hierarchical level classification is made in the first appropriate place

U G05G 1/30

• Controlling members actuated by foot

G05G 1/305

• • {-Compound pedal co-operating with two or more controlled members}

U G05G 1/50

• • Manufacturing of pedals; Pedals characterised by the material used

G05G 1/503

• • • {-Controlling members for hand-actuation}

G05G 1/506

• • • {-Controlling members for foot-actuation}

G05G 1/54

• Controlling members specially adapted for actuation by auxiliary operating members or extensions; -Operating members or extensions therefor (*pedal extensions*)(~~pedal extensions~~)

Project: N/A (G06E)

U G06E 3/00

Devices not provided for in group [G06E 1/00](#), e.g. for processing analogue or hybrid data

WARNING

Not complete. For hybrid devices see also [G06J](#)

G06E 3/008

• {-Matrix or vector computation}

WARNING

Not complete. See also [G06E 3/001](#)

Project: N/A (G06F)

G06F

ELECTRICAL DIGITAL DATA PROCESSING (computers in which a part of the computation is effected hydraulically or pneumatically [G06D](#); optically [G06E](#); self-contained input or output peripheral equipment [G06K](#); impedance networks using digital techniques [H03H](#))

NOTE

In this subclass, the following terms or expressions are used with the meaning indicated:

- "handling" includes processing or transporting of data;
- "data processing equipment" means an association of an electric digital data processor classifiable under group

[G06F 7/00](#) , with one or more arrangements classifiable under groups [G06F 1/00](#) to [G06F 5/00](#) and [G06F 9/00](#) to [G06F 13/00](#) .

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G06F 3/18](#) covered by [G06F 3/00](#) , [G06K 11/00](#)

[G06F 7/04](#) covered by [G06F 7/02](#)

[G06F 9/302](#) - [G06F 9/318](#) covered by [G06F 9/30](#)

- [G06F 9/40](#) covered by [G06F 9/4425](#) and subgroups - [G06F 9/42](#) covered by

[G06F 9/4426](#) and subgroups - [G06F 9/45](#) covered by [G06F 8/41](#) and subgroups

G06F 1/00

Details of data-processing equipment not covered by groups [G06F 3/00](#) to [G06F 13/00](#) , {e.g. cooling, packaging or power supply specially adapted for computer application (-security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#)-)}

G06F 1/02

- Digital function generators{(-evaluating functions by calculating only [G06F 7/544](#) , [G06F 7/60](#) ; generating sawtooth or staircase waveforms [H03K 4/00](#)-)}

G06F 1/022

- {Waveform generators, i.e. devices for generating periodical functions of time, e.g. direct digital synthesizers} (-[G06F 1/025](#) , [G06F 1/03](#) take precedence-)

G06F 1/025

- for functions having two-valued amplitude, e.g. Walsh functions{(-generation of pulse trains in general [H03K 3/00](#)-)}

G06F 1/03

- working, at least partly, by table look-up{(-[G06F 1/025](#) takes precedence-)}

NOTE

In order to be classified in this group, the table must contain function values of the desired or an intermediate function, not merely coefficients.

G06F 1/0307

- {Logarithmic or exponential functions} (-[G06F 1/0314](#) , [G06F 1/035](#) take precedence-)

G06F 1/0321

- {Waveform generators, i.e. devices for generating periodical functions of time, e.g. direct digital synthesizers} (-[G06F 1/0314](#) , [G06F 1/035](#) take precedence-)

G06F 1/035

- Reduction of table size{(-[G06F 1/0314](#) takes precedence-)}

U

G06F 1/04

- Generating or distributing clock signals or signals derived directly therefrom

G06F 1/06

- Clock generators producing several clock signals{(-[G06F 1/08](#) to [G06F 1/14](#) take precedence-)}

G06F 1/10

- Distribution of clock signals {e.g. skew}

G06F 1/12

- Synchronisation of different clock signals {provided by a plurality of clock generators}

G06F 1/16

- Constructional details or arrangements (-instrument details [G12B](#)-)

G06F 1/1601

- {Constructional details related to the housing of computer displays, e.g. of CRT monitors, of flat displays (-constructional details related to flat displays integrated in a portable computer, e.g. laptop, handheld computer [G06F 1/1637](#) ; constructional details related to television receivers [H04N 5/64](#)-)}

G06F 1/1607

- {Arrangements to support accessories mechanically attached to the display housing} (-[G06F 1/1603](#) , [G06F 1/1605](#) take precedence-)

G06F 1/1613

- {for portable computers} (-cooling arrangements therefor [G06F 1/203](#) ; constructional details or arrangements for pocket calculators, electronic agendas or books [G06F 15/0216](#) ; constructional details of portable telephone sets: with several bodies [H04M 1/0202](#)-)}

- G06F 1/1615
 - . . . {with several enclosures having relative motions, each enclosure supporting at least one I/O or computing function (-constructional details of portable telephones comprising a plurality of mechanically joined movable body parts [H04M 1/0206](#)-)}
- U G06F 1/1616
 - {with folding flat displays, e.g. laptop computers or notebooks having a clamshell configuration, with body parts pivoting to an open position around an axis parallel to the plane they define in closed position}
- G06F 1/1618
 - {the display being foldable up to the back of the other housing with a single degree of freedom, e.g. by 360° rotation over the axis defined by the rear edge of the base enclosure}~~{1012}~~
- G06F 1/1626
 - . . . {with a single-body enclosure integrating a flat display, e.g. Personal Digital Assistants [PDAs]}
- G06F 1/1633
 - . . . {-Constructional details or arrangements of portable computers not specific to the type of enclosures covered by groups [G06F 1/1615](#) to [G06F 1/1626](#)-}
- G06F 1/1635
 - {Details related to the integration of battery packs and other power supplies such as fuel cells or integrated AC adapter (-details of mounting batteries in general [H01M 2/1022](#)-)}
- G06F 1/1637
 - {Details related to the display arrangement, including those related to the mounting of the display in the housing (-constructional details related to the housing of computer displays in general [G06F 1/1601](#)-)}
- G06F 1/1641
 - {the display being formed by a plurality of foldable display components (-[G06F 1/1647](#) takes precedence-)}
- G06F 1/1643
 - {the display being associated to a digitizer, e.g. laptops that can be used as penpads (-touchpads integrated in a laptop or similar computer [G06F 1/169](#) ; secondary touch screen [G06F 1/1692](#) ; details related to the relative motion of the display enclosure with respect to the body enclosure; e.g. to move between laptop and tablet PC configuration [G06F 1/1615](#)-)}
- G06F 1/1647
 - {including at least an additional display (-[G06F 1/1692](#) takes precedence-)}
- G06F 1/1656
 - {Details related to functional adaptations of the enclosure, e.g. to provide protection against EMI, shock, water, or to host detachable peripherals like a mouse or removable expansions units like PCMCIA cards, or to provide access to internal components for maintenance or to removable storage supports like CDs or DVDs, or to mechanically mount accessories (-mounting of accessories to a computer display [G06F 1/1607](#) ; display hoods [G06F 1/1603](#) ; cooling arrangements for portable computers [G06F 1/203](#)-)}
- U G06F 1/1662
 - {Details related to the integrated keyboard}
- G06F 1/1666
 - {Arrangements for reducing the size of the integrated keyboard for transport, e.g. foldable keyboards, keyboards with collapsible keys (-[G06F 1/1664](#) takes precedence-)}
- G06F 1/1667
 - {Arrangements for adjusting the tilt angle of the integrated keyboard independently from the main body (-adjusting the tilt angle integrally with the main body [G06F 1/166](#)-)}
- G06F 1/1671
 - {Special purpose buttons or auxiliary keyboards, e.g. retractable mini keypads, keypads or buttons that remain accessible at closed laptop (-[G06F 1/1666](#) takes precedence-)}
- G06F 1/1675
 - {-Miscellaneous details related to the relative movement between the different enclosures or enclosure parts which could be adopted independently from the movement typologies specified in [G06F 1/1615](#) and subgroups-}

- G06F 1/1679 {for locking or maintaining the movable parts of the enclosure in a fixed position, e.g. latching mechanism at the edge of the display in a laptop or for the screen protective cover of a PDA (~~G06F 1/1681~~ takes precedence)}
 - G06F 1/1681 {Details related solely to hinges (~~hinge details related to the transmission of signals or power are classified in G06F 1/1683~~)}
 - G06F 1/1684 {~~Constructional details or arrangements related to integrated I/O peripherals not covered by groups G06F 1/1635 to G06F 1/1675~~}
 - G06F 1/169 {the I/O peripheral being an integrated pointing device, e.g. trackball in the palm rest area, mini-joystick integrated between keyboard keys, touch pads or touch stripes (~~G06F 1/1643~~ takes precedence; constructional details of pointing devices G06F 3/033 ; joysticks in general G05G 9/047)}
 - G06F 1/1698 {the I/O peripheral being a sending/receiving arrangement to establish a cordless communication link, e.g. radio or infrared link, integrated cellular phone (~~details of antennas disposed inside a computer H01Q 1/2266~~)}
 - G06F 1/18 {Packaging or power distribution(~~for electrical apparatus in general H05K , H02J~~)}
 - G06F 1/181 {Enclosures (~~for electric apparatus in general H05K 5/00 ; for portable computers G06F 1/1613~~)}
 - G06F 1/182 {with special features, e.g. for use in industrial environments; grounding or shielding against radio frequency interference [RFI] or electromagnetic interference (EMI)(~~in general H05K 9/00~~)}
 - G06F 1/183 {Internal mounting support structures, e.g. for printed circuit boards (~~in general H05K 7/1422~~), internal connecting means (~~for buses G06F 13/409~~)}
 - G06F 1/184 {Mounting of motherboards (~~in general H05K 7/1429~~)}
 - G06F 1/185 {Mounting of expansion boards (~~in general H05K 7/1417~~)}
 - G06F 1/186 {Securing of expansion boards in correspondence to slots provided at the computer enclosure (~~in general H05K 7/1402~~)}
 - G06F 1/187 {Mounting of fixed and removable disk drives (~~constructional details of disk drives housings in general G11B 33/00~~)}
 - G06F 1/188 {Mounting of power supply units (~~power supply for computers, per se G06F 1/26~~)}
 - G06F 1/24 {Resetting means (~~micro-programme loading G06F 9/24 ; restoration from data faults G06F 11/00~~)}
 - G06F 1/26 {Power supply means, e.g. regulation thereof (for memories G11C;{regulation in general G05F})}
 - G06F 1/263 {Arrangements for using multiple switchable power supplies, e.g. battery and AC(~~G06F 1/30~~ takes precedence)}
 - G06F 1/30 {Means for acting in the event of power-supply failure or interruption, e.g. power-supply fluctuations (~~for resetting only G06F 1/24 ; involving the processing of data-words G06F 11/00~~)}
- G06F 3/00** **Input arrangements for transferring data to be processed into a form capable of being handled by the computer; Output arrangements for transferring data from processing unit to output unit, e.g. interface arrangements (~~typewriters B41J~~; conversion of physical variables F15B 5/00 , G01; image acquisition G06T 1/00 , G06F 9/00 ; coding, decoding or code conversion in general H03M ; transmission of digital information H04L; {in regulating or control systems G05B})**

- G06F 3/002
 - {-Specific input/output arrangements not covered by [G06F 3/02](#) to [G06F 3/16](#), e.g. facsimile, microfilm }(-facsimile per se [H04N 1/00](#); viewers photographic printing [G03B](#); electrography, magnetography [G03G](#); other optical apparatus [G02B 27/00](#)-)}
- G06F 3/007
 - {Digital input from or digital output to memories of the shift register type, e.g. magnetic bubble memories, CCD memories (-magnetic bubble memories per se [G11C 19/08](#), CCD memories per se [G11C 19/28](#)-)}
- G06F 3/01
 - Input arrangements or combined input and output arrangements for interaction between user and computer (-[G06F 3/16](#) takes precedence-)
- G06F 3/011
 - • {Arrangements for interaction with the human body, e.g. for user immersion in virtual reality (-for handicapped people in general [A61F 4/00](#); robot control [B25J](#); tactile signalling [G08B](#); blind teaching [G09B 21/00](#); for electrophonic musical instruments [G10H 1/344](#); electronic switches characterised by the way in which the control signals are generated [H03K 17/94](#)-)}
- G06F 3/013
 - • • {Eye tracking input arrangements (-[G06F 3/015](#) takes precedence-)}
- G06F 3/017
 - • {Gesture based interaction, e.g. based on a set of recognized hand gestures (-interaction based on gestures traced on a digitiser [G06F 3/04883](#)-)}
- G06F 3/02
 - • Input arrangements using manually operated switches, e.g. using keyboards or dials (-keyboard switches per se [H01H 13/70](#); electronic switches characterised by the way in which the control signals are generated [H03K 17/94](#)-)
- U G06F 3/0202
 - • • {Constructional details or processes of manufacture of the input device}
- G06F 3/0208
 - • • • {Arrangements for adjusting the tilt angle of a keyboard, e.g. pivoting legs (-for keyboards integrated in a laptop computer [G06F 1/1667](#)-)}
- U G06F 3/021
 - • • • {Arrangements integrating additional peripherals in a keyboard, e.g. card or barcode reader, optical scanner}
- G06F 3/0213
 - • • • • {Arrangements providing an integrated pointing device in a keyboard, e.g. trackball, mini-joystick (-for pointing devices integrated in a laptop computer [G06F 1/169](#); joysticks [G05G 9/047](#); constructional details of pointing devices [G06F 3/033](#)-)}
- G06F 3/0216
 - • • • {Arrangements for ergonomically adjusting the disposition of keys of a keyboard (-for keyboards integrated in a laptop computer [G06F 1/1664](#)-)}
- G06F 3/0221
 - • • • {Arrangements for reducing keyboard size for transport or storage, e.g. foldable keyboards, keyboards with collapsible keys (-[G06F 3/0216](#) takes precedence; for keyboards integrated in a laptop computer [G06F 1/1666](#)-)}
- G06F 3/0227
 - • • {Cooperation and interconnection of the input arrangement with other functional units of a computer (-[G06F 3/023](#) to [G06F 3/037](#) take precedence-)}
- G06F 3/023
 - • • Arrangements for converting discrete items of information into a coded form, e.g. arrangements for interpreting keyboard generated codes as alphanumeric codes, operand codes or instruction codes (-coding in connection with keyboards or like devices in general [H03M 11/00](#)-)]
- U G06F 3/0233
 - • • • {Character input methods}
- G06F 3/0235
 - • • • • {using chord techniques (-[G06F 3/0234](#) takes precedence-)}
- G06F 3/0238
 - • • • {Programmable keyboards (-key guide holders [G06F 3/0224](#)-)}
- G06F 3/027
 - • • • • for insertion of decimal point{(-display of decimal point [G06F 3/1407](#); complete desk- top or hand- held calculators [G06F 15/02](#)-)}
- U G06F 3/03
 - • Arrangements for converting the position or the displacement of a member into a coded form

- G06F 3/0304
- • • {Detection arrangements using opto-electronic means (-constructional details of pointing devices not related to the detection arrangement using opto-electronic means [G06F 3/033](#) and subgroups; optical digitisers [G06F 3/042](#)-)}
- WARNING
Groups [G06F 3/0304](#) and [G06F 3/0317](#) are not complete, pending a reorganisation. See also [G06F 3/042](#) and subgroups
- G06F 3/0312
- • • • {for tracking the rotation of a spherical or circular member, e.g. optical rotary encoders used in mice or trackballs using a tracking ball or in mouse scroll wheels (-tracking relative movement in co-operation with a regularly or irregularly patterned surface, e.g. as in optical [G06F 3/0317](#) ; constructional details of scroll or thumb-wheels [G06F3/03362](#) ; optical rotary encoders [G01D 5/3473](#) ; thumb wheel switches [H01H 19/001](#)-)}
- U G06F 3/0317
- • • • {in co-operation with a patterned surface, e.g. absolute position or relative movement detection for an optical mouse or pen positioned with respect to a coded surface}
- G06F 3/0321
- • • • • {by optically sensing the absolute position with respect to a regularly patterned surface forming a passive digitiser, e.g. pen optically detecting position indicative tags printed on a paper sheet (-constructional details of pen-shaped pointing devices [G06F 3/03545](#) , [G06F 3/03542](#) , [G06F 3/037](#)-)}
- G06F 3/033
- • • Pointing devices displaced or positioned by the user, e.g. mice, trackballs, pens or joysticks; Accessories therefor{(-constructional details of joysticks [G05G 9/047](#) ; arrangement for interfacing a joystick to a computer [G06F 3/038](#)-)}
- U G06F 3/0354
- • • • with detection of 2D relative movements between the device, or an operating part thereof, and a plane or surface, e.g. 2D mice, trackballs, pens or pucks
- G06F 3/03543
- • • • • {Mice or pucks (-[G06F 3/03541](#) takes precedence-)}
- G06F 3/03549
- • • • • {Trackballs (-[G06F 3/03541](#) takes precedence-)}
- G06F 3/039
- • • • Accessories therefor, e.g. mouse pads (-furniture aspects [A47B 21/00](#)-)
- U G06F 3/041
- • • Digitisers, e.g. for touch screens or touch pads, characterized by the transducing means
- G06F 3/042
- • • • by opto-electronic means{(-pens detecting optically their absolute position with respect to a coded surface [G06F 3/0317](#)-)}
- G06F 3/0425
- • • • • {using a single imaging device like a video camera for tracking the absolute position of a single or a plurality of objects with respect to an imaged reference surface, e.g. video camera imaging a display or a projection screen, a table or a wall surface, on which a computer generated image is displayed or projected (-tracking a projected light spot to determine a position on a display surface [G06F 3/0386](#)-)}
- G06F 3/0426
- • • • • • {tracking fingers with respect to a virtual keyboard projected or printed on the surface (-virtual keyboards on touch screens [G06F 3/04886](#)-)}
- G06F 3/0428
- • • • • • {by sensing at the edges of the touch surface the interruption of optical paths, e.g. an illumination plane, parallel to the touch surface which may be virtual (-sensing beam interruptions in a planar beam grid of an optical touch-screen [G06F 3/0421](#)-)}
- U G06F 3/048
- • Interaction techniques based on graphical user interfaces [GUI]

NOTE

This group covers subject matter where the focus is placed on the way the user can interact with the displayed data. The mere presence of a standard GUI in the context of the disclosure of a specific software application or a specific device capable of processing data related to its specific function, should be in general classified in the appropriate subclasses related to those software applications or specific devices.

In this group, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its groups, which is considered to represent information of interest for search, should be classified in each of those groups.

- U G06F 3/0481
 - • • based on specific properties of the displayed interaction object or a metaphor-based environment, e.g. interaction with desktop elements like windows or icons, or assisted by a cursor's changing behaviour or appearance
- G06F 3/04812
 - • • • {interaction techniques based on cursor appearance or behaviour being affected by the presence of displayed objects, e.g. visual feedback during interaction with elements of a graphical user interface through change in cursor appearance, constraint movement or attraction/repulsion with respect to a displayed object (-interaction techniques based on cursor behaviour involving tactile or force feedback [G06F 3/016-](#))}
- G06F 3/04817
 - • • • {using icons (-graphical programming languages using iconic symbols [G06F 8/34-](#))}
- U G06F 3/0484
 - • • for the control of specific functions or operations, e.g. selecting or manipulating an object or an image, setting a parameter value or selecting a range
- G06F 3/04842
 - • • • {Selection of a displayed object (-[G06F 3/0482](#) takes precedence-)}
- U G06F 3/0487
 - • • using specific features provided by the input device, e.g. functions controlled by the rotation of a mouse with dual sensing arrangements, or of the nature of the input device, e.g. tap gestures based on pressure sensed by a digitiser
- U G06F 3/0488
 - • • • using a touch-screen or digitiser, e.g. input of commands through traced gestures
- G06F 3/04886
 - • • • • {by partitioning the screen or tablet into independently controllable areas, e.g. virtual keyboards, menus (-[G06F 3/04883](#) takes precedence-)}
- U G06F 3/0489
 - • • • using dedicated keyboard keys or combinations thereof
- G06F 3/04892
 - • • • • {Arrangements for controlling cursor position based on codes indicative of cursor displacements from one discrete location to another, e.g. using cursor control keys associated to different directions or using the tab key (-arrangements for controlling cursor position based on coordinate signals [G06F 3/038-](#))}
- G06F 3/04895
 - • • • • {Guidance during keyboard input operation, e.g. prompting (-help systems [G06F 9/4446-](#))}
- G06F 3/05
 - Digital input using the sampling of an analogue quantity at regular intervals of time, {input from a/d converter or output to d/a converter} (-analogue- digital conversion per se [H03M 1/00](#) ; sampling per se [H03K 17/00](#) ; sample- and- hold arrangements per se [G11C 27/02-](#))
- G06F 3/06
 - Digital input from or digital output to record carriers, {e.g. RAID, emulated record carriers, networked record carriers} (-recording or reproducing devices per se [G11B](#); error detection, error correction, monitoring per se regarding storage systems [G06F 11/00](#); accessing or addressing within memory systems or architectures [G06F 12/00](#); information retrieval [G06F 17/30-](#))}
- U G06F 3/0601
 - • {Dedicated interfaces to storage systems}

- U G06F 3/0668 • . . {adopting a particular infrastructure}
- G06F 3/067 • . . . {Distributed or networked storage systems, e.g. storage area networks [SAN]}, network attached storage [NAS]}
- U G06F 3/0671 • . . . {In-line storage system}
- U G06F 3/0673 • {Single storage device}
- G06F 3/0679 • {Non-volatile semiconductor memory device, e.g. flash memory, one time programmable memory [OTP]}
- G06F 3/08 • . from or to individual record carriers, e.g. punched card, {memory card, integrated circuit [IC] card, smart card (-record carriers for use with machines and with at least a part designed to carry digital markings [G06K 19/00](#) ; coded identity card or credit card with a coded signal [G07F 7/10](#)-)}
- G06F 3/12 • Digital output to print unit, {e.g. line printer, chain printer} (-digital output to typewriter [G06F 3/09](#) ; printing of alphanumeric characters [G06K 15/02](#)-)
- U G06F 3/1201 • . {Dedicated interfaces to print systems}
- U G06F 3/1223 • . . {specifically adapted to use a particular technique}
- U G06F 3/1229 • {Printer resources management or printer maintenance, e.g. device status, power levels}
- G06F 3/1234 • {Errors handling and recovery, e.g. reprinting (-[G06F 3/1261](#) takes precedence-)}
- U G06F 3/1237 • {Print job management}
- U G06F 3/1268 • {Job submission, e.g. submitting print job order or request not the print data itself}
- G06F 3/1271 • {Job submission at the printing node, e.g. creating a job from a data stored locally or remotely (-[G06F 3/1238](#) takes precedence-)}
- G06F 3/14 • Digital output to display device; {Cooperation and interconnection of the display device with other functional units} (-control of display in general [G09G](#); arrangements for producing a permanent visual presentation of the output data [G06K 15/00](#)-)
- G06F 3/16 • Sound input; Sound output (conversion of speech into digital information or vice versa [G10L](#))
- G06F 5/00 Methods or arrangements for data conversion without changing the order or content of the data handled (-by coding or decoding [H03M](#)-)**
- G06F 5/01 • for shifting, e.g. justifying, scaling, normalising((-digital stores in which the information is moved stepwise, e.g. shift-registers [G11C 19/00](#) ; digital stores in which the information circulates [G11C 21/00](#)-)}
- G06F 5/015 • . {having at least two separately controlled shifting levels, e.g. using shifting matrices (-[G06F 5/012](#) takes precedence-)}
- G06F 5/06 • for changing the speed of data flow, i.e. speed regularising {or timing, e.g. delay lines, FIFO buffers; over- or underrun control therefor; (-[G06F 7/78](#) takes precedence-)}
- G06F 5/08 • . having a sequence of storage locations, the intermediate ones not being accessible for either enqueue or dequeue operations, e.g. using a shift register((-[G06F 5/065](#) takes precedence; shift registers per se [G11C 19/00](#)-)}
- G06F 5/10 • . having a sequence of storage locations each being individually accessible for both enqueue and dequeue operations, e.g. using random access memory((-[G06F 5/065](#) takes precedence-)}
- G06F 7/00 Methods or arrangements for processing data by operating upon the order or content of the data handled (-logic circuits [H03K 19/00](#)-)**
- G06F 7/02 • Comparing digital values (-[G06F 7/06](#) , { [G06F 7/22](#) , } [G06F 7/38](#) take precedence; information retrieval [G06F 17/30](#) ; comparing pulses [H03K 5/22](#)-)

- G06F 7/06
- Arrangements for sorting, selecting, merging or comparing data on individual record carriers (-sorting of postal letters [B07C](#) ; conveying record carriers from one station to another [G06K 13/02-](#))
- G06F 7/08
- • Sorting, i.e. grouping record carriers in numerical or other ordered sequence according to the classification of at least some of the information they carry (-by merging two or more sets of carriers in ordered sequence [G06F 7/16-](#))
- U G06F 7/22
- Arrangements for sorting or merging computer data on continuous record carriers, e.g. tape, drum, disc
- G06F 7/24
- • Sorting, i.e. extracting data from one or more carriers, rearranging the data in numerical or other ordered sequence, and rerecording the sorted data on the original carrier or on a different carrier or set of carriers {sorting methods in general}{(-[G06F 7/36](#) takes precedence-)}
- G06F 7/26
- • • the sorted data being recorded on the original record carrier within the same space in which the data had been recorded prior to their sorting, without using intermediate storage{ contains no documents, see [G06F 7/24-](#)}
- G06F 7/32
- • Merging, i.e. combining data contained in ordered sequence on at least two record carriers to produce a single carrier or set of carriers having all the original data in the ordered sequence {merging methods in general} (-[G06F 7/36](#) takes precedence-)
- U G06F 7/38
- Methods or arrangements for performing computations using exclusively denominational number representation, e.g. using binary, ternary, decimal representation
- G06F 7/383
- • {using magnetic or similar elements}{(-parametric and other resonant circuits [G06F 7/388-](#))}
- G06F 7/386
- • • {decimal, radix 20 or 12 (-[G06F 7/385](#) takes precedence-)}
- G06F 7/40
- • using contact- making devices, e.g. electro- magnetic relay (-[G06F 7/46](#) takes precedence-)
- G06F 7/42
- • • Adding; Subtracting{ [G06F 7/405](#) takes precedence-}
- G06F 7/44
- • • Multiplying; Dividing{ [G06F 7/405](#) takes precedence-}
- G06F 7/446
- • • • {by partial product forming (*with electric multiplication table*)}{~~with electric multiplication table~~}
- U G06F 7/46
- • using electromechanical counter-type accumulators
- U G06F 7/462
- • • {Multiplying; dividing}
- G06F 7/465
- • • • {by partial product forming (*with electric multiplication table*)}{~~with electric multiplication table~~}
- U G06F 7/48
- • using non-contact-making devices, e.g. tube, solid state device; using unspecified devices
- G06F 7/483
- • • Computations with numbers represented by a non-linear combination of denominational numbers, e.g. rational numbers, logarithmic number system, floating-point numbers (-conversion to or from floating-point codes [H03M 7/24-](#)){(-[G06F 7/4806](#) , [G06F 7/4824](#) , [G06F 7/49](#) , [G06F 7/491](#) , [G06F 7/544](#) take precedence-)}
- G06F 7/485
- • • • Adding; Subtracting{(-[G06F 7/4833](#) , [G06F 7/4836](#) take precedence-)}
- G06F 7/487
- • • • Multiplying; Dividing{(-[G06F 7/4833](#) , [G06F 7/4836](#) take precedence-)}

- G06F 7/49
- . . . Computations with a radix, other than binary, 8, 16 or decimal, e.g. ternary, negative or imaginary radices, mixed radix {non-linear PCM (-G06F 7/4824 takes precedence)}
- WARNINGS
- Not complete. For radix 12 or 20 see provisionally also [G06F 7/491](#) and subgroups
- G06F 7/491
- . . . Computations with decimal numbers {radix 12 or 20.(-G06F 7/4824 takes precedence)}
- G06F 7/4912
- {Adding; Subtracting (-G06F 7/492 , G06F 7/498 take precedence)}
- G06F 7/4915
- {Multiplying; Dividing (-G06F 7/492 , G06F 7/498 take precedence)}
- G06F 7/492
- using a binary weighted representation within each denomination {[G06F 7/498](#) takes precedence}
- G06F 7/4925
- {Adding; Subtracting (-G06F 7/493 takes precedence)}
- U G06F 7/499
- . . . Denomination or exception handling, e.g. rounding, overflow
- NOTE
- { documents published before 12-2005 are not systematically classified in the subgroups of [G06F 7/499](#) : See the relevant subgroup of [G06F 7/48](#) and the ICOs [G06F 7/499](#) + }
- U G06F 7/49942
- {Significance control}
- U G06F 7/49947
- {Rounding}
- G06F 7/49963
- {Rounding to nearest (-G06F 7/49957 takes precedence)}
- G06F 7/49968
- {Rounding towards positive infinity (-G06F 7/49957 takes precedence)}
- G06F 7/49973
- {Rounding towards negative infinity, e.g. truncation of two's complement numbers (-G06F 7/49957 takes precedence)}
- G06F 7/49978
- {Rounding towards zero (-G06F 7/49957 takes precedence)}
- G06F 7/50
- . . . Adding; Subtracting (-G06F 7/483 to [G06F 7/491](#) , [G06F 7/544](#) take precedence)
- G06F 7/501
- Half or full adders, i.e. basic adder cells for one denomination (~~EXCLUSIVE-OR circuits H03K 19/21~~ ~~EXCLUSIVE-OR circuits H03K 19/21~~)
- G06F 7/502
- Half adders; Full adders consisting of two cascaded half adders (-G06F 7/5013 takes precedence)
- G06F 7/505
- {in bit-parallel fashion, i.e. having a different digit-handling circuit for each denomination (-half or full adders [G06F 7/501](#)-)}
- G06F 7/5057
- {using table look-up}; using programmable logic arrays (-G06F 7/509 takes precedence)
- G06F 7/52
- . . . Multiplying; Dividing (-G06F 7/483 to [G06F 7/491](#) , [G06F 7/544](#) take precedence)
- U G06F 7/523
- Multiplying only
- G06F 7/525
- in serial-serial fashion, i.e. both operands being entered serially (-G06F 7/533 takes precedence)
- G06F 7/527
- in serial-parallel fashion, i.e. one operand being entered serially and the other in parallel (-G06F 7/533 takes precedence)
- G06F 7/53
- in parallel-parallel fashion, i.e. both operands being entered in parallel (-G06F 7/533 takes precedence)
- G06F 7/5306
- {with row wise addition of partial products (-G06F 7/5324 takes precedence)}

- G06F 7/5318 {with column wise addition of partial products, e.g. using Wallace tree, Dadda counters (~~G06F 7/5324~~ takes precedence)}
- U G06F 7/535 Dividing only
- G06F 7/537 Reduction of the number of iteration steps or stages, e.g. using the Sweeny-Robertson-Tocher (SRT) algorithm{ not used, see [G06F 7/535](#) or [G06F 7/5375](#)}
- G06F 7/5375 {Non restoring calculation, where each digit is either negative, zero or positive, e.g. SRT;}
- WARNING
Not complete. Provisionally see [G06F 7/535](#) + [G06F 7/5375](#)
- G06F 7/544 . . . for evaluating functions by calculation ({ [G06F 7/4824](#) take precedence } ; with a look-up table [G06F 1/02](#) ; complex mathematical operations [G06F 17/10](#)-)
- G06F 7/5443 {Sum of products (~~for applications thereof, see the relevant places, e.g. [G06F 17/10](#) , [H03H 17/00](#)~~)}
- G06F 7/57 . . . Arithmetic logic units (ALU), i.e. arrangements or devices for performing two or more of the operations covered by groups [G06F 7/483](#) - [G06F 7/556](#) or for performing logical operations (~~instruction execution [G06F 9/30](#)~~){ [G06F 7/49](#) , [G06F 7/491](#) take precedence (~~logic gate circuits [H03K 19/00](#)~~)}
- G06F 7/58 . Random or pseudo-random number generators({~~random pulse generators [H03K 3/84](#) ; secret telegraphic communication [H04L 9/00](#) ; lottery apparatus [G07C 15/00](#)~~)}
- G06F 7/60 . Methods or arrangements for performing computations using a digital non-denominational number representation, i.e. number representation without radix; Computing devices using combinations of denominational and non-denominational quantity representations, {e.g. using difunction pulse trains, STEELE computers, phase computers (~~conversion of digital data to or from non-denominational form [H03M 5/00](#) , [H03M 7/00](#)~~)}
- WARNING
Not complete: for computing devices using combinations of denominational and non-denominational quantity representations see also [G06F 7/62](#)
- G06F 7/605 . {Additive or subtractive mixing of two pulse rates into one} (~~beat-frequency oscillators [H03B 21/00](#) ; input circuits of electric counters, e.g. up-down counters [H03K 21/00](#)~~)}
- G06F 7/607 . {number-of-ones counters, i.e. devices for counting the number of input lines set to ONE among a plurality of input lines, also called bit counters or parallel counters} (~~for applications thereof, see the relevant places, e.g. [G06F 7/49](#) , [G06F 7/5013](#) , [G06F 7/509](#) , [H03M 1/00](#) , [H03M 7/20](#)~~)}
- G06F 7/62 . . Performing operations exclusively by counting total number of pulses; {Multiplication, division or derived operations using combined denominational and incremental processing by counters, i.e. without column shift (~~G06F 7/68~~ takes precedence)}
- G06F 7/64 . . Digital differential analysers, i.e. computing devices for differentiation, integration or solving differential or integral equations, using pulses representing increments; Other incremental computing devices for solving difference equations (~~G06F 7/70~~ takes precedence; differential analysers using hybrid computing techniques [G06J 1/02](#)){ DDA application in numerical control [G05B 19/18](#)}
- G06F 7/68 . . using pulse rate multipliers or dividers {pulse rate multipliers or dividers per se} (~~G06F 7/70~~ takes precedence){ (~~frequency division in electronic watches [G04G 3/02](#) ; frequency multiplication or division in oscillators [H03B 19/00](#) ; frequency dividing counters per se [H03K 23/00](#) to [H03K 29/00](#)~~)}

- G06F 7/70
 - • using stochastic pulse trains, i.e. randomly occurring pulses the average pulse rates of which represent numbers{(conversion of analogue signals into stochastic pulse trains and vice-versa [H03M 1/04](#))}
- U G06F 7/72
 - • using residue arithmetic
- G06F 7/721
 - • • {Modular inversion, reciprocal or quotient calculation{(G06F 7/724 , [G06F 7/727](#) , [G06F 7/728](#) take precedence)}
- G06F 7/722
 - • • {Modular multiplication{(G06F 7/724 , [G06F 7/727](#) , [G06F 7/728](#) take precedence)}
- G06F 7/723
 - • • {Modular exponentiation{(G06F 7/724-G06F 7/724),(G06F 7/727 [G06F 7/727](#)),(G06F 7/728 take precedence)}
- G06F 7/724
 - • • {Finite field arithmetic{(for error detection or correction in general [H03M 13/00](#) , in computers [G06F 11/10](#))}
- G06F 7/727
 - • • {Modulo N arithmetic, with N being either $(2^{**n})-1, 2^{**n}$ or $(2^{**n})+1$, e.g. mod 3, mod 4 or mod 5 (G06F 7/728 takes precedence)}
- G06F 7/74
 - Selecting or encoding within a word the position of one or more bits having a specified value, e.g. most or least significant one or zero detection, priority encoders{(with shifting [G06F 5/01](#))}
- G06F 7/76
 - Arrangements for rearranging, permuting or selecting data according to predetermined rules, independently of the content of the data (according to the content of the data [G06F 7/06](#) , [G06F 7/22](#) ; parallel / series conversion or vice versa [H03M 9/00](#))
- G06F 7/762
 - • {having at least two separately controlled rearrangement levels, e.g. multistage interconnection networks (G06F 7/764 to [G06F 7/768](#) take precedence)}
- G06F 8/00**
 - {Arrangements for software engineering (execution of stored program [G06F 9/06](#) ; testing or debugging [G06F 11/36](#) ; hardware/software co-design [G06F 17/50](#) ; software project management [G06Q10/00C](#))}**
- U G06F 8/30
 - {Creation or generation of source code}
- U G06F 8/31
 - • {Programming languages or programming paradigms}
- G06F 8/314
 - • • {Parallel programming languages{(G06F 8/313 takes precedence)}
- G06F 8/33
 - • {Intelligent editors{(text processing [G06F 17/21](#))}
- G06F 8/34
 - • {Graphical or visual programming (use of icons for interaction with graphical user interfaces [G06F 3/048](#))}
- G06F 8/38
 - • {to implement user interfaces{(interaction techniques for graphical user interfaces [G06F 3/048](#))}
- U G06F 8/40
 - {Transformations of program code}
- U G06F 8/41
 - • {Compilation}
- U G06F 8/44
 - • • {Encoding}
- U G06F 8/443
 - • • • {Optimisation}
- G06F 8/4434
 - • • • • {Reducing the memory space required by the program code (digital compression [H03M 7/30](#))}
- U G06F 8/4441
 - • • • • {Reducing the execution time required by the program code}
- G06F 8/4442
 - • • • • • {Reducing the number of cache misses; Data prefetching (cache prefetching [G06F 12/0862](#))}
- G06F 8/445
 - • • • • {Exploiting fine grain parallelism, i.e. parallelism at instruction level (run-time instruction scheduling [G06F 9/3836](#))}
- U G06F 8/45
 - • • {Exploiting coarse grain parallelism in compilation, i.e. parallelism between groups of instructions}
- G06F 8/451
 - • • • {Code distribution (considering CPU load at run-time [G06F 9/505](#) ; load rebalancing [G06F 9/5083](#))}

- U G06F 8/453 {Data distribution}
- G06F 8/454 {Consistency (cache consistency protocols in hierarchically structured memory systems [G06F 12/0815](#)-)}
- G06F 8/457 {Communication (intertask communication [G06F 9/54](#)-)}
- G06F 8/458 {Synchronisation, e.g. post-wait, barriers, locks (synchronisation among tasks [G06F 9/52](#)-)}
- G06F 8/48 . . . {Incremental compilation (software reuse [G06F 8/36](#)-)}
- G06F 8/54 . . {Link editing before load time (link editing at or after load time [G06F 9/44521](#)-)}
- U G06F 8/60 . {Software deployment}
- U G06F 8/65 . . {Update}
- G06F 8/66 . . . {of program stored in read-only memory [ROM]}
- U G06F 8/70 . {Software maintenance or management}
- G06F 8/78 . . {Methods to solve the "Year 2000" [Y2K] problem]}
- G06F 9/00 Arrangements for programme control, e.g. control unit (programme control for peripheral devices [G06F 13/10](#) ; in regulating or control systems [G05B](#)-)**
- G06F 9/04 . using record carriers containing only programme instructions ([G06F 9/06](#) takes precedence-)
- U G06F 9/06 . using stored programme, i.e. using internal store of processing equipment to receive and retain programme
- U G06F 9/22 . . Micro-control or micro-programme arrangements
- G06F 9/26 . . . Address formation of the next micro-instruction ([G06F 9/28](#) takes precedence-){Microprogram storage or retrieval arrangements}
- G06F 9/30 . . Arrangements for executing machine-instructions, e.g. instruction decode (for executing micro-instructions [G06F 9/22](#) ; for executing subprogrammes [G06F9/40](#)-)
- G06F 9/32 . . . Address formation of the next instruction, e.g. incrementing the instruction counter, jump ([G06F 9/38](#) takes precedence; sub-programme jump [G06F9/42](#)-)
- G06F 9/34 . . . Addressing or accessing the instruction operand or the result; {Formation of operand address; Addressing modes (address translation [G06F 12/00](#)-)}
- G06F 9/345 of multiple operands or results{(addressing multiple banks [G06F 12/06](#)-)}
- G06F 9/355 Indexed addressing {i.e. using more than one address operand}
- U G06F 9/38 . . . Concurrent instruction execution, e.g. pipeline, look ahead
- U G06F 9/3824 {Operand accessing}
- G06F 9/383 {Operand prefetching (cache prefetching [G06F 12/0862](#)-)}
- G06F 9/3834 {Maintaining memory consistency (cache consistency protocols [G06F 12/0815](#)-)}
- U G06F 9/3836 {Instruction issuing, e.g. dynamic instruction scheduling, out of order instruction execution}
- G06F 9/3851 {from multiple instruction streams, e.g. multistreaming (initiation or dispatching of multiple tasks or threads [G06F 9/48](#)-)}
- G06F 9/3861 {Recovery, e.g. branch miss-prediction, exception handling (error detection or correction [G06F 11/00](#)-)}
- G06F 9/3877 {using a slave processor, e.g. coprocessor (peripheral processor [G06F 13/12](#) ; vector processor [G06F 15/8053](#)-)}
- U G06F 9/44 . . Arrangements for executing specific programmes

- G06F 9/4401
 - . . . {Bootstrapping (-secure booting [G06F 21/575](#) ; fault tolerant booting [G06F 11/1417](#) ; resetting means [G06F 1/24](#) ; power-on self test [G06F 11/2284](#)-)}
- U G06F 9/4443
 - . . . {Execution mechanisms for user interfaces}
- G06F 9/4445
 - {Remote windowing , e.g. X-Window System, desktop virtualisation (-protocols for telewriting [H04L 67/38](#)-)}
- G06F 9/445
 - . . . Programme loading or initiating{(-bootstrapping [G06F 9/4401](#) ; movement of software or configuration parameters for network-specific applications [H04L 67/34](#)-)}
- U G06F 9/44505
 - {Configuring for programme initiating, e.g. using registry, configuration files}
- G06F 9/4451
 - {User profiles, roaming (-user profiles for network-specific applications [H04L 67/306](#)-)}
- G06F 9/44589
 - {Programme code verification, e.g. Java bytecode verification, proof-carrying code (-high-level semantic checks [G06F 8/43](#) ; testing and debugging software [G06F 11/36](#)-)}
- G06F 9/455
 - . . . Emulation; Software simulation{, i.e. virtualisation or emulation of application or operating system execution engines (-instruction translation at instruction execution time [G06F 9/3017](#) ; multiprogramming in general [G06F 9/46](#) ; logical partitioning of resources or management or configuration of virtualized resources [G06F 9/5077](#) ; in-circuit emulation [G06F 11/3652](#) ; environments for testing or debugging software [G06F 11/3664](#)-)}
- U G06F 9/45533
 - {Hypervisors; Virtual machine monitors}
- G06F 9/45537
 - {Provision of facilities of other operating environments, e.g. WINE (-I/O emulation [G06F 13/105](#)-)}
- U G06F 9/45558
 - {Hypervisor-specific management and integration aspects}
- G06F 2009/4557
 - {Distribution of virtual machine instances; Migration and load balancing aspects (-load distribution or balancing [G06F 9/505](#) , [G06F 9/5083](#) ; Task migration [G06F 9/4856](#)-)}
- G06F 2009/45575
 - {Starting, stopping, suspending, resuming virtual machine instances (-programme initiating [G06F 9/445](#) ; task life-cycle in general [G06F 9/485](#)-)}
- G06F 2009/45579
 - {I/O management (*device drivers, storage access*)(~~device drivers, storage access~~)(-internal functioning of device drivers [G06F 13/102](#) , loading of device drivers [G06F 9/4411](#)-)}
- G06F 2009/45583
 - {Memory management, e.g. access, allocation (-memory management in general [G06F 12/00](#); allocation of memory to service a request [G06F 9/5016](#)-)}
- G06F 2009/45587
 - {Isolation or security of virtual machine instances (-security arrangements [G06F 21/00](#)-)}
- G06F 2009/45591
 - {Monitoring or debugging support (-monitoring and debugging in general in [G06F 11/30](#) , [G06F 11/36](#)-)}
- G06F 2009/45595
 - {Network integration; enabling network access in virtual machine instances (-network-specific arrangements for supporting networked applications [H04L 67/00](#)-)}
- U G06F 9/46
 - . . Multiprogramming arrangements
- G06F 9/465
 - . . . {Distributed object oriented systems (-remote method invocation (RMI) [G06F 9/548](#)-)}
- U G06F 9/466
 - . . . {Transaction processing}
- G06F 9/467
 - {Transactional memory (-[G06F 9/528](#) takes precedence-)}

- U G06F 9/48 . . . Programme initiating; Programme switching, e.g. by interrupt
- U G06F 9/4806 {Task transfer initiation or dispatching}
- U G06F 9/4843 {by program, e.g. task dispatcher, supervisor, operating system}
- G06F 9/485 {Task life-cycle, e.g. stopping, restarting, resuming execution (-G06F 9/4881 takes precedence-)}
- G06F 9/4856 {resumption being on a different machine, e.g. task migration , virtual machine migration (-G06F 9/5088 takes precedence-)}
- U G06F 9/4881 {Scheduling strategies for dispatcher, e.g. round robin, multi-level priority queues}
- G06F 9/4893 {taking into account power or heat criteria (-power management in computers in general G06F 1/3203 ; thermal management in computers in general G06F 1/206-)}
- U G06F 9/50 . . . Allocation of resources, e.g. of the central processing unit (CPU)
- U G06F 9/5005 {to service a request}
- U G06F 9/5027 {the resource being a machine, e.g. CPUs, Servers, Terminals}
- G06F 9/5038 {considering the execution order of a plurality of tasks, e.g. taking priority or time dependency constraints into consideration (-scheduling strategies G06F 9/4881 and subgroups-)}
- U G06F 9/5061 {Partitioning or combining of resources}
- G06F 9/5066 {Algorithms for mapping a plurality of inter-dependent sub-tasks onto a plurality of physical CPUs (-mapping at compile time, see G06F 8/451-)}
- G06F 9/5077 {Logical partitioning of resources; Management or configuration of virtualized resources (-specific details on emulation or internal functioning of virtual machines G06F 9/455-)}
- G06F 9/5094 {where the allocation takes into account power or heat criteria (-power management in computers in general G06F 1/3203 ; thermal management in computers in general G06F 1/206-)}
- U G06F 9/54 . . . Interprogramme communication;{Intertask communication}
- G06F 9/543 {User-generated data transfer, e.g. clipboards, dynamic data exchange [DDE]}, object linking and embedding [OLE]}
- U G06F 9/547 {Remote procedure calls [RPC]; Web services}
- G06F 9/548 {Object oriented; Remote method invocation [RMI]} (-non-remote method invocation G06F 9/443-)}

G06F 11/00

Error detection; Error correction; Monitoring (-methods or arrangements for verifying the correctness of marking on a record carrier G06K 5/00 ; in information storage based on relative movement between record carrier and transducer G11B , e.g. G11B 20/18 ; in static stores G11C ; coding, decoding or code conversion, for error detection or error correction, in general H03M 13/00-)

NOTE

In this group the indexing codes of [G06F 1/00](#) to [G06F 15/00](#) are added

- G06F 11/004 . . {Error avoidance (-G06F 11/07 and subgroups take precedence-)}
- G06F 11/006 . . {Identification (-G06F 11/2289 takes precedence-)}
- U G06F 11/07 . . . responding to the occurrence of a fault, e.g. fault tolerance
- U G06F 11/0703 . . {Error or fault processing not based on redundancy, i.e. by taking additional measures to deal with the error or fault not making use of redundancy in operation, in hardware, or in data representation}

- U G06F 11/0706 . . . {the processing taking place on a specific hardware platform or in a specific software environment}
- G06F 11/0715 {in a system implementing multitasking (-multitasking per se [G06F 9/46-](#))}
- G06F 11/0721 {within a central processing unit [CPU]}
- G06F 11/0724 {in a multiprocessor or a multi-core unit (-multiprocessors per se [G06F 15/80-](#))}
- G06F 11/0727 {in a storage system, e.g. in a DASD or network based storage system (-circuits for error detection or correction within digital recording or reproducing units [G11B 20/18](#) ; drivers for digital recording or reproducing units [G06F 3/06](#) ; storage area networks [H04L 29/08549-](#))}
- G06F 11/073 {in a memory management context, e.g. virtual memory or cache management (-memory management [G06F 12/00](#) ; testing of static memory units [G11C 29/00-](#))}
- G06F 11/0736 {in functional embedded systems, i.e. in a data processing system designed as a combination of hardware and software dedicated to performing a certain function (-testing or monitoring of automated control systems [G05B 23/02-](#))}
- G06F 11/0745 {in an input/output transactions management context (-input/output processing in general [G06F 13/00-](#))}
- G06F 11/0748 {in a remote unit communicating with a single-box computer node experiencing an error/fault (-remote testing [G06F 11/2294-](#))}
- G06F 11/0751 . . . {Error or fault detection not based on redundancy (-power supply failures [G06F 1/30](#) ; network fault management [H04L 12/2419-](#))}
- G06F 11/0766 . . . {Error or fault reporting or storing (-reporting or storing of non-error data [G06F 11/30](#) , [G06F 11/34-](#))}
- G06F 11/079 . . . {Root cause analysis, i.e. error or fault diagnosis (-in a hardware test environment [G06F 11/22](#) ; in a software test environment [G06F 11/36-](#))}
- G06F 11/0793 . . . {Remedial or corrective actions (-by retry [G06F 11/1402](#) ; recovery from an exception in an instruction pipeline [G06F 9/3861](#) ; in a network context [H04L 29/14-](#))}
- U G06F 11/08 . . Error detection or correction by redundancy in data representation, e.g. by using checking codes
- U G06F 11/10 . . . Adding special bits or symbols to the coded information, e.g. parity check, casting out 9's or 11's
- G06F 11/1004 {to protect a block of data words, e.g. CRC or checksum (-[G06F 11/1076](#) takes precedence; security arrangements for protecting computers or computer systems against unauthorized activity [G06F 21/00-](#))}
- G06F 11/1008 {in individual solid state devices (-[G06F 11/1004](#) takes precedence-)}
- G06F 11/1012 {using codes or arrangements adapted for a specific type of error (-[G06F 11/1048](#) takes precedence-)}
- G06F 11/1068 {in sector programmable memories, e.g. flash disk (-[G06F 11/1072](#) takes precedence-)}
- G06F 11/14 . . Error detection or correction of the data by redundancy in operation (-[G06F 11/16](#) takes precedence-)
- U G06F 11/1402 . . . {Saving, restoring, recovering or retrying}
- U G06F 11/1415 {at system level}
- G06F 11/142 {Reconfiguring to eliminate the error (-**group management mechanisms in a peer-to-peer network H04L 67/1044** **group management mechanisms in a peer-to-peer network H04L 67/1044**)}
- G06F 11/1474 {in transactions (-[G06F 17/30286](#) takes precedence-)}
- U G06F 11/16 . . Error detection or correction of the data by redundancy in hardware

- G06F 11/1608
- • • {Error detection by comparing the output signals of redundant hardware (~~G06F 11/1629~~ , ~~G06F 11/1666~~ take precedence; error detection or correction in information storage based on relative movement between record carrier and transducer [G11B 20/18](#) ; checking static stores for correct operation [G11C 29/00](#) ; for logic circuits [H03K 19/003](#) , [H03K 19/007](#) ; for pulse counters or frequency dividers [H03K 21/40](#))}
- U G06F 11/1658
- • • {Data re-synchronization of a redundant component, or initial sync of replacement, additional or spare unit}
- G06F 11/1662
- • • • {the resynchronized component or unit being a persistent storage device (~~re-synchronization of failed mirror storage [G06F 11/2082](#) ; rebuild or reconstruction of parity RAID storage [G06F 11/1008](#))}~~
- WARNING
Not complete pending a reclassification. See also [G06F 11/1658](#)
- G06F 11/18
- • • {using passive fault-masking of the redundant circuits (~~error detection by comparing the output of redundant processing systems with continued operation after detection of the error [G06F 11/165](#))}~~
- U G06F 11/20
- • • using active fault-masking, e.g. by switching out faulty elements or by switching in spare elements
- G06F 11/2002
- • • • {where interconnections or communication control functionality are redundant (~~flexible arrangements for bus networks involving redundancy [H04L 12/40176](#))}~~
- G06F 11/2015
- • • • {Redundant power supplies (~~power supply failure [G06F 1/30](#))}~~
- G06F 11/2017
- • • • {where memory access, memory control or I/O control functionality is redundant (~~redundant communication control functionality [G06F 11/2005](#) ; redundant storage control functionality [G06F 11/2089](#))}~~
- WARNING
Not complete pending a reclassification. See also **G06F11/20L**
- G06F 11/202
- • • • {where processing functionality is redundant (~~redundant communication control functionality [G06F 11/2005](#) , redundant storage control functionality [G06F 11/2089](#))}~~
- G06F 11/2046
- • • • • {where the redundant components share persistent storage (~~G06F 11/2043 takes precedence~~)}
- G06F 11/2053
- • • • {where persistent mass storage functionality or persistent mass storage control functionality is redundant (~~error detection or correction in information storage based on relative movement between record carrier and transducer [G11B 20/18](#))}~~
- G06F 11/2094
- • • • • {Redundant storage or storage space (~~G06F 11/2056 takes precedence~~)}
- G06F 11/2097
- • • • • {maintaining the standby controller/processing unit updated (~~initialisation or re-synchronisation thereof [G06F 11/1658](#) and subgroups~~)}
- G06F 11/22
- Detection or location of defective computer hardware by testing during standby operation or during idle time, e.g. start-up testing (~~testing of digital circuits, e.g. of separate computer components [G01R 31/317](#))}~~
- U G06F 11/2205
- {using arrangements specific to the hardware being tested}
- U G06F 11/2236
- • • {to test CPU or processors}
- G06F 11/2242
- • • • {in multi-processor systems, e.g. one processor becoming the test master (~~G06F 11/2736 takes precedence~~)}
- G06F 11/24
- Marginal checking{ or other specified testing methods not covered by [G06F 11/26](#) , e.g. race tests-}
- U G06F 11/26
- Functional testing

- G06F 11/273
 - • • Tester hardware, i.e. output processing circuits{(-G06F 11/263 takes precedence-)}
- G06F 11/28
 - by checking the correct order of processing (-G06F 11/08 to G06F 11/26 take precedence; monitoring patterns of pulse trains H03K 5/19-)
- U G06F 11/30
 - Monitoring
- U G06F 11/3003
 - • {Monitoring arrangements specially adapted to the computing system or computing system component being monitored}
- G06F 11/3006
 - • • {where the computing system is distributed, e.g. networked systems, clusters, multiprocessor systems (-multiprogramming arrangements G06F 9/46 ; allocation of resources G06F 9/50-)}
- G06F 11/301
 - • • {where the computing system is a virtual computing platform, e.g. logically partitioned systems (-virtual machines G06F 9/45533 ; logical partitioning of resources G06F 9/5077-)}
- G06F 11/3013
 - • • {where the computing system is an embedded system, i.e. a combination of hardware and software dedicated to perform a certain function in mobile devices, printers, automotive or aircraft systems (-testing or monitoring of control systems or parts thereof G05B 23/02-)}
- G06F 11/3017
 - • • {where the computing system is implementing multitasking (-multiprogramming arrangements G06F 9/46 ; allocation of resources G06F 9/50-)}
- G06F 11/3034
 - • • {where the computing system component is a storage system, e.g. DASD based or network based (-digital recording or reproducing G11B 20/18 ; digital input from or digital output to record carriers G06F 3/06 ; arrangements and networking functions for distributed storage of data in a network H04L 29/08549-)}
- G06F 11/3037
 - • • {where the computing system component is a memory, e.g. virtual memory, cache (-accessing, addressing or allocating within memory systems or architectures G06F 12/00 ; checking stores for correct operation G11C 29/00-)}
- G06F 11/3041
 - • • {where the computing system component is an input/output interface (-interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units G06F 13/00-)}
- G06F 11/3051
 - • {Monitoring arrangements for monitoring the configuration of the computing system or of the computing system component, e.g. monitoring the presence of processing resources, peripherals, I/O links, software programs (-verification or detection of system hardware configuration G06F 11/2247-)}
- G06F 11/3055
 - • {Monitoring arrangements for monitoring the status of the computing system or of the computing system component, e.g. monitoring if the computing system is on, off, available, not available (-error or fault processing without redundancy G06F 11/0703 ; error detection or correction by redundancy in data representation G06F 11/08 ; error detection or correction by redundancy in operation G06F 11/14 ; error detection or correction by redundancy in hardware G06F 11/16-)}
- G06F 11/3058
 - • {Monitoring arrangements for monitoring environmental properties or parameters of the computing system or of the computing system component, e.g. monitoring of power, currents, temperature, humidity, position, vibrations (-thermal management in cooling arrangements of a computing system G06F 1/206-)}
- G06F 11/3062
 - • • {where the monitored property is the power consumption (-power management in a computing system G06F 1/3203-)}

- G06F 11/3065
 - • {Monitoring arrangements determined by the means or processing involved in reporting the monitored data (-error or fault reporting or logging [G06F 11/0766](#)-)}
- G06F 11/3089
 - • {Monitoring arrangements determined by the means or processing involved in sensing the monitored data, e.g. interfaces, connectors, sensors, probes, agents (-software debugging using additional hardware using a specific debug interface [G06F 11/3656](#) ; performance evaluation by tracing or monitoring [G06F 11/3466](#)-)}
- G06F 11/32
 - • with visual {or acoustical}indication of the functioning of the machine
- U G06F 11/321
 - • • {Display for diagnostics, e.g. diagnostic result display, self-test user interface}
- G06F 11/322
 - • • • {Display of waveforms, e.g. of logic analysers (-[G06F 11/323](#) takes precedence-)}
- U G06F 11/324
 - • • {Display of status information}
- G06F 11/328
 - • • • {Computer systems status display (-[G06F 11/327](#) takes precedence-)}
- U G06F 11/34
 - • Recording or statistical evaluation of computer activity, e.g. of down time, of input/output operation;{Recording or statistical evaluation of user activity, e.g. usability assessment}
- U G06F 11/3409
 - • • {for performance assessment}
- G06F 11/3433
 - • • • {for load management} (-allocation of a server based on load conditions [G06F 9/505](#) ; load rebalancing [G06F 9/5083](#) ; redistributing the load in a network by a load balancer [H04L 67/1029](#)-)
- G06F 11/3438
 - • • {monitoring of user actions (-checking the network activity of the user for network-specific applications [H04L 67/22](#)-)}
- U G06F 11/3466
 - • • {Performance evaluation by tracing or monitoring}
- G06F 11/3476
 - • • • {Data logging (-[G06F 11/14](#) , [G06F 11/2205](#) take precedence-)}
- U G06F 11/36
 - Preventing errors by testing or debugging software
- G06F 11/3604
 - • {Software analysis for verifying properties of programs (byte-code verification [G06F 9/44589](#)-)}
- G06F 11/3608
 - • • {using formal methods, e.g. model checking, abstract interpretation (theorem proving [G06N 5/006](#)-)}
- G06F 11/3612
 - • • {by runtime analysis (-performance monitoring [G06F 11/3466](#)-)}
- U G06F 11/362
 - • {Software debugging}
- G06F 11/3628
 - • • {of optimised code (-optimisation [G06F 8/443](#)-)}
- U G06F 11/3648
 - • • {using additional hardware}
- G06F 11/3652
 - • • • {in-circuit-emulation [ICE]/arrangements}}
- G06F 11/366
 - • • {using diagnostics (-[G06F 11/0703](#) takes precedence-)}
- G06F 11/3668
 - • {Software testing (-software testing in telephone exchanges [H04M 3/242](#) , testing of hardware [G06F 11/22](#)-)}
- G06F 12/00**
 - Accessing, addressing or allocating within memory systems or architectures ({ digital input or output to record carriers, e.g. to disc storage units [G06F 3/06](#) }; information storage in general [G11](#))**
- G06F 12/02
 - Addressing or allocation; Relocation (-programme address sequencing [G06F 9/00](#) ; arrangements for selecting an address in a digital store [G11C 8/00](#)-)
- U G06F 12/0223
 - • {User address space allocation, e.g. contiguous or non contiguous base addressing}
- U G06F 12/023
 - • • {Free address space management}
- U G06F 12/0253
 - • • • {Garbage collection, i.e. reclamation of unreferenced memory}

- G06F 12/0269 {Incremental or concurrent garbage collection, e.g. in real-time systems (~~G06F 12/0261~~ takes precedence)}
- G06F 12/0284 . . . {Multiple user address space allocation, e.g. using different base addresses (~~interprocessor communication G06F 15/163~~)}
- G06F 12/0292 . . . {using tables or multilevel address translation means (~~G06F 12/023~~ takes precedence; address translation in virtual memory systems [G06F 12/10](#))}
- G06F 12/06 . . Addressing a physical block of locations, e.g. base addressing, module addressing, memory dedication (~~G06F 12/08~~ takes precedence)
- NOTE**
This group is limited to Module addressing or allocation; base addressing is classified in [G06F 12/0223](#) .
- U G06F 12/0615 . . . {Address space extension}
- G06F 12/063 {for I/O modules, e.g. memory mapped I/O (~~I/O protocol G06F 13/42~~)}
- G06F 12/0638 . . . {Combination of memories, e.g. ROM and RAM such as to permit replacement or supplementing of words in one module by words in another module (~~address formation of the next micro-instruction G06F 9/26~~ ; masking faults in memories by using spares or by reconfiguring [G11C 29/70](#))}
- U G06F 12/08 . . in hierarchically structured memory systems, e.g. virtual memory systems
- U G06F 12/0802 . . . {Addressing of a memory level in which the access to the desired data or data block requires associative addressing means, e.g. cache}
- G06F 12/0804 {with main memory updating (~~G06F 12/0806~~ takes precedence; see provisionally also [G06F 12/12](#))}
- U G06F 12/0806 {Multiuser, multiprocessor, multiprocessing cache systems}
- G06F 12/0808 {with cache invalidating means (~~G06F 12/0815~~ and subgroups take precedence)}
- U G06F 12/0815 {Cache consistency protocols}
- U G06F 12/0817 {using directory methods}
- G06F 12/082 {Associative directories (~~G06F 12/0822~~ takes precedence)}
- G06F 12/0822 {Copy directories (~~local copy tags for implementing a bus snooping protocol G06F 12/0831~~)}
- G06F 12/0831 {using a bus scheme (*e.g. with bus monitoring or watching means*)(~~e.g. with bus monitoring or watching means~~)}
- G06F 12/0833 {in combination with broadcast means (*e.g. for invalidation or updating*)(~~e.g. for invalidation or updating~~)}
- G06F 12/0835 {for main memory peripheral accesses (*e.g. I/O or DMA*)(~~e.g. I/O or DMA~~)}
- U G06F 12/0844 {Multiple simultaneous or quasi-simultaneous cache accessing}
- G06F 12/0855 {Overlapped cache accessing, e.g. pipeline (~~G06F 12/0846~~ takes precedence)}
- U G06F 12/0877 {Cache access modes}
- G06F 12/0886 {Variable-length word access (~~G06F 12/0851~~ takes precedence)}
- U G06F 12/0893 {Organization and technology of caches}
- G06F 12/0897 {with a plurality of cache hierarchy levels (~~G06F 12/0811~~ takes precedence)}
- U G06F 12/10 . . . Address translation
- U G06F 12/1027 {using associative or pseudo-associative address translation means, e.g. translation look-aside buffer (TLB)}

- G06F 12/1036
 - {for multiple virtual address spaces, e.g. segmentation} (~~G06F 12/1045 takes precedence~~)
- G06F 12/14
 - . Protection against unauthorised use of memory {or access to memory} (~~security arrangements for protecting computers or computer systems against unauthorised activity G06F 21/00 ; multiprogramming arrangements G06F 9/46~~)
- G06F 12/1408
 - . {by using cryptography} (~~for digital transmission H04L 9/00~~)
- G06F 12/1416
 - . {by checking the object accessibility, e.g. type of access defined by the memory independently of subject rights} (~~G06F 12/1458 takes precedence~~)
- G06F 12/16
 - . Protection against loss of memory contents {contains no material, see G06F 11/00}
- G06F 13/00**
 - Interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units** (~~interface circuits for specific input/output devices G06F 3/00 ; multiprocessor systems G06F 15/16 ; transmission of digital information in general H04L; selecting H04Q; { multiprogramme control therefor G06F 9/46 }~~)
- G06F 13/10
 - . Programme control for peripheral devices (~~G06F 13/14 to G06F 13/42 take precedence~~)
- G06F 13/102
 - . {where the programme performs an interfacing function, e.g. device driver} (~~G06F 13/105 takes precedence; scheduling within device drivers G06F 9/52 ; contention policies within device drivers G06F 9/4881~~)
- U G06F 13/12
 - . using hardware independent of the central processor, e.g. channel or peripheral processor
- U G06F 13/124
 - . . . {where hardware is a sequential transfer control unit, e.g. microprocessor, peripheral processor or state-machine}
- G06F 13/128
 - . . . {for dedicated transfers to a network} (~~for protocol converters G06F 13/387~~)
- U G06F 13/14
 - . Handling requests for interconnection or transfer
- G06F 13/16
 - . for access to memory bus (~~G06F 13/28 takes precedence~~)
- G06F 13/1605
 - . . . {based on arbitration} (~~arbitration in handling access to a common bus or bus system G06F 13/36~~)
- G06F 13/1652
 - . . . {in a multiprocessor architecture} (~~interprocessor communication using common memory G06F 15/167~~)
- U G06F 13/1668
 - . . . {Details of memory controller}
- G06F 13/1689
 - . . . {Synchronisation and timing concerns} (~~synchronisation on a memory bus G06F 13/4234~~)
- G06F 13/18
 - . . . based on priority control (~~G06F 13/1605 takes precedence~~)
- U G06F 13/20
 - . for access to input/output bus
- G06F 13/22
 - . . . using successive scanning, e.g. polling (~~G06F 13/24 takes precedence~~)
- G06F 13/24
 - . . . using interrupt (~~G06F 13/32 takes precedence~~)
- G06F 13/28
 - . . . using burst mode transfer, e.g. direct memory access {DMA}, cycle steal (~~G06F 13/32 takes precedence~~)
- G06F 13/282
 - . . . {Cycle stealing DMA} (~~G06F 13/30 takes precedence~~)
- G06F 13/285
 - . . . {Halt processor DMA} (~~G06F 13/30 takes precedence~~)
- G06F 13/287
 - . . . {Multiplexed DMA} (~~G06F 13/30 takes precedence~~)
- G06F 13/38
 - . Information transfer, e.g. on bus (~~G06F 13/14 takes precedence~~)
- G06F 13/40
 - . Bus structure {for computer networks G06F 15/163 ; for optical bus networks H04B10/20}
- U G06F 13/4004
 - . . . {Coupling between buses}

- G06F 13/4022 {using switching circuits, e.g. switching matrix, connection or expansion network (-[G06F 13/4009](#) takes precedence-)}
- G06F 13/4027 {using bus bridges (-[G06F 13/4022](#) takes precedence-)}
- U G06F 13/4063 . . . {Device-to-bus coupling}
- U G06F 13/4068 {Electrical coupling}
- G06F 13/4072 {Drivers or receivers (-[G06F 13/4086](#) takes precedence; for multistate logic circuits [H03K 19/002](#)-)}
- G06F 13/4081 {Live connection to bus, e.g. hot-plugging (-current or voltage limitation during live insertion [H02H 9/004](#)-)}
- G06F 13/409 {Mechanical coupling (-[Back panels H05K 7/1438](#) [Back panels H05K 7/1438](#)-)}
- G06F 13/42 . . . Bus transfer protocol, e.g. handshake; Synchronisation (-synchronisation in transmission of digital information in general [H04L 7/00](#)-)
- G06F 13/4265 . . . {on a point to point bus (-[G06F 13/4247](#) , [G06F 13/4282](#) take precedence-)}
- G06F 13/4282 . . . {on a serial bus, e.g. I2C bus, SPI bus (-on daisy chain buses [G06F 13/4247](#)-)}

- G06F 15/00** **Digital computers in general (-details [G06F 1/00](#) to [G06F 13/00](#)-); Data processing equipment in general (neural networks for image data processing [G06T](#))**
- U G06F 15/02 . . . manually operated with input through keyboard and computation using a built-in programme, e.g. pocket calculators
- U G06F 15/025 . . . {adapted to a specific application}
- G06F 15/0291 {for reading, e.g. e-books (-constructional details of portable computers [G06F 1/1613](#)-)}
- G06F 15/16 . . . Combinations of two or more digital computers each having at least an arithmetic unit, a programme unit and a register, e.g. for a simultaneous processing of several programmes (-coordinating programme control therefor [G06F 9/52](#) ; in regulating and control system [G05B](#)-)}
- G06F 15/161 . . . {Computing infrastructure, e.g. computer clusters, blade chassis or hardware partitioning (-casings, cabinets, racks or drawers for data centers [H05K 5/00](#)-)}
- U G06F 15/163 . . . Interprocessor communication
- G06F 15/167 using a common memory, e.g. mailbox (-memory protection [G06F 12/14](#) ; memory access priority [G06F 13/18](#)-)
- G06F 15/173 using an interconnection network, e.g. matrix, shuffle, pyramid, star, snowflake (-interface switching circuits [G06F 13/40](#)-)
- U G06F 15/17306 {Intercommunication techniques}
- G06F 15/17312 {Routing techniques specific to parallel machines, e.g. wormhole, store and forward, shortest path problem congestion (-routing on a LAN [H04L 12/5689](#)-)}
- G06F 15/17325 {Synchronisation; Hardware support therefor (-intertask synchronisation [G06F 9/52](#)-)}
- G06F 15/17331 {Distributed shared memory [DSM]}, e.g. remote direct memory access [RDMA]†}
- G06F 15/17337 {Direct connection machines, e.g. completely connected computers, point to point communication networks (-coupling between buses [G06F 13/4004](#)-)}
- G06F 15/17343 {wherein the interconnection is dynamically configurable, e.g. having loosely coupled nearest neighbor architecture (-reconfigurable processors arrays [G06F 15/7867](#)-)}

- G06F 15/1735
 - G06F 15/177
 - G06F 15/18
 - G06F 15/76
 - U G06F 15/78
 - U G06F 15/7828
 - G06F 15/7832
 - U G06F 15/7839
 - G06F 15/7842
 - G06F 15/7857
 - U G06F 15/7867
 - U G06F 15/7885
 - G06F 15/7889
 - G06F 15/80
 - G06F 15/8007
 - U G06F 17/00**
 - G06F 17/10
 - G06F 17/11
 - G06F 17/13
 - G06F 17/14
 - G06F 17/147
 - G06F 17/15
 - G06F 17/16
 - G06F 17/17
- . . . {Network adapters, e.g. SCI, Myrinet (-protocol engines [H04L 29/06081-](#))}
 - . {Initialisation or configuration control (-processor initialisation [G06F 9/4405-](#))}
 - . in which a programme is changed according to experience gained by the computer itself during a complete run; Learning machines (-adaptive control systems [G05B 13/00-](#)){ not used, see [G06N 99/005-](#)}
 - . Architectures of general purpose stored programme computers (-with programme plugboard [G06F 15/08](#) ; multicomputers [G06F 15/16](#) , general purpose image data processing [G06T 1/00-](#))
 - . . comprising a single central processing unit
 - . . . {without memory}
 - {on one IC chip (*single chip microprocessors*)}(*single-chip microprocessors*)}
 - . . . {with memory}
 - {on one IC chip (*single chip microcontrollers*)}(*single-chip microcontrollers*)}
 - {using interleaved memory (-addressing [G06F 12/0607-](#))}
 - . . . {with reconfigurable architecture}
 - {Runtime interface, e.g. data exchange, runtime control}
 - {Reconfigurable logic implemented as a co-processor (-instruction execution using a coprocessor [G06F 9/3877-](#))}
 - . . comprising an array of processing units with common control, e.g. single instruction multiple data processors (-[G06F 15/82](#) takes precedence; { for correlation function computation [G06F 17/15](#) })
 - . . . {single instruction multiple data [SIMD]} multiprocessors]}
 - Digital computing or data processing equipment or methods, specially adapted for specific functions**
 - . Complex mathematical operations{(-function generation by table look-up [G06F 1/03](#) ; evaluation of elementary functions by calculation [G06F 7/544-](#))}
 - . . for solving equations{, e.g. nonlinear equations, general mathematical optimization problems (-optimization specially adapted for a specific administrative, business or logistic context [G06Q 10/04-](#))}
 - . . . Differential equations (-using digital differential analysers [G06F 7/64-](#))
 - . . Fourier, Walsh or analogous domain transformations,{e.g. Laplace, Hilbert, Karhunen-Loeve, transforms (-for correlation function computation [G06F 17/156](#) ; spectrum analysers [G01R 23/16-](#))}
 - . . . {Discrete orthonormal transforms, e.g. discrete cosine transform, discrete sine transform, and variations therefrom, e.g. modified discrete cosine transform, integer transforms approximating the discrete cosine transform (-[G06F 17/145](#) takes precedence-)}
 - . . Correlation function computation {including computation of convolution operations (-arithmetic circuits for sum of products per se, e.g. multiply-accumulators [G06F 7/5443](#) ; digital filters, e.g. FIR, IIR, adaptive filters [H03H 17/00-](#))}
 - . . Matrix or vector computation,{e.g. matrix-matrix or matrix-vector multiplication, matrix factorization (-matrix transposition [G06F 7/78-](#))}
 - . . Function evaluation by approximation methods, e.g. inter- or extrapolation, smoothing, least mean square method ({ [G06F 17/18](#) takes precedence } ; interpolation for numerical control [G05B 19/18-](#))

- G06F 17/18
 - • for evaluating statistical data, {e.g. average values, frequency distributions, probability functions, regression analysis (-forecasting specially adapted for a specific administrative, business or logistic context [G06Q 10/04-](#))}
- G06F 17/20
 - Handling natural language data (-speech analysis or synthesis [G10L-](#))
- G06F 17/21
 - • Text processing (-[G06F 17/27](#) , [G06F 17/28](#) take precedence; systems for composing machines [B41B 27/00-](#))
- G06F 17/211
 - • • {Formatting, i.e. changing of presentation of document (-[G06F 17/25](#) , [G06F 17/26](#) take precedence-)}
- G06F 17/218
 - • • • {Tagging; Marking up (-details of markup languages [G06F 17/22-](#)); Designating a block; Setting of attributes (-style sheets, e.g. eXtensible Stylesheet Language Transformation (XSL-T) [G06F 17/227-](#))}
- G06F 17/22
 - • • Manipulating or registering by use of codes, e.g. in sequence of text characters{-compression [H03M 7/30-](#)}
- G06F 17/2235
 - • • • {Hyperlinking (-information retrieval based on hyperlinks [G06F 17/30014-](#))}
- G06F 17/2247
 - • • • {Tree structured documents; Markup, e.g. Standard Generalized Markup Language [SGML], Document Type Definition (DTD)(-validation and parsing [G06F 17/2705](#) ; data retrieval [G06F 17/30](#) ; coding and compression [H03M 7/30-](#))}
- G06F 17/2252
 - • • • {Coding or compression of tree-structured data (-coding and compression in general [H03M 7/30-](#))}
- G06F 17/24
 - • • Editing, e.g. insert/delete(-[G06F 17/22](#) takes precedence-)}
- G06F 17/246
 - • • • {Spreadsheets (-relational data bases [G06F 17/30595](#) ; form-filling [G06F 17/243-](#))}
- U G06F 17/27
 - • Automatic analysis, e.g. parsing{(speech recognition, analysis or synthesis [G10L](#))}
- U G06F 17/2705
 - • • {Parsing}
- G06F 17/272
 - • • • {Parsing markup language streams (-streaming [G06F 17/2258-](#))}
- G06F 17/28
 - • Processing or translating of natural language (-[G06F 17/27](#) takes precedence-)
- G06F 17/2863
 - • • {Processing of non-latin text (-Kana-to-kanji conversion [G06F 17/2223](#) , vowelisation [G06F 17/273-](#))}
- G06F 17/289
 - • • {Use of machine translation, e.g. multi-lingual retrieval, server side translation for client devices, real-time translation (-~~Data retrieval [G06F 17/30](#) , administrative and business methods [G06Q 10/00](#) ; [G06Q 30/00](#)~~ *Data retrieval [G06F 17/30](#) , administrative and business methods [G06Q 10/00](#) , [G06Q 30/00](#)*)}
- G06F 17/30
 - Information retrieval; Database structures therefor; {File system structures therefor (data processing systems or methods specially adapted for administrative, commercial, financial managerial, supervisory or forecasting purposes [G06Q](#))}
- U G06F 17/30002
 - • {Interfaces; Database management systems; Updating}

WARNING
This group is no longer used for the classification of new documents as from April 15, 2012. The backlog of this group is being continuously reclassified to subgroups of [G06F 17/30067](#) and [G06F 17/30286](#)

- G06F 17/30005
- • • {File format conversion} (-code conversion circuits or methods [H03M 5/00](#) , [H03M 7/00](#)-)}
- WARNING
This group is no longer used for the classification of new documents as from April 15, 2012. The backlog of this group is being continuously reclassified to subgroups of [G06F 17/30179](#) and [G06F 17/30569](#)
- G06F 17/30008
- • {Concurrency control and recovery} (-[G06F 11/1412](#) takes precedence; transaction processing [G06F 9/466](#)-)}
- WARNING
This group is no longer used for the classification of new documents as from April 15, 2012. The backlog of this group is being continuously reclassified to subgroups of [G06F 17/30067](#) and [G06F 17/30286](#)
- U G06F 17/30011
- • {Document retrieval systems}
- G06F 17/30014
- • • {Hypermedia} (-hyperlinking within text processing [G06F 17/2235](#)-)}
- G06F 17/30017
- • {Multimedia data retrieval; Retrieval of more than one type of audiovisual media} (-retrieval of image data [G06F 17/30244](#) ; retrieval of video data [G06F 17/30781](#) ; retrieval of audio data [G06F 17/3074](#) ; editing or indexing of data stored based on relative movement between record carrier and transducer [G11B 27/00](#)-)}~~{1207}~~
- WARNING
Groups [G06F 17/3002](#) - [G06F 17/30064](#) are not complete pending reclassification. See also [G06F 17/30017](#)
- G06F 17/3002
- • • {Indexing} (-indexing by using information signals detectable on the record carrier and recorded by the same method as the main recording [G11B 27/28](#)-)}
- G06F 17/30023
- • • {Querying} (-programmed access in sequence to addressed parts of tracks of operating discs [G11B 27/105](#)-)}
- G06F 17/30026
- • • • {using audio data} (-details of audio retrieval [G06F 17/3074](#) ; general determination or detection of speech characteristics [G10L 11/00](#); speech recognition [G10L 15/00](#); speaker recognition [G10L 17/00](#); electrophonic musical instruments [G10H](#)-)}
- G06F 17/3005
- • • {Presentation of query results} (-menu, index or table of content presentation of record carriers [G11B 27/32](#) , [G11B 27/34](#)-)}
- G06F 17/30058
- • • {Retrieval by browsing and visualisation of multimedia data} (-trick modes [G11B 27/005](#) ; browsing through video recorded on operating discs [G11B 27/105](#)-)}
- G06F 17/30061
- • • • {Spatial browsing, e.g. 2D maps, 3D or virtual spaces} (-interaction with 3D GUI environments in general [G06F 3/04815](#)-)}
- G06F 17/30067
- • {File systems; File servers} (-[G06F 17/3061](#) , [G06F 17/30017](#) , [G06F 17/30244](#) , [G06F 17/3074](#) , [G06F 17/30781](#) take precedence; dedicated interfaces to storage systems [G06F 3/0601](#) ; error detection, correction or monitoring [G06F 11/00](#)-)}
- WARNING
Groups [G06F 17/3007](#) to [G06F 17/30238](#) are not complete pending reclassification. See also this group
- G06F 17/3007
- • • {File system administration} (-file or folder operations [G06F 17/30115](#)-)}
- G06F 17/30073
- • • • {Details of archiving} (-details of hierarchical storage management (HSM) systems [G06F 17/30221](#) ; lifecycle management in storage systems [G06F 3/0649](#) ; backup systems [G06F 11/1446](#)-)}

- G06F 17/30076 {Details of conversion of file system types or formats (-management of the data involved in backup or backup restore [G06F 11/1448-](#))}
- G06F 17/30079 {Details of migration of file systems (-migration mechanisms in storage systems [G06F 3/0647-](#))}
- G06F 17/30082 {Use of management policies (-file migration policies for HSM systems [G06F 17/30221](#) ; backup systems [G06F 11/1446-](#))}
- G06F 17/30085 {characterised by the use of retention policies (-retention policies for HSM systems [G06F 17/30221-](#))}
- G06F 17/30088 {Details of file system snapshots on the file-level, e.g. snapshot creation, administration, deletion (-use of snapshots for error detection or correction [G06F 11/14](#) , [G06F 11/16-](#))}
- G06F 17/30091 . . . {File storage and access structures (-management of files in storage systems [G06F 3/0643-](#))}
- G06F 17/30097 {Hash-based (-content-based indexing of textual data [G06F 17/30613-](#))}
- U G06F 17/30115 . . . {File and folder operations}
- G06F 17/30117 {Delete operations (-erasing in storage systems [G06F 3/0652-](#))}
- U G06F 17/3012 {File meta data generation}
- G06F 17/30123 {File name conversion (-management of the data involved in backup or backup restore [G06F 11/1448-](#))}
- G06F 17/30126 {Details of user interfaces specifically adapted to file systems, e.g. browsing and visualisation, 2d or 3d GUIs (-query results presentation [G06F 17/30112](#) ; interaction techniques for graphical user interfaces [G06F 3/048-](#))}
- U G06F 17/30129 . . . {Details of further file system functionalities}
- G06F 17/30132 {Caching or prefetching or hoarding of files (-caching for data retrieval from the Internet [G06F 17/30902](#) ; caching for peripheral storage systems, e.g. disk cache [G06F 12/0866](#) ; network-specific arrangements or communication protocols for caching [H04L 67/2842-](#))}
- G06F 17/30135 {Details of de-fragmentation performed by the file system (-management of blocks in storage devices [G06F 3/064](#) ; saving storage space on storage systems [G06F 3/0608-](#))}
- G06F 17/30138 {Details of free space management performed by the file system (-management of blocks in storage devices [G06F 3/064](#) ; saving storage space on storage systems [G06F 3/0608-](#))}
- G06F 17/30147 {for reducing power consumption or coping with limited storage space, e.g. in mobile devices (-saving storage space on storage devices [G06F 3/0608](#) ; power saving in storage systems [G06F 3/0625-](#))}
- G06F 17/3015 {Redundancy elimination performed by the file system (-management of the data involved in backup or backup restore using de-duplication of the data [G06F 11/1453-](#))}
- G06F 17/30153 {using compression, e.g. sparse files (-details of compression [H03M 7/30](#) ; protocols for data compression [H04L 69/04-](#))}
- G06F 17/30156 {De-duplication implemented within the file system, e.g. based on file segments (-de-duplication techniques in storage systems for the management of data blocks [G06F 3/0641-](#))}
- G06F 17/30174 {Techniques for file synchronisation in file systems (-change detection [G06F 17/30144](#) ; file management policies in general [G06F 17/30082](#) ; distributed file systems [G06F 17/30194](#) ; synchronisation of structured data [G06F 17/30575](#) ; protocols for data synchronisation between network nodes [H04L 67/1095-](#))}
- U G06F 17/30182 . . . {File system types}

- U G06F 17/30194 {Distributed file systems}
- G06F 17/30197 {implemented using NAS architecture (-distributed or networked storage systems [G06F 3/067](#) ; protocols for distributed storage of data in a network [H04L 67/1097-](#))}
- G06F 17/302 {Details of management specifically adapted to network area storage (NAS)(-management of NAS or SAN [G06F 3/067-](#))}
- G06F 17/30203 {Details of providing network file services by network file servers, e.g. by using NFS, CIFS} (-network file access protocols [H04L 67/1097-](#))
- G06F 17/30206 {implemented based on peer-to-peer networks, e.g. gnutella (-p2p communication protocols [H04L 67/104-](#))}
- G06F 17/30209 {Details of management specifically adapted to peer-to-peer storage networks(-topology management mechanisms of peer-to-peer networks [H04L 67/1042-](#))}
- G06F 17/30218 {specifically adapted to static storage, e.g. adapted to flash memory, SSD(-dedicated interfaces to non-volatile semiconductor memory device [G06F 3/0679](#) ; dedicated interfaces to non-volatile semiconductor memory arrays [G06F 3/0688-](#))}
- G06F 17/30221 {Details of hierarchical storage management (HSM) systems, e.g. file migration and policies thereof (-details of archiving [G06F 17/30073](#) ; life cycle management [G06F 3/0649](#) ; hybrid storage combining heterogeneous device types [G06F 3/0685-](#))}
- G06F 17/30227 {Transactional file systems (-commit processing in structured data stores [G06F 17/30377-](#))}
- U G06F 17/30233 {Virtual file systems}
- G06F 17/30238 {Specific adaptations of the file system to access devices and non-file objects via standard file system access operations, e.g. pseudo file systems(-dedicated interfaces to storage systems [G06F 3/0601-](#))}
- G06F 17/30241 . . . {in geographical information databases (-instruments for geographical navigation [G01C 21/00](#) ; three dimensional geographic models [G06T 17/05-](#))}
- U G06F 17/30244 . . . {in image databases}
- G06F 17/30247 . . . {based on features automatically derived from the image data (-pattern recognition [G06K 9/00-](#))}
- U G06F 17/30286 . . . {in structured data stores}
- WARNING
- Not complete pending the completion of a reclassification; see also [G06F 17/30002](#), [G06F 17/30008](#) and [G06F 17/30283](#)
- U G06F 17/30289 . . . {Database design, administration or maintenance}
- G06F 17/30306 {Database tuning (-[G06F 17/30339](#) takes precedence; database performance monitoring [G06F 11/3409-](#))}
- G06F 17/30309 {Managing data history or versioning (-querying temporal data [G06F 17/30551](#) ; querying versioned data [G06F 17/30548-](#))}
- U G06F 17/30312 . . . {Storage and indexing structures; Management thereof}
- G06F 17/30321 {Indexing structures (-indexing structures for unstructured textual data [G06F 17/30619-](#))}
- U G06F 17/30345 . . . {Update requests}
- G06F 17/30348 {Concurrency control(-transaction processing [G06F 9/466-](#))}
- G06F 17/30368 {Change logging, detection, and notification (-replication [G06F 17/30575-](#))}
- U G06F 17/30377 {Details of updates performed during online database operations; commit processing}

- G06F 17/3038 {Details of bulk updating operations (-data conversion details [G06F 17/30569](#)-)}
- U G06F 17/30386 . . . {Retrieval requests}
- G06F 17/30389 {Query formulation (-Interaction techniques for graphical user interfaces [G06F 3/048](#)-)}
- G06F 17/30398 {Query predicate definition using graphical user interfaces, including menus and forms (-[G06F 17/30392](#) takes precedence-)}
- G06F 17/30401 {Natural language query formulation (-natural language analysis, translation, semantics [G06F 17/27](#) , [G06F 17/28](#)-)}
- U G06F 17/30424 {Query processing}
- U G06F 17/30427 {Query translation}
- G06F 17/3043 {Translation of natural language queries to structured queries (-natural language analysis, translation, semantics [G06F 17/27](#) , [G06F 17/28](#)-)}
- U G06F 17/30557 . . . {Details of integrating or interfacing systems involving at least one database management system}
- G06F 17/30566 {in federated and virtual databases (-distributed queries [G06F 17/30545](#)-)}
- U G06F 17/30587 . . . {Details of specialised database models}
- U G06F 17/30595 {Relational databases}
- G06F 17/30598 {Clustering or classification (-for textual data [G06F 17/30705](#)-)}
- G06F 17/30601 {including cluster or class visualization or browsing (-for textual data [G06F 17/30713](#)-)}
- G06F 17/3061 . . . {of unstructured textual data (-document management systems [G06F 17/30011](#)-)}
- U G06F 17/30613 . . . {Indexing}
- G06F 17/30616 {Selection or weighting of terms for indexing (-[G06F 17/30663](#) takes precedence; for summarization [G06F 17/30719](#)-)}
- G06F 17/30619 {indexing structures (-indexing structures for structured data stores [G06F 17/30321](#)-)}
- U G06F 17/30634 . . . {Querying}
- U G06F 17/30637 {Query formulation}
- G06F 17/3064 {using system suggestions (-[G06F 17/30646](#) takes precedence-)}
- U G06F 17/30657 {Query processing}
- U G06F 17/3066 {Query translation}
- G06F 17/30666 {Syntactic pre-processing steps, e.g. stopword elimination, stemming (-lexical analysis [G06F 17/277](#), [G06F 8/425](#)-)}
- G06F 17/30669 {Translation of the query language, e.g. Chinese to English (-language translation [G06F 17/28](#)-)}
- G06F 17/30675 {Query execution (-[G06F 17/30699](#) takes precedence-)}
- G06F 17/30693 {Reuse of stored results of previous queries (-for formulation of new queries [G06F 17/30646](#)-)}
- G06F 17/30696 {Presentation or visualization of query results (-[G06F 17/30651](#) takes precedence; browsing or visualization of document space [G06F 17/30716](#)-)}
- G06F 17/30699 . . . {Filtering based on additional data, e.g. user or group profiles (-filtering in web context [G06F 17/30867](#)-)}
- G06F 17/30705 {Clustering or classification (-manual classification [G06F 17/30722](#)-)}
- U G06F 17/30722 . . . {based on associated metadata or manual classification, e.g. bibliographic data}

- G06F 17/30725 . . . {using identifiers, e.g. barcodes, RFIDs (-for URLs [G06F 17/30879](#)-)}
- G06F 17/30728 . . . {using citations (-hypermedia [G06F 17/30014](#)-)}
- G06F 17/3074 . . . {Audio data retrieval (-retrieval of video data [G06F 17/30781](#) ; retrieval of multimedia data [G06F 17/30017](#) ; general determination or detection of speech characteristics [G10L11/00](#); speech recognition [G10L 15/00](#); speaker recognition [G10L 17/00](#); electrophonic musical instruments [G10H](#); editing or indexing of data stored based on relative movement between record carrier and transducer [G11B 27/00](#)-)}
- WARNING**
Groups [G06F 17/30743](#) - [G06F 17/30778](#) are not complete pending reclassification. See also [G06F 17/3074](#)
- G06F 17/30743 . . . {using features automatically derived from the audio content, e.g. descriptors, fingerprints, signatures, MEP-cepstral coefficients, musical score, tempo (-content oriented musical parameter indexing, e.g. tempo [G10H](#); determination or detection of speech characteristics [G10L11/00](#); audio watermarking, e.g. by inserting fingerprints [G10L19/00W](#) ; indexing by using information signals detectable on the record carrier and recorded by the same method as the main recording [G11B 27/28](#)-)}
- G06F 17/30746 . . . {using automatically derived transcript of audio data, e.g. lyrics (speech recognition [G10L 15/00](#))}
- G06F 17/30749 . . . {using information manually generated or using information not derived from the audio data, e.g. title and artist information, time and location information, usage information, user ratings (-programmed access in sequence to addressed parts of tracks of operating discs [G11B 27/105](#)-)}
- G06F 17/30769 . . . {Presentation of query results (-menu, index or table of content presentation of record carriers [G11B 27/32](#) , [G11B 27/34](#)-)}
- G06F 17/30775 . . . {Browsing (-generation of a list or set of audio data [G06F 17/30772](#) ; trick modes [G11B 27/005](#) ; browsing through audio recorded on operating discs [G11B 27/105](#)-)}
- U G06F 17/30781 . . . {of video data (recognising patterns [G06K 9/00](#); image analysis [G06T 7/00](#); editing or indexing information signals on a record carrier in which information is recorded and accessed based on relative movement between record carrier and transducer [G11B 27/00](#); source coding or decoding of digital video signal [H04N 19/00](#); selective content distribution, e.g. interactive television, video on demand [H04N 21/00](#))}
- G06F 17/30784 . . . {using features automatically derived from the video content, e.g. descriptors, fingerprints, signatures, genre (-recognising video content [G06K 9/00711](#) ; extraction of features or characteristics for pattern recognition of the image [G06K 9/46](#)-)}
- G06F 17/30787 . . . {using audio features (-general determination or detection of speech characteristics [G10L11/00](#) ; speech recognition [G10L 15/00](#) ; speaker recognition [G10L 17/00](#) ; contents oriented musical parameter indexing, e.g. tempo [G10H](#)-)}
- G06F 17/3079 . . . {using objects detected or recognised in the video content (-methods for image acquisition of a pattern to be recognized involving target detection [G06K 9/3241](#)-)}
- G06F 17/30793 . . . {the detected or recognised objects being people (-face recognition [G06K 9/00221](#) ; human body recognition [G06K 9/00369](#) ; speaker recognition [G10L 17/00](#)-)}
- G06F 17/30796 . . . {using original textual content or text extracted from visual content or transcript of audio data (-extraction of overlay text [G06K9/32R1T2](#)-)}

- G06F 17/30799 {using low-level visual features of the video content (-methods for preprocessing an image in order to extract features of a pattern to be recognized [G06K 9/46](#) ; image processing involving image features extraction in general [G06T-](#))}
- G06F 17/30802 {using colour or luminescence (-colour analysis on image data [G06T 7/408-](#))}
- G06F 17/30805 {using shape (-[G06F 17/3079](#) takes precedence; segmentation or edge detection on image data [G06T 7/0079](#) ; analysis of geometric attributes on image data [G06T 7/60-](#))}
- G06F 17/30808 {using texture (-[G06F 17/3079](#) takes precedence; texture analysis on image data [G06T 7/401](#) , [G06T 7/407-](#))}
- G06F 17/30811 {using motion, e.g. object motion, camera motion (-motion analysis on image data [G06T 7/20-](#))}
- U G06F 17/30823 . . . {Query formulation and processing specifically adapted for the retrieval of video data}
- G06F 17/30825 {Query by example, e.g. a complete video frame or video sequence (-graphical querying [G06F 17/30831-](#))}
- G06F 17/30831 {Graphical querying, e.g. query-by-region, query-by-sketch, query-by-trajectory, GUIs for designating a person/face/object as a query predicate (-end-user interface involving hot spots associated with the video [H04N 21/4725](#) ; end-user interface for selecting a Region of Interest [H04N 21/4728-](#))}
- G06F 17/30837 . . . {Query results presentation or summarisation specifically adapted for the retrieval of video data (-end-user interface for requesting or interacting with video content, e.g. video on demand interface or electronic program guide [H04N 21/472-](#))}
- G06F 17/3084 {Presentation of query results (-[G06F 17/30843](#) takes precedence; browsing a video collection [G06F 17/30849-](#))}
- G06F 17/30846 . . . {Browsing of video data (-end-user interface for requesting or interacting with video content, e.g. video on demand interface or electronic program guide [H04N 21/472](#) ; indicating arrangements in the context of indexing and addressing recorded information [G11B 27/34-](#))}
- G06F 17/30855 {Hypervideo (-linking data to content, e.g. by linking an URL to a video object in the context of video distribution systems [H04N 21/858-](#))}
- G06F 17/30858 . . . {Video database index structures or management thereof (-table of contents on a record carrier [G11B 27/327-](#))}
- G06F 17/30861 . . {Retrieval from the Internet, e.g. browsers (-internet protocol [H04L 29/06095-](#))}
- U G06F 17/30876 . . . {by using information identifiers, e.g. encoding URL in specific indicia, browsing history}
- G06F 17/30887 {URL specific, e.g. using aliases, detecting broken or misspelled links (-address allocation to terminals or nodes connected to a network [H04L 29/12009-](#))}
- U G06F 17/30899 . . . {Browsing optimisation}
- G06F 17/30902 {of access to content, e.g. by caching (-accessing, addressing or allocating within memory systems and caches [G06F 12/08-](#))}
- U G06F 17/30908 . . {of semistructured data, the underlying structure being taken into account, e.g. mark-up language structure data}
- U G06F 17/30914 . . . {Mapping or conversion}
- G06F 17/3092 {Mark-up to mark-up conversion (-conversion for visualization in web browsing [G06F 17/30905-](#))}
- U G06F 17/30943 . . {details of database functions independent of the retrieved data type}

- G06F 17/30946 . . . {indexing structures (-indexing structures for specific data types [G06F 17/30067](#) , [G06F 17/30619](#) , [G06F 17/30321-](#))}
 - G06F 17/30949 {hash tables (-hashing functions for network address lookup or routing in networks [H04L 12/5689](#)-)}
 - G06F 17/30952 {using directory or table look-up (-use of a directory or look-up table in file systems [G06F 17/30067-](#))}
 - G06F 17/30958 {Graphs; Linked lists (-[G06F 17/30961](#) takes precedence-)}
 - U G06F 17/30964 . . . {Querying}
 - U G06F 17/30979 {Query processing}
 - G06F 17/30985 {by using string matching techniques (-sequence comparison in bioinformatics [G06F 19/22](#) ; string matching used for packet routing in packet switching systems [H04L 12/5689-](#))}
 - G06F 17/30988 {by searching ordered data, e.g. alpha-numerically ordered data (-sequence comparison in bioinformatics [G06F 19/22-](#))}
 - G06F 17/40 . Data acquisition and logging (-for input to computer [G06F 3/00](#) ; { displays as computer output [G06F 3/14](#) ; for image data processing [G06T 9/00](#) ; compression in general [H03M 7/30](#) ; for transmission [H04B 1/66](#) ; for pictorial communication [H04N](#); arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station [H04Q 9/00](#) })
- WARNING
This group is no longer used for the classification of new documents. The documents are classified in the application fields according to the references above
- U G06F 17/50 . Computer-aided design
 - U G06F 17/5009 . . {using simulation}
 - G06F 17/5018 {using finite difference methods or finite element methods (-picture mesh generation [G06T 17/20-](#))}
 - G06F 17/5022 {Logic simulation, e.g. for logic circuit operation (-fault-simulation [G06F 11/261](#) ; test pattern synthesising [G06F 11/263-](#))}
 - G06F 17/5045 . . {Circuit design (-[G06F 17/5068](#) takes precedence; logic circuits [H03K 19/00-](#))}
 - G06F 17/509 . . {Network design, e.g. positioning, routing, graphs (-circuit design [G06F 17/5068-](#))}
 - G06F 17/60 . Administrative, commercial, managerial, supervisory or forecasting purposes (-electronic cash registers other than digital data processing aspects thereof [G07G 1/12-](#))
- WARNING
This group is no longer used for the classification of new documents as from January 1, 2006. The backlog of this group is being continuously reclassified to the relevant groups of [G06Q](#)
- G06F 17/602 . . {Data processing in buying-selling transactions (-for trading of electric energy [H02J 3/008-](#))(not used)}
 - G06F 17/604 {for exchange business, e.g. quotations or sales transactions of stock or other commodities (-stock quotation systems [H04L 12/1804-](#))}
 - G06F 17/606 {Centrally controlled vending systems (-mechanisms actuated by objects other than coins to free or to actuate vending, hiring or the like apparatus [G07F 7/00-](#))}

G06F 19/00 **Digital computing or data processing equipment or methods, specially adapted for specific applications (G06F 17/00 takes precedence; data processing systems or methods specially adapted for administrative, commercial, financial, managerial, supervisory or forecasting purposes G06Q)**

WARNING

This group only covers specific applications related to the fields of healthcare or life sciences, e.g. bioinformatics ([G09F 19/10](#)), medical informatics ([G06F 19/30](#)), or chemoinformatics ([G06F 19/70](#)). Groups [G06F 19/30](#) - [G06F 19/709](#) do not correspond to former or future IPC groups. Concordance CPC : IPC for said groups is as follows: - [G06F 19/30](#) - [G06F 19/366](#) : [G06F 19/00](#)
- [G06F 19/70](#) - [G06F 19/709](#) : [G06F 19/00](#)

- G06F 19/10
- Bioinformatics, i.e. methods or systems for genetic or protein-related data processing in computational molecular biology (in silico methods of screening virtual chemical libraries [C40B 30/02](#) ; in silico or mathematical methods of creating virtual chemical libraries [C40B 50/02](#)-)
- G06F 19/30
- {Medical informatics, i.e. computer-based analysis or dissemination of patient or disease data (bioinformatics [G06F 19/10](#) ; measuring for diagnostic purposes [A61B 5/00](#) ; recognising patterns in biomedical signals [G06K 9/00496](#) ; data processing systems or methods specially adapted for administrative or managerial aspects of healthcare or welfare [G06Q 50/22](#)-)}
- G06F 19/32
- {Medical data management, e.g. systems or protocols for archival or communication of medical images, computerised patient records or computerised general medical references (information retrieval or databases per se [G06F 17/30](#) ; data security aspects [G06F 21/00](#)-)}
- G06F 19/321
- • {Management of medical image data, e.g. communication or archiving systems such as picture archiving and communication systems [PACS]} or related medical protocols such as digital imaging and communications in medicine protocol [DICOM]; Editing of medical image data, e.g. adding diagnosis information (image data processing in general [G06T](#), image data processing related to 3D objects [G06F 17/00](#) ; biomedical image inspection [G06T 7/0012](#)-)}
- U G06F 19/34
- {Computer-assisted medical diagnosis or treatment, e.g. computerised prescription or delivery of medication or diets, computerised local control of medical devices, medical expert systems or telemedicine}
- G06F 19/3406
- • {Local monitoring or local control of medical devices, e.g. configuration parameters, graphical user interfaces [GUI]} or dedicated hardware interfaces}
- G06F 19/3437
- • {Medical simulation or modelling, e.g. simulating the evolution of medical disorders (computer-aided design using simulation [G06F 17/5009](#) ; biomedical image modelling [G06T 17/00](#)-)}
- G06F 19/3443
- • {Medical data mining, e.g. in previous cases of different patients (pattern recognition in general [G06K 9/62](#)-)}
- G06F 19/345
- • {Medical expert systems, neural networks or other automated diagnosis (computer systems utilising knowledge based models [G06N 5/00](#) ; neural networks per se [G06N 3/02](#)-)}
- U G06F 19/3456
- • {Computer-assisted prescription or delivery of medication, e.g. prescription filling or compliance checking}

- G06F 19/3462 . . . {Computer-assisted distribution of medication from dispensers, i.e. making sure that medication is correctly delivered to patients (-medication containers [A61J 1/00](#) ; dispensers activated by money or the like [G07F-](#))}
- G06F 19/3468 . . . {Computer-assisted delivery of medication via infusion or injection (-infusion devices per se [A61M 5/14-](#))}
- G06F 19/3481 . . . {Computer-assisted prescription or delivery of treatment by physical action, e.g. surgery or physical exercise (-surgical instruments, devices or methods [A61B 17/00](#) ; apparatuses for physical training [A63B-](#))}
- G06F 19/36 . . {Computer-assisted acquisition of medical data, e.g. computerised clinical trials or questionnaires (-measuring analogue medical signals [A61B 5/00-](#))}
- G06F 19/366 . . . {Acquisition of data related to laboratory tests, e.g. special identifiers for examination containers (-investigating biological material [G01N 33/48-](#))}
- G06F 19/70 . {Chemoinformatics, i.e. data processing methods or systems for the retrieval, analysis, visualisation, or storage of physicochemical or structural data of chemical compounds (-in silico methods of screening virtual chemical libraries [C40B 30/02](#) ; in silico or mathematical methods of creating virtual chemical libraries [C40B 50/02](#) ; computer-aided design per se [G06F 17/50](#) ; bioinformatics [G06F 19/10](#) ; processing of 2D or 3D images [G06T-](#))}

WARNING

Subgroups [G06F 19/701](#) - [G06F 19/709](#) are not complete pending reclassification; see also group [G06F 19/70](#) .

- G06F 19/701 . . {for molecular modelling, e.g. calculation and theoretical details of quantum mechanics, molecular mechanics, molecular dynamics, Monte Carlo methods, conformational analysis or the like (-molecular modelling of nucleic acids or proteins [G06F 19/16-](#))}
- G06F 19/703 . . {for computer-assisted identification of chemical compounds or molecular structures, e.g. computer-assisted structure elucidation [CASE]/systems}
- G06F 19/705 . . {for database search of chemical structures, e.g. full structure search, substructure search, similarity search, pharmacophore search, 3D structure search (-information retrieval in general [G06F 17/30-](#))}
- G06F 19/706 . . {for drug design with the emphasis on a therapeutic agent, e.g. ligand-biological target interactions, pharmacophore generation (-drug targeting using protein structure data [G06F 19/16](#) ; binding site identification [G06F 19/18-](#))}
- G06F 19/707 . . {using machine learning, data mining or chemometrics, e.g. pattern recognition, knowledge discovery, rule extraction, correlation, clustering or classification, chemical name to structure conversion (-use of machine learning, data mining or biostatistics for processing genetic or protein-related data [G06F 19/24-](#))}
- G06F 19/708 . . {for data visualisation, e.g. molecular structure representations, graphics generation, display of maps or networks or other visual representations (-data visualisation specially adapted for processing genetic or protein-related data [G06F 19/26-](#))}
- G06F 19/709 . . {for programming tools or database systems, e.g. ontologies, heterogeneous data integration, data warehousing or computing architectures (-programming tools or database systems specially adapted for processing genetic or protein-related data [G06F 19/28-](#))}

G06F 21/00	Security arrangements for protecting computers, components thereof, programs or data against unauthorised activity {(-address-based protection against unauthorised use of memory G06F 12/14 ; record carriers for use with machines and with at least a part designed to carry digital markings G06K 19/00 ; preventing unauthorised reproduction or copying of disk-type recordable media G11B 20/00 ; secret or secure communication H04L 9/00 ; digital watermarking on images H04N 1/32 ; protection in video systems or pay television H04N 7/16 -)}
U G06F 21/10	· {Protecting distributed programs or content, e.g. vending or licensing of copyrighted material}
G06F 21/16	· · {Program or content traceability, e.g. by watermarking (-digital watermarking on images H04N 1/32 -)}
U G06F 21/70	· {Protecting specific internal or peripheral components, in which the protection of a component leads to protection of the entire computer}
G06F 21/78	· · {to assure secure storage of data (-address-based protection against unauthorised use of memory G06F 12/14 ; record carriers for use with machines and with at least a part designed to carry digital markings G06K 19/00 -)}
G06F 21/80	· · · {in storage media based on magnetic or optical technology, e.g. disks with sectors (-preventing unauthorised reproduction or copying of disk-type recordable media G11B 20/00 -)}
G06F 2200/00	Indexing scheme relating to G06F 1/04 - G06F 1/32
G06F 2200/16	· Indexing scheme relating to G06F 1/16 - G06F 1/18
G06F 2200/20	· Indexing scheme relating to G06F 1/20
G06F 2200/26	· Indexing scheme relating to G06F 1/26
U G06F 2201/00	Indexing scheme relating to error detection, to error correction, and to monitoring
G06F 2201/815	· Virtual (-middleware or OS functionality using virtual machines to implement generic software techniques for error detection or fault masking G06F 11/1484 -)
G06F 2201/82	· Solving problems relating to consistency (-ensuring consistency in mirrored systems G06F 11/2064 -)
G06F 2201/85	· Active fault masking without idle spares (-active fault masking without idle spare hardware where processing functionality is redundant G06F 11/2035 -)
G06F 2203/00	Indexing scheme relating to G06F 3/00 - G06F 3/048
G06F 2203/01	· Indexing scheme relating to G06F 3/01
G06F 2203/033	· Indexing scheme relating to G06F 3/033
G06F 2203/038	· Indexing scheme relating to G06F 3/038
G06F 2203/041	· Indexing scheme relating to G06F 3/041 - G06F3-045
G06F 2203/048	· Indexing scheme relating to G06F 3/048
G06F 2205/00	Indexing scheme relating to group G06F 5/00 ; Methods or arrangements for data conversion without changing the order or content of the data handled
G06F 2205/06	· Indexing scheme relating to groups G06F 5/06 - G06F 5/16
G06F 2205/10	· Indexing scheme relating to groups G06F 5/10 - G06F 5/14
G06F 2205/12	· Indexing scheme relating to groups G06F 5/12 - G06F 5/14
U G06F 2206/00	Indexing scheme related to dedicated interfaces for computers
G06F 2206/10	· Indexing scheme related to storage interfaces for computers, indexing schema related to group G06F 3/06

- G06F 2206/15 · Indexing scheme related to printer interfaces for computers, indexing schema related to group [G06F 3/12](#)
- G06F 2206/20 · Indexing scheme related to audio interfaces for computers, indexing schema related to group [G06F 3/16](#)
- U G06F 2207/00 Indexing scheme relating to methods or arrangements for processing data by operating upon the order or content of the data handled**
- G06F 2207/02 · Indexing scheme relating to groups [G06F 7/02](#) - [G06F 7/026](#)
- G06F 2207/22 · Indexing scheme relating to groups [G06F 7/22](#) - [G06F 7/36](#)
- G06F 2207/38 · Indexing scheme relating to groups [G06F 7/38](#) - [G06F 7/575](#)
- G06F 2207/3804 · · Details (not used)
- U G06F 2207/3808 · · · concerning the type of numbers or the way they are handled
- U G06F 2207/3812 · · · · Devices capable of handling different types of numbers
- G06F 2207/382 · · · · · Reconfigurable for different fixed word lengths (-multigauge devices [G06F 2207/3828](#)-)
- U G06F 2207/386 · · · Special constructional features
- G06F 2207/3864 · · · · Clockless, i.e. asynchronous operation used as a design principle (-[G06F 2207/3888](#) takes precedence-)
- G06F 2207/48 · · Indexing scheme relating to groups [G06F 7/48](#) - [G06F 7/575](#)
- G06F 2207/483 · Indexing scheme relating to group [G06F 7/483](#)
- G06F 2207/491 · Indexing scheme relating to groups [G06F 7/491](#) - [G06F 7/4917](#)
- G06F 2207/492 · Indexing scheme relating to groups [G06F 7/492](#) - [G06F 7/496](#)
- G06F 2207/506 · Indexing scheme relating to groups [G06F 7/506](#) - [G06F 7/508](#)
- G06F 2207/535 · Indexing scheme relating to groups [G06F 7/535](#) - [G06F 7/5375](#)
- G06F 2207/5352 · · Non-restoring division not covered by [G06F 7/5375](#)
- G06F 2207/544 · Indexing scheme relating to group [G06F 7/544](#)
- G06F 2207/552 · Indexing scheme relating to groups [G06F 7/552](#) - [G06F 7/5525](#)
- G06F 2207/5526 · · Roots or inverse roots of single operands (not used)
- G06F 2207/556 · Indexing scheme relating to group [G06F 7/556](#)
- G06F 2207/58 · Indexing scheme relating to groups [G06F 7/58](#) - [G06F 7/588](#)
- G06F 2207/72 · Indexing scheme relating to groups [G06F 7/72](#) - [G06F 7/729](#)
- G06F 2207/7276 · · Additional details of aspects covered by group [G06F 7/723](#)
- G06F 2209/00 Indexing scheme relating to [G06F 9/00](#)**
- G06F 2209/46 · Indexing scheme relating to [G06F 9/46](#)
- G06F 2209/48 · Indexing scheme relating to [G06F 9/48](#)
- G06F 2209/50 · Indexing scheme relating to [G06F 9/50](#)
- G06F 2209/52 · Indexing scheme relating to [G06F 9/52](#)
- G06F 2209/54 · Indexing scheme relating to [G06F 9/54](#)
- U G06F 2211/00 Indexing scheme relating to details of data-processing equipment not covered by groups [G06F 3/00](#) to [G06F 13/00](#)**
- G06F 2211/10 · Indexing scheme relating to [G06F 11/10](#)
- G06F 2211/1002 · · Indexing scheme relating to [G06F 11/1076](#)
- G06F 2216/00 Indexing scheme relating to additional aspects of information retrieval not explicitly covered by [G06F 17/30](#) and subgroups**

- G06F 2221/00** **Indexing scheme relating to security arrangements for protecting computers, components thereof, programs or data against unauthorised activity (not used)**
- G06F 2221/03 · Indexing scheme relating to [G06F 21/50](#) , monitoring users, programs or devices to maintain the integrity of platforms
 - G06F 2221/07 · Indexing scheme relating to [G06F 21/10](#) , protecting distributed programs or content
 - G06F 2221/0702 · · Binding (not used)
 - G06F 2221/0722 · · Content (not used)
 - G06F 2221/0726 · · · Personalisation (not used)
 - G06F 2221/0744 · · · Unique instance (~~-G06F 2221/0702 takes precedence-~~)
 - G06F 2221/0751 · · Key (not used)
 - G06F 2221/0757 · · Licence (not used)
 - G06F 2221/0762 · · · Definition (not used)
 - G06F 2221/0779 · · Transfer (not used)
 - G06F 2221/0795 · · · Transaction with ACID [*Atomicity, Consistency, Isolation and Durability*] ~~properties(Atomicity, Consistency, Isolation and Durability)properties~~
 - G06F 2221/21 · Indexing scheme relating to [G06F 21/00](#) and subgroups addressing additional information or applications relating to security arrangements for protecting computers, components thereof, programs or data against unauthorised activity

Project: N/A (G06K)

- G06K 1/00** **Methods or arrangements for marking the record carrier in digital fashion (~~-interpreting G06K 3/02-~~)**
- G06K 1/02 · by punching (~~-punching in general B26F-~~)
 - G06K 1/04 · · controlled by sensing markings on the record carrier being punched (~~-sensing of record carriers G06K 7/00-~~)
 - U G06K 1/06 · · Manually-controlled device
 - G06K 1/10 · · · Tape punches (~~-specially adapted for a particular purpose, see the relevant subclass, e.g. for telegraphy H04L-~~)
 - G06K 1/12 · otherwise than by punching (~~-printing in general B41 , e.g. B41J-~~)
 - G06K 1/121 · · {by printing code marks (~~-applying code marks to labels B65C 9/46 ; marking or coding completed packages B65B 61/26-~~)}
 - G06K 1/126 · · {by photographic or thermographic registration (~~-recording apparatus for measuring instruments G01D 15/00-~~)}
 - G06K 1/128 · · {by electric registration, e.g. electrolytic, spark erosion (~~-recording apparatus for measuring instruments G01D 15/06 ; information storage in general G11-~~)}
- G06K 7/00** **Methods or arrangements for sensing record carriers,{e.g. for reading patterns} (~~-G06K 9/00 takes precedence-~~)**

Project: RP0114 (G06K)

- G06K 7/0013 · {by galvanic contacts, e.g. card connectors for ISO-7816 compliant smart cards or memory cards, e.g. SD card readers (~~-connectors in general H01R 13/00 ; connectors for SIM cards used in mobile phones or the like H04B 1/38 H04B 1/3816~~)}

Project: N/A (G06K)

- G06K 7/0095 · {Testing the sensing arrangement, e.g. testing if a magnetic card reader, bar code reader, RFID interrogator or smart card reader functions properly (-testing of electrical circuits [G01R 31/28-](#))}
- U G06K 7/01 · Details
- G06K 7/015 · · Aligning or centering of the sensing device with respect to the record carrier (-in general [G11B-](#))
- G06K 7/016 · · Synchronisation of sensing process (-in general [G11B-](#))
- U G06K 7/08 · by means detecting the change of an electrostatic or magnetic field, e.g. by detecting change of capacitance between electrodes
- U G06K 7/082 · · {using inductive or magnetic sensors}
- G06K 7/083 · · · {inductive (-[G06K 7/10336](#) takes precedence)}
- G06K 7/087 · · · {flux-sensitive, e.g. magnetic, detectors (-[G06K 7/10336](#) takes precedence)}
- U G06K 7/10 · by electromagnetic radiation, e.g. optical sensing; by corpuscular radiation
- U G06K 7/10009 · · {sensing by radiation using wavelengths larger than 0.1 mm, e.g. radio-waves or microwaves}

NOTE

This group covers electromagnetic interrogation as radiated by the antenna of an interrogation device while interrogating a plurality of wireless electronic memory record carriers, e.g. non-contact smart cards, RFID tags or labels, or transponders

- G06K 7/10019 · · · {resolving collision on the communication channels between simultaneously or concurrently interrogated record carriers.(-collision between the communication channels used by wireless communication devices, where the solution is not particularly adapted for RFIDs or the like, [H04W 74/08-](#))}
- G06K 7/10069 · · · · {the collision being resolved in the frequency domain, e.g. by hopping from one frequency to the other (-frequency hopping or spread spectrum techniques [H04B 7/00-](#))}
- U G06K 7/10079 · · · · {the collision being resolved in the spatial domain, e.g. temporary shields for blindfolding the interrogator in specific directions}
- G06K 7/10089 · · · · · {the interrogation device using at least one directional antenna or directional interrogation field to resolve the collision (direction or location finding, such as triangulation techniques, [G01S 13/00](#))}
- U G06K 7/10118 · · · {the sensing being preceded by at least one preliminary step}
- G06K 7/10148 · · · · {the step consisting of dynamically tuning the resonant circuit of the interrogation device that is emitting the interrogation signal, e.g. for impedance matching inside of the interrogation device (-for tuning related to loop aerials in general [H01Q 7/00-](#))}
- U G06K 7/10158 · · · {methods and means used by the interrogation device for reliably powering the wireless record carriers using an electromagnetic interrogation field}
- G06K 7/10178 · · · · {including auxiliary means for focusing, repeating or boosting the electromagnetic interrogation field (-comparable booster antennas integrated on the record carrier itself [G06K 19/07794-](#))}
- G06K 7/10237 · · · {the reader and the record carrier being capable of selectively switching between reader and record carrier appearance, e.g. in near field communication [NFC]} devices where the NFC device may function as an RFID reader or as an RFID tag}}
- G06K 7/10247 · · · · {issues specific to the use of single wire protocol [SWP]} in NFC like devices}}

- G06K 7/10257
 - . . . {arrangements for protecting the interrogation against piracy attacks (-computer security in general [G06F 21/00](#) ; jamming of communication, countermeasures [H04K 3/00](#) ; secret communication [H04K 1/00](#)-)}
- G06K 7/10297
 - . . . {arrangements for handling protocols designed for non-contact record carriers such as RFIDs NFCs, e.g. ISO/IEC 14443 and 18092 (-Protocols for data communication in general, see [H04L 29/06](#)-)}
- G06K 7/10316
 - . . . {using at least one antenna particularly designed for interrogating the wireless record carriers (-antennas in general [H01Q 1/22](#)-)}
- U G06K 7/10366
 - . . . {the interrogation device being adapted for miscellaneous applications}
- U G06K 7/10376
 - {the interrogation device being adapted for being moveable}
- G06K 7/10396
 - {the interrogation device being wearable, e.g. as a glove, bracelet, or ring (-wearable aerials in general [H01Q 1/27](#)-)}
- G06K 7/10415
 - {the interrogation device being fixed in its position, such as an access control device for reading wireless access cards, or a wireless ATM (-banking machines in general [G07F 19/00](#)-)}
- U G06K 7/10425
 - {the interrogation device being arranged for interrogation of record carriers passing by the interrogation device}
- G06K 7/10435
 - {the interrogation device being positioned close to a conveyor belt or the like on which moving record carriers are passing (-conveying in accordance with bodily destination marks, see [B65G 47/46](#) , sorting of objects carrying identity markings, see [B07C 5/34](#)-)}
- G06K 7/10465
 - {the interrogation device being capable of self-diagnosis, e.g. in addition to or as part of the actual interrogation process (-testing of electrical circuits in general [G01R 31/28](#)-)}
- U G06K 7/10544
 - . . {by scanning of the records by radiation in the optical part of the electromagnetic spectrum}
- U G06K 7/10554
 - . . . {Moving beam scanning}
- U G06K 7/10594
 - {Beam path}
- U G06K 7/10683
 - {Arrangement of fixed elements}
- G06K 7/10702
 - {Particularities of propagating elements, e.g. lenses, mirrors (-[G06K 7/10831](#) takes precedence-)}
- U G06K 7/10821
 - . . . {further details of bar or optical code scanning devices}
- G06K 7/10831
 - {Arrangement of optical elements, e.g. lenses, mirrors, prisms (optical elements per se [G02B](#))}
- G06K 7/10841
 - {Particularities of the light-sensitive elements (semiconductor devices [H01L](#))}
- G06K 7/10851
 - {Circuits for pulse shaping, amplifying, eliminating noise signals, checking the function of the sensing device (basic electronic circuitry [H03](#))}
- G06K 7/10861
 - {sensing of data fields affixed to objects or articles, e.g. coded labels (-postal sorting [B07C 3/14](#) , conveying articles [B65G 47/48](#)-)}
- G06K 7/14
 - . . using light without selection of wavelength, e.g. sensing reflected white light (-[G06K 7/10831](#) to [G06K 7/1097](#) take precedence-)}

G06K 9/00

Methods or arrangements for reading or recognising printed or written characters or for recognising patterns, e.g. fingerprints (~~processing or analysis of tracks of nuclear particles G01T 5/02~~; { information retrieval G06F 17/30; medical diagnosis G06F 19/34; recognition of molecular sequences G06F 19/70; radio frequency identification G06K 7/00; recognition of barcodes and similar code images G06K 7/10; computer systems based on specific computational models G06N; image analysis, inspection, positioning or tracking G06T 7/00; recognition of acoustic speech signals G10L 15/00; acoustic speaker identification G10L 17/00 })

NOTE

1. In this group, the following term is used with the meaning indicated:
- "recognising" includes several functions such as extracting features, clustering, classifying or matching.
2. IPC subgroups G06K 9/20, G06K 9/36, G06K 9/62 and G06K 9/74 refer to methods or arrangements that can be applied to a pattern independently of its nature or to that are applied to specific patterns not included in the subgroups in the range G06K 9/00006 to G06K 9/00852. The CPC subgroups in the range G06K 9/00006 to G06K 9/00852 refer to the same methods or arrangements when applied or specially adapted to the specific patterns to which these subgroups relate.
3. The present group does not cover the use of recognised patterns in specific applications, e.g. the use of traced gestures recognised as commands to be input to a computer is covered by the groups under G06F 3/00

- G06K 9/00006
- {Acquiring or recognising fingerprints or palmprints (~~non-computerised biometric identification A61B 5/00~~; means for preventing unauthorised use of vehicles B60R 25/00; security in computer systems G06F 21/00; secure access to buildings G07C 9/00; secret or secure communication H04L 9/00; means for preventing unauthorised telephone calls H04M 1/667-)}
- G06K 9/00013
- {Image acquisition (~~materials for developing fingerprints, means for visual identification A61B 5/1172-)}~~
- G06K 9/00026
- • {~~by combining adjacent partial images(e.g. slices)~~*by combining adjacent partial images (e.g. slices)* to create a composite input or reference pattern; tracking a sweeping finger movement (~~for specific swipe sensing hardware the groups G06K 9/0002, G06K 9/00033, G06K 9/0004 and G06K 9/00046 take precedence-)}~~
- G06K 9/00046
- • {~~by using geometrical optics, e.g. using prisms (-G06K 9/00033 takes precedence-)}~~
- G06K 9/00053
- • {Protecting the fingerprint sensor against damage caused by the finger (~~protecting semiconductor devices against mechanical damage in general H01L 23/562; encapsulations of semiconductor devices H01L 23/28; protecting semiconductor devices against electrostatic discharges in general H01L 23/60, H01L 27/0248-)}~~
- G06K 9/00107
- {Detecting the live character of the finger, i.e. distinguishing from a fake or cadaver finger (~~fingerprint spoof detection by analysing recognition results G06K 9/00087-)}~~
- G06K 9/00127
- {Acquiring and recognising microscopic objects, e.g. biological cells and cellular parts (~~apparatus for measuring microbiological properties C12M 1/34; optical analysis of chemical or physical properties of particles, e.g. investigation of dimensions G01N 15/14; biomedical image inspection G06T 7/0012-)}~~
- G06K 9/00134
- {Acquisition, e.g. centering the image field (~~fluorescence analysis G01N 21/64; scanning microscopes G02B 21/002; processing of multiple slides G02B 21/365-)}~~
- G06K 9/0014
- {Pre-processing, e.g. image segmentation (~~segmentation for general image processing G06T 7/0079-); Feature extraction}~~

- G06K 9/00201
 - {Recognising three-dimensional objects, e.g. using range or tactile information (-arrangements for measuring depth [G01B 11/22](#) , for measuring curvatures [G01B 11/24](#) ; processing image data for depth or shape recovery [G06T 7/0051](#) ; registration of range data [G06T 7/0024](#)-)}
- U G06K 9/00221
 - {Acquiring or recognising human faces, facial parts, facial sketches, facial expressions}
- U G06K 9/00228
 - • {Detection; Localisation; Normalisation}
- G06K 9/00234
 - • • {using pixel segmentation or colour matching (-segmentation for general image processing [G06T 7/0079](#) ; colour analysis [G06T 7/408](#)-)}
- G06K 9/00241
 - • • {using holistic features (-extraction or representation of holistic features per se [G06K 9/00275](#)-)}
- G06K 9/00248
 - • • {using facial parts and geometric relationships (-extraction or representation of facial parts per se [G06K 9/00281](#)-)}
- G06K 9/00261
 - • • {using comparisons between temporally consecutive images (-face tracking [G06T 7/20](#)-)}
- U G06K 9/00268
 - • {Feature extraction; Face representation}
- G06K 9/00275
 - • • {Holistic features and representations, i.e. based on the facial image taken as a whole (-statistical feature extraction in general [G06K 9/6232](#) ; matching eigenfaces [G06K 9/00288](#)-)}
- G06K 9/00281
 - • • {Local features and components; Facial parts (-iris recognition [G06K 9/00597](#)-); Occluding parts, e.g. glasses; Geometrical relationships}
- U G06K 9/00288
 - • {Classification, e.g. identification}
- G06K 9/00295
 - • • {of unknown faces, i.e. recognising the same non-enrolled faces, e.g. recognising the unknown faces across different face tracks (-tracking in general [G06T 7/20](#) ; detecting affinities between people using analysis of image collections [G06K 9/00677](#)-)}
- G06K 9/00335
 - {Recognising movements or behaviour, e.g. recognition of gestures, dynamic facial expressions; Lip-reading (-using movements or postures of body parts for inputting data to a computer [G06F 3/00](#) ; static facial expressions [G06K 9/00221](#) ; recognition of scene events [G06K 9/00624](#) ; analysis of movement [G06T 7/20](#) ; lip-reading assisted speech recognition [G10L 15/24](#)-)}
- G06K 9/00355
 - • {Recognition of hand or arm movements, e.g. recognition of deaf sign language (-static hand posture recognition [G06K 9/00375](#)-)}
- G06K 9/00362
 - {Recognising human body or animal bodies, e.g. vehicle occupant, pedestrian; Recognising body parts, e.g. hand (-passenger detection systems [B60N 2/002](#) ; handprints [G06K 9/00006](#) ; face and facial components [G06K 9/00221](#) ; eyes [G06K 9/00597](#) ; determining position of passenger [G06T 7/004](#)-)}
- G06K 9/00369
 - • {Recognition of whole body, e.g. static pedestrian or occupant recognition (-[G06K 9/00342](#) takes precedence-)}
- G06K 9/00375
 - • {Recognition of hand or arm, e.g. static hand biometric or posture recognition (-[G06K 9/00355](#) takes precedence; palmprint and fingerprint recognition [G06K 9/00006](#)-)}
- G06K 9/00402
 - {Recognising digital ink, i.e. recognising temporal sequences of handwritten position coordinates (-[G06K 9/00154](#) takes precedence; interaction arrangements using gestures traced on a digitiser [G06F 3/04883](#) ; acquisition of digital ink as far as essentially related to recognition [G06K 9/222](#)-)}
- U G06K 9/00442
 - {Document analysis and understanding; Document recognition}
- G06K 9/00449
 - • {Layout structured with printed lines or input boxes, e.g. business forms, tables (-tables without printed lines or boxes [G06K 9/00463](#) ; identification of document type using identifier or marker [G06K 9/2054](#)-)}
- G06K 9/00456
 - • {Classification of image contents, e.g. text, photographs, tables (-discrimination based on image tones [H04N 1/40062](#)-)}

- G06K 9/00496
 - {Recognising patterns in signals and combinations thereof (-signature verification [G06K 9/00154](#) ; analysing specific medical signals, e.g. bioelectric signals, blood pressure [A61B 5/00](#) ; processing radar and similar signals [G01S](#) ; analysis of chromatographic signals [G01N 30/86](#) ; processing seismic signals [G01V 1/28](#) , [G01V 1/46](#) ; acoustic speech processing [G10L](#) ; transmission systems [H04B 1/00](#)-)}
- G06K 9/00503
 - • {Preprocessing, e.g. filtering (-electrical circuits for filtering [H03H](#) ; adaptive filters [H03H 21/00](#) ; convolution-based filters [H03H 17/00](#) , [H03H 21/00](#)-)}
- G06K 9/00523
 - • {Feature extraction (-arrangements for measuring frequencies and for spectral analysis [G01R 23/16](#) ; algorithms for spectral analysis, digital electric mathematical transforms per se [G06F 17/14](#)-)}
- G06K 9/00536
 - • {Classification; Matching (-digital electric correlation [G06F 17/15](#) ; electronic classification and matching per se [G06K 9/62](#)-)}
- G06K 9/0057
 - • {Source localisation; Inverse modelling (-electroencephalography [A61B 5/0476](#) ; source separation [G06K 9/624](#) ; image reconstruction from projection, e.g. tomography [G06T 11/003](#) ; beam formers in general [G10K 11/34](#) ; radio transmission systems for beam forming [H04B 7/04](#)-)}
- G06K 9/00577
 - {Recognising objects characterised by unique random properties, i.e. objects having a physically unclonable function [PUF], e.g. authenticating objects based on their unclonable texture (-verifying genuineness of valuable papers [G07D 7/00](#)-)}
- G06K 9/00624
 - {Recognising scenes, i.e. recognition of a whole field of perception; recognising scene-specific objects (-image retrieval [G06F 17/30244](#) ; video retrieval [G06F 17/30781](#) ; image analysis and image segmentation, e.g. pixel labelling [G06T 7/00](#) ; alarm systems [G08B](#); traffic control [G08G](#); pictorial communication [H04N](#)-)}
- G06K 9/0063
 - • {Recognising patterns in remote scenes, e.g. aerial images, vegetation versus urban areas (-radar and similar technologies [G01S](#); segmentation for general image processing [G06T 7/0079](#)-)}
- G06K 9/00711
 - • {Recognising video content, e.g. extracting audiovisual features from movies, extracting representative key-frames, discriminating news vs. sport content (-information retrieval in video databases [G06F 17/30781](#) ; recognition of movements or behaviour [G06K 9/00335](#) ; extracting overlay text [G06K 9/3266](#) ; fusion techniques [G06K 9/6288](#) ; speech recognition [G10L 15/00](#); indexing of audio and video or audiovisual data on record media using extracted features or characteristics [G11B 27/28](#)-)}
- G06K 9/00718
 - • • {Higher-level, semantic clustering, classification or understanding of video scenes, e.g. detection, labelling or Markovian modelling of sport events or news items (-segmenting video sequences [G06K 9/00765](#) ; clustering techniques per se [G06K 9/6218](#) ; classification techniques per se [G06K 9/6267](#)-)}
- G06K 9/00724
 - • • • {of sport video content (-determination of trajectories [G06T 7/20](#)-)}
- G06K 9/00744
 - • • • {Extracting features from the video content, e.g. video "fingerprints", or characteristics, e.g. by automatic extraction of representative shots or key frames (-segmentation for general image processing [G06T 7/0079](#) ; use of extracted content features in video information retrieval [G06F 17/30784](#) ; automated annotation of image based on image contents [G06K 9/00671](#) ; determination of region of interest for recognition [G06K 9/3233](#) ; extraction of image features or characteristics [G06K 9/46](#) , determining representative patterns [G06K 9/6255](#)-)}
- G06K 9/00751
 - • • • {Detecting suitable features for summarising video content (-presentation in the form of a video summary [G06F 17/30843](#) ; editing video summary [G11B 27/034](#) ; programmed access to video content [G11B 27/105](#)-)}

- G06K 9/00758
 - • {Matching video sequences (-aligning the image field [G06K 9/32](#) ; image matching techniques [G06K 9/00201](#) , [G06K 9/62](#) ; registration of image sequences [G06T 7/0038](#)-)}
- G06K 9/00765
 - • {Segmenting video sequences, i.e. computational techniques such as parsing or cutting the sequence, low-level clustering or determining units such as shots and scenes (-segmentation of touching or overlapping patterns in the image field [G06K 9/34](#) ; segmentation for general image processing [G06T 7/0079](#) ; segmentation of an image based on motion information [G06T 7/2006](#) ; picture signal circuitry for scene change detection [H04N 5/147](#)-)}
- G06K 9/00771
 - {Recognising scenes under surveillance, e.g. with Markovian modelling of scene activity (-[G06K 9/00785](#) takes precedence; recognition of movements or behaviour [G06K 9/00335](#) ; motion analysis using general image processing [G06T 7/20](#) ; intruder alarms using image scanning and comparing systems [G08B 13/194](#) ; circuitry for movement detection and estimation for pictorial communication [H04N 5/144](#) ; closed circuit television systems [H04N 7/18](#)-)}
- G06K 9/00778
 - • {Recognition or static of dynamic crowd images, e.g. recognition of crowd congestion (-recognition of individual pedestrians [G06K 9/00369](#) , recognition of whole body movements [G06K 9/00342](#) ; counting mechanisms [G06M](#); analysis of motion [G06T 7/20](#) ; individual entry or exit registers [G07C 9/00](#)-)}
- G06K 9/00785
 - {Recognising traffic patterns acquired by static cameras (-measuring or analysing of parameters relative to traffic conditions [G08G 1/0104](#) ; analysing traffic situation by means of optical sensors [G08G 1/04](#)-)}
- G06K 9/00791
 - {Recognising scenes perceived from the perspective of a land vehicle, e.g. recognising lanes, obstacles or traffic signs on road scenes (-vehicle signalling devices [B60Q 9/005](#) , [B60Q 1/525](#) ; viewing systems for vehicles being directed to the improvement of the driver's vision [B60R 1/00](#) ; means for informing the driver [B60W 50/14](#) ; steering aid displays [B62D 15/02](#) ; control of position of land vehicles using camera and image processing [G05D 1/0246](#) ; traffic control for road vehicles, e.g. involving several vehicles or traffic rules [G08G 1/00](#)-)}
- G06K 9/00798
 - • {Recognition of lanes or road borders, e.g. of lane markings, or recognition of driver's driving pattern in relation to lanes perceived from the vehicle; Analysis of car trajectory relative to detected road (-determination of trajectories [G06T 7/20](#)-)}
- G06K 9/00805
 - • {Detecting potential obstacles (-recognising people [G06K 9/00362](#)-)}
- U G06K 9/00832
 - {Recognising scenes inside a vehicle, e.g. related to occupancy, driver state, inner lighting conditions}
- G06K 9/00845
 - • {Recognising the driver's state or behaviour, e.g. attention, drowsiness (-anti-dozing alarms [G08B 21/06](#) ; safety device responsive to condition of driver [B60K 28/02](#) ; psychotechnic devices for vehicle drivers [A61B 5/18](#)-)}
- G06K 9/00885
 - {-Biometric patterns not provided for under [G06K 9/00006](#) , [G06K 9/00154](#) , [G06K 9/00335](#) , [G06K 9/00362](#) , [G06K 9/00597](#) ; Biometric specific functions not specific to the kind of biometric-}
- G06K 9/00892
 - {Use of multiple biometrics (-sensor fusion [G06K 9/6289](#)-)}
- G06K 9/00899
 - {Spoof detection (-[G06K 9/00107](#) takes precedence-)}
- G06K 9/03
 - Detection or correction of errors, e.g. by rescanning the pattern{-validation or performance evaluation [G06K 9/6261](#)-}
- U G06K 9/18
 - using printed characters having additional code marks or containing code marks, e.g. the character being composed of individual strokes of different shape, each representing a different code value

- G06K 9/183
 - • {Characters composed of bars, e.g. CMC-7 (-bar code forming unreadable characters, e.g. UPC, [G06K 7/00](#)-)}
- G06K 9/186
 - • {Recognition of characters printed with magnetic ink (-[G06K 9/183](#) takes precedence-)}
- U G06K 9/20
 - Image acquisition
- G06K 9/2054
 - • {Selective acquisition/locating/processing of specific regions, e.g. highlighted text, fiducial marks, predetermined fields, document type identification (-[G06K 9/2018](#) , [G06K 9/209](#) take precedence; recognising the document type with the paragraph layout [G06K 9/00442](#) ; recognising the document type with the layout of printed lines or input boxes [G06K 9/00449](#)-)}
- G06K 9/2063
 - • • {based on a marking or identifier characterising the document or the area (-markings for centering the field of view on the document [G06K 9/3216](#)-)}
- G06K 9/2072
 - • • {based on positionally close symbols, e.g. amount sign or URL-specific characters (-recognition with lexical or semantic contextt [G06K 9/72](#)-)}
- G06K 9/209
 - • {Sensor details, e.g. position, configuration, special lenses (-[G06K 9/2018](#) takes precedence-)}
- U G06K 9/22
 - • using hand-held instruments
- G06K 9/222
 - • • {the instrument generating sequences of position coordinates corresponding to handwriting; preprocessing or recognising digital ink (-pen or stylus type devices inputting position [G06F 3/03545](#) , light pens [G06F 3/03542](#) ; interaction arrangements using gestures traced on a digitiser [G06F 3/04883](#)-)}
- U G06K 9/32
 - • Aligning or centering of the image pick-up or image-field
- G06K 9/3216
 - • • {by locating a pattern (-[G06K 9/3208](#) , [G06K 9/3275](#) take precedence; centering within a document with a marking [G06K 9/2063](#)-)}
- G06K 9/3233
 - • • {Determination of region of interest (-segmentation for general image processing [G06T 7/0079](#)-)}
- G06K 9/3275
 - • • {Inclination (skew) detection or correction of characters or of image to be recognised (-determining orientation of objects in general [G06T 7/004](#)-)}
- G06K 9/34
 - • Segmentation of touching or overlapping patterns in the image field{-segmentation by quantisation, e.g. thresholding, [G06K 9/38](#) ; edge detection for image feature extraction [G06K 9/4604](#) ; extraction of connected components or edge linking [G06K 9/4638](#) ; segmentation or edge detection for general image processing [G06T 7/0079](#)-)}
- G06K 9/342
 - • • {Cutting or merging image elements, e.g. region growing, watershed, clustering-based techniques (-smoothing or thinning of patterns [G06K 9/44](#) ; clustering techniques [G06K 9/6218](#) ; region-based segmentation for general image processing [G06T 7/0081](#)-)}
- G06K 9/344
 - • • {using recognition of characters or words (-lexical postprocessing of segmented characters [G06K 9/72](#)-)}
- G06K 9/346
 - • • {Removing patterns interfering with the pattern to be recognised, such as ruled lines, underlines (-extracting table structures [G06K 9/00442](#) ; document recognition [G06K 9/2054](#)-)}
- G06K 9/36
 - Image preprocessing, i.e. processing the image information without deciding about the identity of the image (-image data processing or generation, in general [G06T](#))

NOTE

Group [G06K 9/58](#) takes precedence over groups [G06K 9/38](#) to [G06K 9/54](#)

- G06K 9/38
 - • Quantising the analogue image signal {e.g. histogram thresholding for discrimination between background and foreground patterns (-region-based segmentation of touching or overlapping patterns [G06K 9/342](#) ; image segmentation for general image processing [G06T 7/0081](#)-)}
- G06K 9/40
 - • Noise filtering{{(-restoration for general image processing [G06T 5/001](#) ; morphologic operations for general image enhancement [G06T 5/30](#)-)}
- G06K 9/44
 - • Smoothing or thinning of the pattern{{(-restoration for general image processing [G06T 5/001](#) ; morphologic operations for general image enhancement [G06T 5/30](#)-)}
- G06K 9/46
 - • Extraction of features or characteristics of the image{{(-segmentation of touching or overlapping patterns [G06K 9/34](#) ; edge detection for feature extraction [G06K 9/4604](#) ; segmentation or edge detection for general image processing [G06T 7/0079](#)-)}
- G06K 9/4604
 - • • {Detecting partial patterns, e.g. edges or contours, or configurations, e.g. loops, corners, strokes, intersections (-extracting features by contour coding [G06K 9/48](#) ; edge-based segmentation for general image processing [G06T 7/0083](#) ; edge detection for general image processing [G06T 7/0085](#)-)}
- U G06K 9/4609
 - • • • {by matching or filtering}
- G06K 9/4614
 - • • • {filtering with Haar-like subimages, e.g. computation thereof with the integral image technique (-biologically-inspired filters such as Gabor wavelets or local ICA kernels [G06K 9/4619](#) ; local approaches in face detection or representation [G06K 9/00248](#) , [G006K9/00F2L](#)-)}
- G06K 9/4638
 - • • • {by analysing connectivity relationships of elements of the pattern, e.g. by edge linking, by connected component or neighbouring slice analysis, by Markov Random Field [MRF]/analysis (-segmentation of touching or overlapping patterns involving probabilistic approaches [G06K 9/34](#) ; MRF and other Markovian models in general [G06K 9/6296](#) ; computing shortest geodesic path [G06K 9/6215](#) ; segmentation involving probabilistic approaches for general image processing [G06T 7/0087](#)-)}
- G06K 9/4642
 - • • {by performing operations within image blocks or by using histograms (-[G06K 9/4652](#) and [G06K 9/4671](#) take precedence; matching image histograms [G06K 9/6212](#)-)}
- G06K 9/4647
 - • • • {summing image-intensity values; Projection and histogram analysis (-intersections with "scanning" patterns [G06K 9/50](#) ; [G06K 9/4652](#) takes precedence-)}
- G06K 9/4652
 - • • {related to colour (-[G06K 9/4671](#) takes precedence; colour-based face detection [G06K 9/00234](#) ; colour analysis in general [G06T 7/408](#) ; region-based segmentation for general image processing [G06T 7/0081](#) ; colour conversion and processing [H04N 1/46](#) ; coding colour pictures signals using a reduced set of representative colours [H04N 1/644](#)-)}
- G06K 9/4661
 - • • {related to illumination properties, e.g. according to a reflectance or lighting model (-depth from shading [G06T 7/0053](#) ; image rendering with lighting effects [G06T 15/50](#)-)}
- G06K 9/4671
 - • • {Extracting features based on salient regional features, e.g. Scale Invariant Feature Transform [SIFT] keypoints (-determination of region of interest for recognition [ROI] [G06K 9/3233](#) ; extraction of specific shape primitives, e.g. corner or loop, or of configurations thereof, [G06K 9/4604](#) ; biologically-inspired systems integrating saliency maps, e.g. for modelling visual attention [G06K 9/4628](#) ; global invariant features [G06K 9/52](#)-)}
- G06K 9/4676
 - • • • {Extracting features based on a plurality of salient regional features, e.g. "bag of words"(-saliency map with interactions such as reinforcement or inhibition [G06K 9/4623](#)-)}
- U G06K 9/468
 - • • {related to a structural representation of the pattern}

- G06K 9/4685
 - . . . {Syntactic representation, e.g. using a grammatical approach (-syntactic pattern recognition [G06K 9/6878](#)-)}
- G06K 9/469
 - . . . {Graphical representation, e.g. directed attributed graph (-graph matching [G06K 9/6892](#)-)}
- G06K 9/48
 - . . . by coding the contour of the pattern {contour related features or features from contour like patterns, e.g. hand-drawn point-sequence}
- G06K 9/50
 - . . . by analysing segments intersecting the pattern {segments obtained by the intersection of the pattern with a scanning pattern, e.g. random scanning, circular scanning (-[G06K 9/4638](#) takes precedence-)}
- U G06K 9/52
 - . . . by deriving mathematical or geometrical properties from the whole image
- G06K 9/525
 - . . . {Computation of moments (-moments not relevant for pattern recognition [G06T 7/606](#)-)}
- U G06K 9/54
 - . . Combinations of preprocessing functions
- G06K 9/56
 - . . . using a local operator, i.e. means to operate on an elementary image point in terms of the immediate surroundings of this point((-local operators for general image enhancement [G06T 5/20](#)-)}
- U G06K 9/60
 - . Combination of image acquisition and preprocessing functions
- G06K 9/605
 - . . {the combination being locally implemented within the sensing arrangement, e.g. artificial retina (-receptive fields [G06K 9/4619](#) ; enhancement in image sensors [H04N 3/15](#) , [H04N 5/217](#) , [H04N 5/232](#) , [H04N 5/235](#)-)}
- G06K 9/62
 - . Methods or arrangements for recognition using electronic means (-learning machines [G06F 15/18](#) ; digital correlation [G06F 17/15](#) ; analogue correlation [G06G 7/19](#)-)}
- U G06K 9/6201
 - . . {Matching; Proximity measures}
- G06K 9/6202
 - . . . {Comparing pixel values or logical combinations thereof, or feature values having positional relevance, e.g. template matching (-specially adapted for image alignment [G06T 7/0024](#) ; specially adapted for position determination [G06T 7/004](#) ; specially adapted for the calculation of depth from stereo images [G06T 7/0051](#) , specially adapted for image segmentation [G06T 7/0079](#) ; specially adapted for the analysis of motion [G06T 7/20](#)-)}
- U G06K 9/6203
 - . . . {Shifting or otherwise transforming the patterns to accommodate for positional errors}
- G06K 9/6204
 - {Matching of contours (-[G06K 9/6206](#) , [G06K 9/6211](#) take precedence-)}
- G06K 9/6205
 - {by mapping curve parameters onto an accumulator array, e.g. generalised Hough Transform (-detecting primitive shapes such as lines and circles by accumulating parameters of a known equation [G06K 9/4633](#)-)}
- G06K 9/6206
 - {involving a deformation of the sample or reference pattern; Elastic matching (-segmentation of touching or overlapping patterns involving deformable models [G06K 9/34](#) ; segmentation involving deformable models for general image processing [G06T 7/0089](#)-)}
- G06K 9/6211
 - {Matching configurations of points or features, e.g. constellation matching (-[G06K 9/00087](#) takes precedence-)}
- G06K 9/6217
 - . . {Design or setup of recognition systems and techniques; Extraction of features in feature space; Clustering techniques; Blind source separation (-regression analysis [G06F 17/18](#)-)}
- U G06K 9/6218
 - . . . {Clustering techniques}
- U G06K 9/622
 - {Non-hierarchical partitioning techniques}

- G06K 9/6224
 - {based on graph theory, e.g. Minimum Spanning Trees [MST]}, graph cuts, spectral clustering techniques (-segmentation of touching or overlapping patterns involving graph-based approaches [G06K 9/342](#) ; graph embedding [G06K 9/6252](#) ; segmentation involving graph-based approaches for general image processing [G06T 7/0093](#)-)}
- G06K 9/6228
 - . . . {Selecting the most significant subset of features (-[G06K 9/6232](#) takes precedence-)}
- G06K 9/6229
 - {by using evolutionary computational techniques, e.g. genetic algorithms (-genetic algorithms per se [G06N 3/126](#)-)}
- G06K 9/6231
 - {by evaluating different subsets according to an optimisation criteria such as class separability, e.g. forward selection, backward elimination (-linear discriminant analysis [G06K 9/6234](#)-)}
- U G06K 9/6232
 - . . . {Extracting features by transforming the feature space, e.g. multidimensional scaling; Mappings, e.g. subspace methods}
- G06K 9/6234
 - {based on a discrimination criterion, e.g. discriminant analysis (-discriminant functions [G06K 9/6227](#)-)}
- G06K 9/6239
 - {based on a naturality criterion, e.g. with non-negative factorisation or negative correlation (-matrix computation [G06F 17/16](#)-)}
- U G06K 9/624
 - {based on a separation criterion, e.g. independent component analysis}
- G06K 9/6246
 - {overcoming non-stationarity or permutations (-using non-stationarity for separation [G06K 9/6244](#)-)}
- U G06K 9/6247
 - {based on an approximation criterion, e.g. principal component analysis}
- G06K 9/6248
 - {nonlinearly, e.g. embedding a manifold in a Euclidean space (-principal curves [G06K 9/6251](#)-)}
- G06K 9/6253
 - . . . {User interactive design (-[G06K 9/6263](#) takes precedence-); Environments; Tool boxes}
- U G06K 9/6256
 - . . . {Obtaining sets of training patterns; Bootstrap methods, e.g. bagging, boosting}
- G06K 9/6257
 - {characterised by the organisation or the structure of the process, e.g. boosting cascade (-feature selection by floating search [G06K 9/6231](#)-)}
- G06K 9/6259
 - {characterised by the incorporation of unlabelled data, e.g. multiple instance learning [MIL], semi-supervised techniques using expectation-maximisation [EM] or na?ve labelling (-EM techniques [G06K 9/6226](#); EM techniques [G06K 9/6226](#); validation with "oracles" [G06K 9/6263](#))}
- U G06K 9/6262
 - . . . {Validation, performance evaluation or active pattern learning techniques}
- G06K 9/6263
 - {based on the feedback of a supervisor (-relevance feedback in information retrieval [G06F 17/30](#)-)}
- U G06K 9/6267
 - . . {Classification techniques}
- U G06K 9/6268
 - . . . {relating to the classification paradigm, e.g. parametric or non-parametric approaches}
- G06K 9/6277
 - {~~based on a parametric (probabilistic)~~ *based on a parametric (probabilistic)* model, e.g. based on Neyman-Pearson lemma, likelihood ratio, Receiver Operating Characteristic (ROC) curve plotting a False Acceptance Rate (FAR) versus a False Reject Rate (FRR)(-segmentation of touching or overlapping patterns involving probabilistic approaches [G06K 9/34](#) ; image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields techniques, [G06K 9/4638](#) ; segmentation involving probabilistic approaches for general image processing [G06T 7/0087](#)-)}
- U G06K 9/6285
 - . . . {relating to the decision surface}
- G06K 9/6287
 - {Non-linear, e.g. polynomial classifier (-[G06K 9/6284](#) takes precedence; classifier with multiple radial basis functions [G06K 9/6273](#)-)}

- G06K 9/6288
 - • {Fusion techniques, i.e. combining data from various sources, e.g. sensor fusion (-bootstrap techniques, e.g. boosting [G06K 9/6256](#) ; data unmixing [G06K 9/624](#) ; image matching [G06K 9/64](#) ; fusion of acoustic speaker inputs [G10L 17/10](#)-)}
- G06K 9/6289
 - • • {of input or preprocessed data (-imaging spectrometers [G01J 3/2823](#) ; image fusion in general and biomedical image fusion [G06T 5/50](#) ; processing and conversion of colour signals [H04N 1/46](#)-)}
- G06K 9/6292
 - • • {of classification results, e.g. of classification results related to same input data (-[G06K 9/6256](#) takes precedence-)}
- G06K 9/6296
 - • {Graphical models, e.g. Bayesian networks (-probabilistic networks per se [G06N 7/005](#)-)}
- G06K 9/6297
 - • • {Markov models and related models, e.g. semi-Markov models; Markov random fields; networks embedding Markov models (-segmentation of touching or overlapping patterns involving probabilistic approaches [G06K 9/34](#) ; image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields, [G06K 9/4638](#) ; application of Markov models to acoustic speech recognition [G10L 15/00](#) ; segmentation involving probabilistic approaches for general image processing [G06T 7/0087](#)-)}
- G06K 9/68
 - • using sequential comparisons of the image signals with a plurality of references {in which the sequence of the image signals or the references is relevant}, e.g. addressable memory
- G06K 9/685
 - • • {Involving plural approaches, e.g. verification by template match; resolving confusion among similar patterns, e.g. O & Q (-[G06K 9/6807](#) takes precedence-)}
- U G06K 9/6878
 - • • {Syntactic or structural pattern recognition, e.g. symbolic string recognition}
- G06K 9/6885
 - • • • {Syntactic analysis, e.g. using a grammatical approach (-syntactic image representation [G06K 9/4685](#)-)}
- G06K 9/6892
 - • • • {Graph matching (-graphical image representation [G06K 9/469](#)-)}
- G06K 9/70
 - • • the selection of the next reference depending on the result of the preceding comparison {contains no documents}
- U G06K 9/72
 - • using context analysis based on the provisionally recognized identity of a number of successive patterns, e.g. a word
- G06K 9/723
 - • • {Lexical context (-[G06K 9/00872](#) takes precedence-)}
- G06K 9/74
 - Arrangements for recognition using optical reference masks (-optical analogue correlation [G06E 3/00](#) ; ~~{arrangements for optically extracting non-holistic features, e.g. optical wedge-ring detectors, G06K 9/58}~~ ; *{arrangements for optically extracting non-holistic features, e.g. optical wedge-ring detectors, G06K 9/58}*)
- G06K 9/741
 - • {using frequency domain filters, e.g. Fourier masks implemented on spatial light modulators (-spatial light modulators per se [G02B 26/00](#) , [G02F](#)-)}
- G06K 11/00**

Methods or arrangements for graph-reading or for converting the pattern of mechanical parameters, e.g. force or presence, into electrical signal (-combined with character or pattern recognition [G06K 9/00](#) ; feelers for copying devices on machine tools [B23Q 35/00](#) ; arrangements for measuring areas [G01B](#); measuring force [G01L](#); adapted as input devices to computers [G06F 3/00](#) ; systems for transmitting the position of an object with respect to a predetermined reference system, e.g. tele-autographic system, [G08C 21/00](#)-)

WARNING

This group and its subgroups are no longer used for the classification of new documents as from 1 January 2006. Documents relating to methods and

arrangements for input to a computer are classified under [G06F 3/033](#) and [G06F 3/041](#)

- G06K 11/06
 - Devices for converting the position of a manually operated writing or tracing member into an electrical signal ~~{(-not used, see [G06F 3/03](#)-)}~~
- G06K 13/00**
 - Conveying record carriers from one station to another, e.g. from stack to punching mechanism ~~(-transport devices in general [B65G](#) ; handling thin or filamentary material in general [B65H](#)-)~~**
- U G06K 13/02
 - the record carrier having longitudinal dimension comparable with transverse dimension, e.g. punched card
- U G06K 13/08
 - · Feeding or discharging cards
- G06K 13/0843
 - · · {from or back into the same magazine ~~(-automatic card files [G06K 17/0003](#)-)}~~
- G06K 13/14
 - · · Card magazines, e.g. pocket, hopper ~~(-card magazines in general [B42F](#)-)~~
- G06K 13/18
 - the record carrier being longitudinally extended, e.g. punched tape ~~(-features of interest apart from data processing [G11B](#) ; magnetic-tape drive [G11B 15/00](#)-)~~
- G06K 15/00**
 - Arrangements for producing a permanent visual presentation of the output data{, e.g. computer output printers} ~~(-printing or plotting combined with another operation, e.g. with conveying, [G06K 17/00](#)-)}~~~~(-construction of printing heads [B41J 2/00](#) ; special arrangements for scanning and reproduction of pictures involving their transmission, e.g. facsimile [H04N 1/00](#) ; for photocomposing [B41B 19/00](#)-)}~~**
- U G06K 15/002
 - {Interacting with the operator}
- G06K 15/007
 - · {only remotely, e.g. at a host computer ~~(-dedicated computer interfaces to print systems [G06F 3/1201](#)-)}~~
- U G06K 15/02
 - using printers
- G06K 15/025
 - · {Simulating output on another printing arrangement, e.g. proof output ~~(-matching two or more picture signal generators or two or more picture reproducers [H04N 1/6052](#)-)}~~
- G06K 15/027
 - · {Test patterns and calibration ~~(-arrangements for controlling or analysing printing mechanisms of typewriters or selective printing units [B41J 29/393](#) takes precedence; colour correction using test pattern analysis in general [H04N 1/6033](#)-)}~~
- G06K 15/10
 - · by matrix printers~~{(-[G06K 15/028](#) takes precedence-)}~~
- G06K 15/12
 - · by photographic printing {e.g. by laser printers}
- G06K 15/1204
 - · · {involving the fast moving of an optical beam in the main scanning direction ~~(-[G06K 15/1233](#) to [G06K 15/129](#) take precedence-)}~~
- G06K 15/1209
 - · · · {Intensity control of the optical beam ~~(-[G06K 15/1223](#) takes precedence-)}~~
- G06K 15/1219
 - · · · {Detection, control or error compensation of scanning velocity or position, e.g. synchronisation ~~(-[G06K 15/1223](#) takes precedence-)}~~
- G06K 15/1228
 - · · {involving the fast moving of a light beam in two directions ~~(-[G06K 15/1233](#) to [G06K 15/129](#) take precedence-)}~~
- G06K 15/1285
 - · · {Holographic scanning ~~(-in general [G02B](#)-)}~~
- G06K 15/14
 - · by electrographic printing, e.g. xerography; by magnetographic printing~~{(-[G06K 15/12](#) takes precedence-)}~~
- G06K 15/18
 - · {Conditioning data for presenting it to the physical printing elements ~~(-for data conditioning specific to a type of printer see subgroups [G06K 15/028](#) to [G06K 15/14](#) ; print job translation or parsing [G06F 3/1244](#)-)}~~
- U G06K 15/1801
 - · · {Input data handling means}

- G06K 15/1818 {Adaptations for accepting data from more than one source (-managing interfaces [G06K 15/4045-](#))}
- G06K 15/1825 {Adapting the print data to an output condition, e.g. object trapping (-trapping on rasterized data [H04N 1/58-](#))}
- U G06K 15/1835 {Transforming generic data}
- G06K 15/1844 {Anti-aliasing raster data (-[G06K 15/1843](#) takes precedence-)}
- G06K 15/1846 {Depleting generic raster data, e.g. characters (-[G06K 15/1843](#) takes precedence-)}
- G06K 15/1867 {Post-processing of the composed and rasterized print image (-Scanning, transmission or reproduction of documents [H04N 1/00-](#))}
- U G06K 15/1872 {Image enhancement}
- G06K 15/1878 {Adjusting colours (-Image colour correction or control for documents in general [H04N 1/60-](#))}
- G06K 15/1881 {Halftoning (-halftoning of still images in general [H04N 1/405](#) , [H04N 1/52-](#))}
- G06K 15/40 . {Details not directly involved in printing, e.g. machine management, management of the arrangement as a whole or of its constitutive parts (-computer driven print job management [G06F 3/1237-](#))}
- G06K 15/4005 . . {Sharing resources or data with other data processing systems; Preparing such data (-for distributed printing [G06K 15/1859-](#))}
- G06K 15/402 . . . {Sharing data concerning the arrangement's configuration or current state (-for managing optional units [G06K 15/4025-](#))}
- G06K 15/4055 . . {Managing power consumption, e.g. standby mode (-computer driven power saving management for a printer [G06F 3/1221](#) ; power saving in a data processing device in general [G06F 1/32-](#))}
- G06K 15/406 . . . {Wake-up procedures (-start-up of a laser scanner [G06K 15/1219-](#))}
- G06K 15/4065 . . {Managing print media, e.g. determining available sheet sizes (-feeding means [G06K 15/16-](#))}
- G06K 15/408 . . . {Handling exceptions, e.g. faults (-computer driven error handling and recovery for a printer [G06F 3/1234-](#))}
- G06K 15/4095 . . {Secure printing (-computer driven secure printing [G06F 3/1238-](#))}
- U **G06K 17/00** **Methods or arrangements for effecting co-operative working between equipments covered by two or more of the preceding main groups, e.g. automatic card files incorporating conveying and reading operations**
- U G06K 17/0003 . {Automatic card files incorporating selecting, conveying and possibly reading and/or writing operations}
- G06K 17/0012 . . {with more than one selection steps, e.g. selection of a record carrier from a selected compartment of a compartmented storage (-storage devices for articles [B65G 1/0407-](#))}
- G06K 17/0016 . . {Selecting or retrieving of images by means of their associated code-marks, e.g. coded microfilm or microfiche (-microfilm reading [G03B 21/11](#) ; computers therefor [G06F 17/30](#) ; teaching devices [G09B 5/02](#) ; accessing record carriers [G11B 27/002](#) ; static digital stores using optical elements [G11C 13/004](#) ; intermediate storage of facsimile picture signals [H04N 1/21-](#))}
- G06K 17/0022 . . {arrangements or provisions for transferring data to distant stations, e.g. from a sensing device (-"transfer between computer elements [G06F 13/00](#) "; data-transmission [H04L-](#))}
- G06K 17/0032 . . {Apparatus for automatic testing and analysing marked record carriers, used for examinations of the multiple choice answer type (-teaching apparatus working with questions and answers [G09B 7/00-](#))}

- G06K 19/00** Record carriers for use with machines and with at least a part designed to carry digital markings (-record carriers adapted for controlling specific machines, see the appropriate subclass for the machine, e.g. [B23Q](#), [D03C](#), [G10F](#), [H04L](#); form printing [B41](#); file cards [B42F 19/00](#) ; record carriers in general [G11](#)-)
- G06K 19/005 · {the record carrier comprising an arrangement to facilitate insertion into a holding device, e.g. an arrangement that makes the record carrier fit into an etui or a casing (-ticket holders [A45C 11/18](#)-)}
- U G06K 19/02 · characterised by the selection of materials, e.g. to avoid wear during transport through the machine
- G06K 19/025 · · {the material being flexible or adapted for folding, e.g. paper or paper-like materials used in luggage labels, identification tags, forms or identification documents carrying RFIDs (-methods for testing the genuineness of valuable papers, e.g. banknotes or passports [G07D 7/00](#) ; constructional features of booklets and the like [B42D](#)-)}
- G06K 19/027 · · {the material being suitable for use as a textile, e.g. woven-based RFID-like labels designed for attachment to laundry items (-markings attached to laundry items in general [D06F 93/00](#)-)}
- U G06K 19/04 · characterised by the shape
- G06K 19/041 · · {Constructional details (-[G06K 19/06](#) takes precedence-)}
- G06K 19/042 · · · {the record carrier having a form factor of a credit card and including a small sized disc, e.g. a CD or DVD (-disc shaped data carriers in general, see [G11B 20/00](#) and [G11B 23/00](#)-)}
- U G06K 19/06 · characterised by the kind of the digital marking, e.g. shape, nature, code
- G06K 19/06009 · · {with optically detectable marking (-[G06K 19/063](#) , [G06K 19/08](#) take precedence-)}
- U G06K 19/06046 · · · {Constructional details}
- G06K 19/06065 · · · · {the marking being at least partially represented by holographic means (-holographic marking in general, see [G06K 19/16](#)-)}
- G06K 19/0614 · · · · {the marking being selective to wavelength, e.g. color barcode or barcodes only visible under UV or IR (-methods or arrangements for sensing record carriers using a selected wavelength, see [G06K 7/12](#)-)}
- G06K 19/067 · · Record carriers with conductive marks, printed circuits or semiconductor circuit elements, e.g. credit or identity cards {also with resonating or responding marks without active components}
- U G06K 19/0672 · · · {with resonating marks}
- G06K 19/0675 · · · · {the resonating marks being of the surface acoustic wave [SAW]} kind (-SAW devices per se [H03H 9/64](#)-)}
- U G06K 19/07 · · · with integrated circuit chips
- U G06K 19/0701 · · · · {at least one of the integrated circuit chips comprising an arrangement for power management}
- G06K 19/0707 · · · · · {the arrangement being capable of collecting energy from external energy sources. e.g. thermocouples, vibration, electromagnetic radiation (-[G06K 19/0702](#) takes precedence-)}
- G06K 19/0712 · · · · · {the arrangement being capable of triggering distinct operating modes or functions dependent on the strength of an energy or interrogation field in the proximity of the record carrier (-active means for hindering electromagnetic reading or writing [G06K 19/07336](#)-)}
- U G06K 19/0716 · · · · · {at least one of the integrated circuit chips comprising a sensor or an interface to a sensor}

- G06K 19/0718 {the sensor being of the biometric kind, e.g. fingerprint sensors (-fingerprint sensors in general, see [G06K 9/00](#) ; biometric access-control systems in general, see [G07C 9/00](#)-)}
- G06K 19/0719 {[at least one of the integrated circuit chips comprising an arrangement for application selection, e.g. an acceleration sensor or a set of radio buttons (-application selection on smart cards using pure software control, see [G07F 7/10](#)-)}
- G06K 19/073 Special arrangements for circuits, e.g. for protecting identification code in memory (-protection against unauthorised use of computer memories [G06F 12/14](#)-)
- U G06K 19/07309 {Means for preventing undesired reading or writing from or onto record carriers}
- G06K 19/07318 {by hindering electromagnetic reading or writing (-jamming of communication, counter-measures [H04K 3/00](#) ; secret communication [H04K 1/00](#)-)}
- G06K 19/07327 {Passive means, e.g. Faraday cages (-~~Faraday-type protection of electric circuits in general H05K 9/00~~ *Faraday-type protection of electric circuits in general H05K 9/00*-)}
- U G06K 19/07345 {by activating or deactivating at least a part of the circuit on the record carrier, e.g. ON/OFF switches}
- G06K 19/07354 {by biometrically sensitive means, e.g. fingerprint sensitive (-fingerprint sensors in general [G06K 9/00006](#) ; biometrically activated access control [G07C 9/00071](#)-)}
- G06K 19/07372 {by detecting tampering with the circuit (-tampering detection for semiconductor circuits in general [H01L 23/58](#)-)}
- U G06K 19/077 Constructional details, e.g. mounting of circuits in the carrier
- U G06K 19/0772 {Physical layout of the record carrier}
- G06K 19/07722 {the record carrier being multilayered, e.g. laminated sheets (-flat articles in general, see [B32B 37/00](#)-)}
- G06K 19/07724 {the record carrier being at least partially made by a molding process (-molding in general [B29C 45/14](#)-)}
- G06K 19/07732 {the record carrier having a housing or construction similar to well-known portable memory devices, such as SD cards, USB or memory sticks (- housings for electrical equipment in general, see [H05K 5/02](#)-)}
- U G06K 19/07749 {the record carrier being capable of non-contact communication, e.g. constructional details of the antenna of a non-contact smart card}
- U G06K 19/07758 {arrangements for adhering the record carrier to further objects or living beings, functioning as an identification tag}
- G06K 19/07762 {the adhering arrangement making the record carrier wearable, e.g. having the form of a ring, watch, glove or bracelet (-record carriers for insertion in the human body for medical purposes [A61B 19/00](#) ; record carriers adapted for attachment to animals [A01K 11/00](#)-)}
- G06K 19/07764 {the adhering arrangement making the record carrier attachable to a tire (-tire temperature or pressure control arrangements, see [B60C 23/00](#)-)}
- G06K 19/07773 {Antenna details (-antennas for wireless devices, e.g. RFID tags, in general [H01Q 1/22](#)-)}
- G06K 19/07798 {part of the antenna or the integrated circuit being adapted for rupturing or breaking, e.g. record carriers functioning as sealing devices for detecting not-authenticated opening of containers (-electronic seals [G09F 3/03](#)-)}

- G06K 19/08
- • using markings of different kinds {or more than one marking of the same kind}in the same record carrier, e.g. one marking being sensed by optical and the other by magnetic means
- G06K 21/00** **Information retrieval from punched cards designed for manual use or handling by machine (-G06K 19/00 takes precedence-); Apparatus for handling such cards, e.g. marking or correcting**
- G06K 21/002
- {Selecting of marginally notched cards (-card filling arrangements [B42F 17/00-](#))}
- G06K 21/06
- Apparatus or tools adapted for slotting or otherwise marking information-retrieval cards (-tools for perforating in general [B26F-](#))
- G06K 21/08
- Apparatus or tools for correcting punching or slotting errors {and regeneration of record carriers}
- G06K 2215/00** **Arrangements for producing a permanent visual presentation of the output data (not used)**
- U G06K 2215/0002
- Handling the output data
- U G06K 2215/002
- • Generic data access
- G06K 2215/0028
- • • characterised by the format per se

Project: N/A (G06M)

- U G06M 1/00** **Design features of general application**
- U G06M 1/22
- for visual indication of the result of count on counting mechanisms, e.g. by window with magnifying lens
- U G06M 1/24
- • Drums; Dials; Pointers (for measuring instruments in general [G01D](#); {for time measuring instruments [G04B 19/00](#), including drums [G04B 19/21](#), [G04C 19/04](#); date indicating [G04B 19/24](#)})
- G06M 1/241
- • • {-Drums}
- G06M 1/243
- • • • {-Drums with presetting means}
- G06M 1/245
- • • {-Dials; Pointers}
- G06M 1/246
- • • {-Bands; Sheets}
- G06M 1/248
- • • {-Discs}

Project: N/A (G06N)

- U G06N 3/00** **Computer systems based on biological models (analogue computers simulating functional aspects of living beings [G06G 7/60](#))**
- G06N 3/002
- {-Biomolecular computers, i.e. using biomolecules, proteins, cells (using DNA [G06N 3/123](#); using neurons [G06N 3/061](#))}
- G06N 3/004
- {-Artificial life, i.e. computers simulating life}
- G06N 3/006
- • {-based on simulated virtual individual or collective life forms , e.g. single "avatar", social simulations, virtual worlds (computer games [A63F 13/00](#); medical simulations [G06F 19/00](#); information retrieval [G06F 17/30873](#); image processing [G06T](#); telecommunication protocols [H04L 29/06034](#))}
- G06N 3/008
- • {-based on physical entities controlled by simulated intelligence so as to replicate intelligent life forms, e.g. robots replicating pets or humans in their appearance or behavior (toys or dolls [A63H 3/00](#); industrial robot control [G05B 19/00](#), [B25J 9/00](#); artificial neural networks [G06N 3/00](#); rule based artificial intelligence [G06N 5/00](#))}
- U G06N 3/02
- using neural network models (for adaptive control [G05B 13/00](#); for image pattern matching [G06K 9/00](#); for image data processing [G06T 1/20](#); for phonetic pattern matching [G10L 15/16](#))
- U G06N 3/04
- • Architectures, e.g. interconnection topology

G06N 3/0409 . . . {-Adaptive Resonance Theory [ART]} networks}}

U G06N 5/00 Computer systems utilising knowledge based models

G06N 5/003 . {-Dynamic search techniques, heuristics, branch-and-bound (G06N 5/046 take precedence; for optimisation G06Q 10/04)}

U G06N 99/00 Subject matter not provided for in other groups of this subclass

G06N 99/002 . {-Quantum computers, i.e. information processing by using quantum superposition, coherence, decoherence, entanglement, nonlocality, teleportation}

G06N 99/005 . {-Learning machines, i.e. computer in which a programme is changed according to experience gained by the machine itself during a complete run (neural networks G06N 3/02; knowledge based models G06N 5/00; fuzzy logic systems G06N 7/02; adaptive control systems G05B 13/00)}

G06N 99/007 . {-Molecular computers, i.e. using inorganic molecules (using biomolecules G06N 3/002)}

Project: N/A (G06Q)

U G06Q 10/00 Administration; Management

G06Q 10/04 . Forecasting or optimisation, e.g. linear programming, "travelling salesman problem" or "cutting stock problem"((-data collection specially adapted for marketing, price determination or demand forecasting G06Q 30/02-))

G06Q 10/06 . Resources, workflows, human or project management, e.g. organising, planning, scheduling or allocating time, human or machine resources; Enterprise planning; Organisational models((-financial asset management G06Q 40/06-))

G06Q 10/10 . Office automation, e.g. computer aided management of electronic mail or groupware (-electronic mail network systems H04L 12/58 ; electronic mail protocols H04L 29/06-); Time management, e.g. calendars, reminders, meetings or time accounting{ organizing, planning, scheduling or allocating time G06Q 10/06-}

G06Q 10/107 . . {-Computer aided management of electronic mail (-electronic mail network systems H04L 12/58 ; electronic mail protocols H04L 29/06-)}

G06Q 10/109 . . {-Time management, e.g. calendars, reminders, meetings, time accounting (-organizing, planning, scheduling or allocating time G06Q 10/06-)}

G06Q 20/00 Payment architectures, schemes or protocols (-apparatus for performing or posting payment transactions G07F 7/08 , G07F 19/00 ; electronic cash registers G07G 1/12-)

U G06Q 20/08 . Payment architectures

G06Q 20/20 . . Point-of-sale [POS] network systems((-POS per se G07F or G07G-))

G06Q 20/202 . . . {-Interconnection or interaction of plural electronic cash registers [ECR]} or to host computer, e.g. network details, transfer of information from host to ECR or from ECR to ECR}}

NOTE

Features of the apparatus per se should be classified in G07G 1/14

U G06Q 20/38 . Payment protocols; Details thereof

G06Q 20/387 . . {-Payment using discounts or coupons (-relating to marketing G06Q 30/02-)}

NOTE

This group covers only the usage of discounts or coupons interacting with the payment of the protocol

U	G06Q 30/00	Commerce, e.g. shopping or e-commerce
U	G06Q 30/06	· Buying, selling or leasing transactions
	G06Q 30/08	· · Auctions, {matching or brokerage (-matching or brokerage for stock exchange G06Q 40/04-)}
U	G06Q 40/00	Finance; Insurance; Tax strategies; Processing of corporate or income taxes
	G06Q 40/08	· Insurance, e.g. risk analysis or pensions {(-processing of insurance policies or claims G06Q 10/10-)}
U	G06Q 50/00	Systems or methods specially adapted for a specific business sector, e.g. utilities or tourism
U	G06Q 50/10	· Services
U	G06Q 50/22	· · Health care, e.g. hospitals; Social work
	G06Q 50/24	· · · Patient record management (-processing of medical or biological data for scientific purposes G06F 19/00-)
U	G06Q 50/30	· Transportation; Communications
	G06Q 50/32	· · Post and telecommunications (-franking apparatus G07B 17/00-)
	G06Q 2220/00	Business processing using cryptography (-postage metering system using cryptography G06Q 2250/05-)

Project: N/A (G06T)**G06T**

IMAGE DATA PROCESSING OR GENERATION, IN GENERAL (specially adapted for particular applications, see the relevant subclasses, e.g. [G06K](#), [G09G](#), [H04N](#))

NOTES

This subclass covers:

- arrangements for geometrically modelling objects, whether the final model is used for display of an image of the object or for some other purpose, such as manufacture of a corresponding object;
- arrangements for analysing the geometric attributes of an image of an object.

This subclass does not cover:

- reading or recognising printed or written characters or recognising patterns, e.g. fingerprints, which is covered by subclass [G06K](#);
- modification of image data to allow display using multiple viewports, which is covered by subclass [G09G](#);
- circuits for generating functions for visual indicators, which are covered by subclass [G09G](#);
- scanning of documents or the like in pictorial communication, which is covered by subclass [H04N](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G06T 1/40](#) covered by [G06T 1/20](#)

U	G06T 1/00	General purpose image data processing
	G06T 1/0014	· {Image feed-back for automatic industrial control, e.g. robot with camera (-robots B25J 19/023-)}
	G06T 1/20	· Processor architectures; Processor configuration, e.g. pipelining (-architectures of general purpose stored programme computers G06F 15/76-)

- U G06T 3/00** **Geometric image transformation in the plane of the image, e.g. from bit-mapped to bit-mapped creating a different image**
- G06T 3/0006 · {Affine transformations (~~-G06T 3/4038 , G06T 3/0068 take precedence-~~)}
- G06T 3/0012 · {Context preserving transformation, e.g. by using an importance map (~~-G06T 3/0062 takes precedence-~~)}
- G06T 3/0025 · · {Detail-in-context presentation (~~-G06T 3/0018 takes precedence-~~)}
- U G06T 3/40** · Scaling the whole image or part thereof
- G06T 3/4007 · · {Interpolation-based scaling, e.g. bilinear interpolation (~~-G06T 3/4015 , G06T 3/403 take precedence-~~)}
- G06T 3/4015 · · {Demosaicing, e.g. colour filter array [CFA]}, Bayer pattern}}
- U G06T 3/60** · Rotation of a whole image or part thereof
- G06T 3/604 · · {using a CORDIC [COordinate Rotation ~~Digital~~Digital Compute]} device}}
- U G06T 5/00** **Image enhancement or restoration, e.g. from bit-mapped to bit-mapped creating a similar image**
- U G06T 5/001** · {Image restoration}
- G06T 5/002 · · {Denoising; Smoothing (~~-noise processing or correction adapted to be used in an image pickup device containing and electronic image sensor H04N 5/217 , H04N 5/357 to H04N 5/365-~~)}
- WARNING
Not complete pending reclassification; see also group [G06T 5/001](#)
- G06T 5/003 · · {Deblurring; Sharpening (~~-vibration or motion blur correction for cameras comprising an electronic image sensor H04N 5/23264-~~)}
- WARNING
Not complete pending reclassification; see also group [G06T 5/001](#)
- G06T 5/005 · · {Retouching; Inpainting; Scratch removal (~~-detecting, correction, reducing or removing defects, e.g. non-responsive pixels of solid state image sensors H04N 5/367 , scratch removal for cinematographic films scanned by electronic image sensor H04N 5/253-~~)}
- WARNING
Not complete pending reclassification; see also group [G06T 5/001](#)
- G06T 5/006 · · {Geometric correction (~~-detecting, correcting, reducing or removing artefacts resulting only from the lens unit, e.g. flare, shading, vignetting or "cos4" H04N 5/3572 , correction of chromatic aberrations adapted to be used in an image pickup device containing and electronic image sensor H04N 9/045-~~)}
- G06T 5/007 · · {Dynamic range modification (~~-applied in cameras using an electronic image sensor H04N 5/2355 , H04N 5/2356-~~)}
- WARNING
Not complete pending reclassification; see also groups [G06T 5/001](#) and [G06T 5/40](#)
- G06T 5/009 · · {Global, i.e. based on properties of the image as a whole (~~-applied in cameras using an electronic image sensor H04N 5/23229 , H04N 5/235-~~)}
- WARNING
Not complete pending reclassification; see also group [G06T 5/40](#)

- G06T 5/10
- by non-spatial domain filtering (applied in cameras using an electronic image sensor [H04N 5/23229](#) , [H04N 5/235](#) , [H04N 5/253](#) , [H04N 5/367](#)-)
- WARNING
Not complete pending reclassification; see also group [G06T 5/001](#)
- G06T 5/20
- by the use of local operators (applied in cameras using an electronic image sensor [H04N 5/23229](#) , [H04N 5/235](#) , [H04N 5/253](#) , [H04N 5/367](#)-)
- G06T 5/40
- by the use of histogram techniques (applied in cameras using an electronic image sensor [H04N 5/23229](#) , [H04N 5/235](#)-)
- G06T 5/50
- by the use of more than one image, e.g. averaging, subtraction (applied in cameras using an electronic image sensor [H04N 5/23229](#) , [H04N 5/235](#)-)
- U G06T 7/00** **Image analysis, e.g. from bit-mapped to non bit-mapped**
- G06T 7/0002
- {Inspection of images, e.g. flaw detection (~~G06T 7/004~~ takes precedence-)}
- WARNING
This group is being reorganised in the 5 following sub-groups
- U G06T 7/0004
- {Industrial image inspection}
- G06T 7/001
- • {using an image reference approach (image matching for pattern recognition or image matching in general [G06K 9/6203](#)-)}
- U G06T 7/0012
- {Biomedical image inspection}
- WARNING
Groups **G06T/00B2R** and [G06T 7/0016](#) are not complete pending reclassification. See also this group
- G06T 7/0014
- • {using an image reference approach (image matching for pattern recognition or image matching in general [G06K 9/6203](#)-)}
- G06T 7/0016
- • • {involving temporal comparison (change detection in general [G06T 7/20](#)-)}
- G06T 7/0022
- {Determining parameters from multiple pictures (depth or shape from stereo images [G06T 7/0075](#) ; depth or shape from multiple images [G06T 7/0065](#) ; stereo camera calibration [G06T 7/002](#)-)}
- G06T 7/0024
- {Registration of images, e.g. alignment of images (image matching for pattern recognition or image matching in general [G06K 9/6203](#)-)}
- U G06T 7/0028
- • • {using feature-based methods}
- G06T 7/003
- • • {involving reference images or patches (image matching for pattern recognition or image matching in general [G06K 9/6203](#)-)}
- G06T 7/0032
- • • {involving models (model matching for pattern recognition [G06K 9/6204](#) , [G06K 9/6878](#)-)}
- G06T 7/0034
- • • {using statistical methods (image matching by comparing statistics of regions for pattern recognition [G06K 9/6212](#)-)}
- U G06T 7/004
- {Determining position or orientation of objects}
- U G06T 7/0042
- {using feature-based methods}
- G06T 7/0044
- • • {involving reference images or patches (image matching for pattern recognition or image matching in general [G06K 9/6203](#)-)}
- G06T 7/0046
- • • {involving models (model matching for pattern recognition [G06K 9/6204](#) , [G06K 9/6878](#)-)}
- G06T 7/0048
- • {using statistical methods (image matching by comparing statistics of regions for pattern recognition [G06K 9/6212](#)-)}
- U G06T 7/0051
- {Depth or shape recovery}

- G06T 7/0057
 - {from laser ranging and structured images, e.g. interferometry (-image acquisition and arrangements for measuring contours or curvatures of an object by projecting a pattern, thereupon [G01B 11/25](#)-)}
- G06T 7/0079
 - {Segmentation or edge detection (-image analysis based on texture or colour features [G06T 7/40](#) ; motion-based segmentation [G06T 7/2006](#) ; separation of touching or overlapping patterns for pattern recognition [G06K 9/34](#) ; extraction of features or characteristics of the image for pattern recognition [G06K 9/46](#)-)}
- G06T 7/0081
 - {Region-based segmentation} (-image analysis based on texture or colour features [G06T 7/40](#) ; separation of touching or overlapping patterns by cutting or merging for pattern recognition [G06K 9/342](#) ; quantising the analogue image signal for pattern recognition [G06K 9/38](#) ; extraction of features or characteristics of the image related to colour for pattern recognition [G06K 9/4652](#)-)
- G06T 7/0083
 - {Edge-based segmentation} (-detecting partial patterns or configurations [G06K 9/4604](#)-)}
- G06T 7/0085
 - {Edge detection} (-detecting partial patterns or configurations [G06K 9/4604](#)-)}
- G06T 7/0087
 - {involving probabilistic approaches, e.g. Markov Random Field [MRF]} modeling (-Markov models or related models or networks embedding Markov models for pattern recognition [G06K 9/6297](#) ; classification techniques based on a parametric, e.g. probabilistic, model [G06K 9/6277](#) ; detecting partial patterns or configurations by analysing connectivity relationship of elements of the pattern [G06K 9/4638](#)-)}
- G06T 7/0089
 - {involving deformable models, e.g. active contour} (-pattern recognition techniques involving a deformation of the sample or reference pattern or elastic matching [G06K 9/6206](#)-)}
- G06T 7/0091
 - {involving morphological operators} (-combinations of preprocessing functions using a local operator for pattern recognition [G06K 9/56](#)-)}
- G06T 7/0093
 - {involving graph-based approaches} (-non-hierarchical partitioning techniques based on graph theory for pattern recognition [G06K 9/6224](#)-)}
- G06T 7/0095
 - {involving transform domain approaches} (-detecting partial patterns, e.g. edges or contours, using the Hough transform for pattern recognition [G06K 9/4633](#)-)}
- U G06T 7/20
 - Analysis of motion {(movement detection in television systems [H04N 5/144](#); motion estimation for digital video signal compression [H04N 19/51](#); recognizing scenes under surveillance and traffic patterns [G06K 9/00771](#), [G06K 9/00785](#))}

WARNING
This group is being reorganised. Documents dealing with shape from motion are reclassified to [G06T 7/0071](#) and a sub-group [G06T 7/2006](#) is created
- U G06T 7/2033
 - {using feature-based methods, e.g. corners, segments}
- G06T 7/204
 - {involving reference images or patches} (-image matching for pattern recognition or image matching in general [G06K 9/6203](#)-)}

WARNING
Not complete pending reclassification; see also group [G06T 7/20](#)
- G06T 7/2046
 - {involving models} (-model matching for pattern recognition [G06K 9/6204](#) , [G06K 9/6878](#)-)}

WARNING
Not complete pending reclassification; see also group [G06T 7/20](#)
- G06T 7/40
 - Analysis of texture{(-depth or shape from texture [G06T 7/0059](#)-)}
- U G06T 7/60
 - Analysis of geometric attributes, e.g. area, center of gravity or perimeter, from an image

G06T 7/606 · · {Center of gravity or moments (-moments specific for pattern recognition, e.g. Zernike moments [G06K 9/525-](#))}

G06T 9/00 **Image coding, e.g. from bit-mapped to non bit-mapped ({ [H04N 1/00](#) , [H04N 19/00](#) take precedence; }compression in general [H03M](#); compression for image communication [H04N](#))**

G06T 9/001 · {Model-based coding, e.g. wire frame (-see provisionally also [G06T 9/00-](#))}

G06T 9/004 · {Predictors, e.g. intraframe, interframe coding (-see provisionally also [G06T 9/00-](#))}

G06T 9/005 · {Statistical coding, e.g. Huffman, run length coding (-see provisionally also [G06T 9/00-](#))}

G06T 9/007 · {Transform coding, e.g. discrete cosine transform (-see provisionally also [G06T 9/00-](#))}

G06T 9/008 · {Vector quantisation (-see provisionally also [G06T 9/00-](#))}

G06T 9/40 · Tree coding, e.g. quadtree, octree (-see provisionally also [G06T 9/00-](#))

U G06T 19/00 **Manipulating 3D models or images for computer graphics**

WARNING

As from August 1, 2011, documents relating to subject matter covered by subgroups [G06T 19/003](#), [G06T 19/006](#) are continuously reclassified to said subgroups

G06T 19/006 · {Mixed reality (-object pose determination, tracking or camera calibration for mixed reality [G06T 7/00-](#))}

WARNING

This group is not complete pending reclassification; see also group [G06T 19/00](#)

Project: N/A (G07B)

G07B 1/00 **Machines for printing and issuing tickets (-printing mechanisms per se [B41](#) ; output mechanisms of digital computers [G06C 11/00-](#))**

G07B 5/00 **Details of, or auxiliary devices for, ticket-issuing machines (-for validating inserted tickets [G07B 11/02-](#))**

G07B 9/00 **Ticket punches (-perforating pliers [B26F 1/36](#) ; marking record carriers in digital fashion by punching [G06K 1/02-](#))**

U G07B 11/00 **Apparatus for validating or cancelling issued tickets**

U G07B 11/02 · for validating inserted tickets

U G07B 11/07 · · by separating part of ticket

G07B 11/09 · · · combined with receptacle for separated part of ticket (-refuse receptacles in general [B65F 1/00-](#))

G07B 13/00 **Taximeters (-measuring distance travelled [G01C](#) ; measuring time [G04-](#))**

G07B 15/00 **Arrangements or apparatus for collecting fares, tolls or entrance fees at one or more control points (-handling coins or paper currency [G07D](#); apparatus for vending or hiring articles or services activated by coins, credit cards, paper currency or the like [G07F 7/00](#) , [G07F 17/00-](#))**

NOTE

Data processing aspects of payment systems or protocols relating to toll, entrance fee or fare collection, e.g. in road pricing or congestion charging, are also classified in [G06Q 20/00](#) .

{ Notes

This group covers also:

- car rental systems;
- systems for reserving and using access tickets, e.g. check-in systems }
- G07B 15/02
 - taking into account a variable factor such as distance or time, e.g. for passenger transport, parking systems or car rental systems (~~G07B 15/06~~ takes precedence; taximeters [G07B 13/00](#) ; parking meters per se [G07F 17/24](#) ; { car rental systems per se [G07B 15/00](#) })
- G07B 15/04
 - · comprising devices to free a barrier, turnstile, or the like (~~turnstiles with registering means [G07C 9/02](#) ; coin-freed aspects [G07F 17/00](#)~~)
- U G07B 15/06
 - Arrangements for road pricing or congestion charging of vehicles or vehicle users, e.g. automatic toll systems

NOTE

This group covers the identification or tracking of vehicles or vehicle users for the purpose of road pricing or congestion charging, which means that vehicles or vehicle users are not necessarily channelled through fixed control points, e.g. toll booths or overhead gantries, but may be detected at a number of places when they travel in normal fashion in a pre-defined locality, e.g. a defined area in a city centre or an expressway, and where the information so generated is then used to determine a charge to be paid
- G07B 15/063
 - · {using wireless information transmission between the vehicle and a fixed station (identification of vehicles [G08G](#))}
- G07B 17/00** **Franking apparatus (printing aspects [B41](#))**
- U G07B 17/00016
 - {Relations between apparatus, e.g. franking machine at customer or apparatus at post office, in a franking system}
- G07B 17/0008
 - · {Communication details outside or between apparatus (~~coin-freed apparatus for franking per se [G07F 17/26](#)~~)}
- G07B 17/00185
 - {Details internally of apparatus in a franking system, e.g. franking machine at customer or apparatus at post office (~~digital data processing [G06F](#) ; coin-freed apparatus for franking per se [G07F 17/26](#)~~)}
- U G07B 17/00193
 - · {Constructional details of apparatus in a franking system}
- G07B 2017/00201
 - · · {Open franking system, i.e. the printer is not dedicated to franking only, e.g. PC (*Personal Computer*)} (~~Personal Computer~~)}
- G07B 2017/00225
 - · · {Vending machine or POS (*Point Of Sale apparatus*)} (~~Point Of Sale apparatus~~)}
- U G07B 17/00459
 - {Details relating to mailpieces in a franking system}
- G07B 17/00467
 - · {Transporting mailpieces (~~postal sorting [B07C](#)~~)}
- G07B 17/00508
 - · {Printing or attaching on mailpieces (~~printing mechanisms [B41J](#) ; security printing [B41M 3/14](#) ; marking methods [B41M 5/00](#) ; inks [C09D 11/00](#) ; record carriers with at least a part designed to carry digital markings [G06K 19/00](#)~~)}
- G07B 17/00661
 - · {Sensing or measuring mailpieces (~~weighing [G01G 19/00](#) ; methods or arrangements for reading or recognising printed or written characters or for recognising patterns [G06K 9/00](#)~~)}
- U G07B 17/00733
 - {Cryptography or similar special procedures in a franking system}

NOTE

References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:

 - secret or secure communication
[H04L 9/00](#)
 - mechanisms actuated by objects other than coins

to free or to actuate vending, hiring, coin
or
paper currency dispensing or refunding
apparatus
for cashless transactions only

G07F7/10F6

- access-control involving the use of a pass
in
combination with an identity-check of the
pass-
holder by means of personal physical data,
e.g.
characteristic facial curves, hand geometry,
voice spectrum, fingerprints

[G07C 9/00](#)

- methods or arrangements for reading or
recognising printed or written characters or
for

recognising patterns [G06K 9/00](#)

- random or pseudo-random generators

[G06F 7/58](#)

- circuits generating pulses having a
predetermined statistical distribution

[H03K 3/84](#)

- multiple service credit cards with
protecting

memory zones **G07F7/10D10M**

- security arrangements for protecting computers
or computer systems against unauthorised activity

[G06F 21/00](#)

- record carriers with conductive marks and
special arrangements for circuits, e.g. for
protecting identification code in memory

[G06K 19/073](#)

- error detection and error correction

[G06F 11/00](#)

- coding, decoding or code conversion, for
error

detection or error correction [H03M 13/00](#)

]

- U G07B 2017/00741 · · {using specific cryptographic algorithms or functions}
- G07B 2017/00774 · · · {~~MAC(Message Authentication Code)~~{MAC (Message Authentication Code), e.g. DES-MAC}
- G07B 2017/00951 · · {Error handling, e.g. EDC (~~Error Detection Codes~~)}{~~Error Detection Codes~~}
- U G07B 2017/00959 · · {Cryptographic modules, e.g. a PC encryption board}
- G07B 2017/00967 · · · {~~PSD(Postal Security Device)~~{PSD [Postal Security Device] as defined by the USPS [~~US Postal Service~~]}{~~US Postal Service~~}
- G07B 17/02 · with means for computing or counting{(-G07B 17/00975 takes precedence-)}

Project: N/A (G07C)

- U G07C 5/00 **Registering or indicating the working of vehicles (for measuring distance travelled or combinations of speed and distance [G01C](#); engine indicators [G01L](#); devices for measuring speed or acceleration [G01P](#))**
- G07C 5/004 · {Indicating the operating range of the engine (economical driving [B60R 16/0236](#), [F02B 77/084](#); measuring liquid fuel of an engine [G01F 9/00](#))}
- U G07C 5/08 · Registering or indicating performance data other than driving, working, idle, or waiting time, with or without registering driving, working, idle or waiting time

- G07C 5/0841
 - • {-Registering performance data (recording measured values [G01D](#); information storage [G11B](#))}
- U G07C 5/085
 - • • {using electronic data carriers}
- G07C 5/0858
 - • • • {-wherein the data carrier is removable}
- G07C 5/0866
 - • • • {-the electronic data carrier being a digital video recorder in combination with video camera}
- U G07C 5/0875
 - • • {using magnetic data carriers}
- G07C 5/0883
 - • • • {-wherein the data carrier is removable}
- G07C 5/0891
 - • • • {-Video recorder in combination with video camera}

U G07C 9/00**Individual entry or exit registers**NOTES

This group covers:

- controlling and registering access of persons to restricted areas or devices

This group does not cover:

- electric permutation locks using mechanical keys, covered by [E05B 49/00](#);
- apparatus actuated by coded identity cards or credit cards, to free or actuate vending, hiring or money-dispensing, covered by [G07F 7/08](#);
- access to facilities or services by means of coins or tokens, covered by [G07F 17/00](#);
- arrangements actuated by coded cards for dispensing or receiving money and posting such transactions to existing accounts, e.g. automatic teller machines, covered by [G07F 19/00](#)

Attention is drawn to the following places, which may be of interest for search:

- [G06K 7/00](#), [G06K 19/00](#) arrangements for sensing or reading record carriers
- [H03K 17/00](#) electronic switching
- [G06K 9/00](#) biometric sensors, recognising biometric patterns
- [A61B 5/117](#) biometric identification used for diagnostic purposes
- [G06F 1/00](#) access to data processing equipment

- U G07C 9/00007
 - {Access-control involving the use of a pass (for electromagnetical or electrical keys and locks, see [E05B 49/00](#))}
- U G07C 9/00031
 - • {-in combination with an identity-check of the pass-holder (recognizing patterns, e.g. fingerprints or signatures [G06K 9/00](#))}
- G07C 9/00071
 - • • {-by means of personal physical data, e.g. characteristic facial curves, hand geometry, voice spectrum, fingerprints (measuring or recording devices for testing the shape, pattern, size or movement of the body or parts thereof per se [A61B 5/103](#))}
- U G07C 9/00174
 - {Electronically operated locks; Circuits therefor; Nonmechanical keys therefor, e.g. passive or active electrical keys or other data carriers without mechanical keys (mechanical locks with electric permutation [E05B 49/00](#); arrangements for sensing or reading record carriers [G06K 7/00](#), [G06K 9/00](#); electronic switching [H03K 17/00](#))}
- G07C 9/00182
 - • {-operated with unidirectional data transmission between data carrier and locks}
- G07C 9/00309
 - • {-operated with bidirectional data transmission between data carrier and locks}
- G07C 9/00571
 - • {-operated by interacting with a central unit}

Project: N/A (G07D)

- U G07D 5/00** **Testing specially adapted to determine the identity or genuineness of coins, e.g. for segregating coins which are unacceptable or alien to a currency {{in combination with apparatus freed or actuated by coins or the like [G07F 3/00](#)}}**
WARNING
 Not complete pending a reclassification. See also groups [G07F 3/00](#) to [G07F 3/027](#)
- G07D 5/005 • {-Testing the surface pattern, e.g. relief}
WARNING
 Not complete pending a reclassification. See also groups [G07F 3/02](#) and [G07F 3/027](#)
- U G07D 7/00** **Testing specially adapted to determine the identity or genuineness of paper currency or similar valuable papers, e.g. for segregating those which are unacceptable or alien to a currency {{arrangements for verifying the correctness of markings on a record carrier [G06K 5/00](#)}}**
NOTE
 In this group, groups [G07D 7/16](#) to [G07D 7/20](#) take precedence over groups [G07D 7/02](#) to [G07D 7/14](#).
WARNING
 Groups [G07D 7/0006](#), [G07D 7/0046](#) and [G07D 7/0093](#) are not complete pending a reclassification. See also group [G07D 7/004](#)
- G07D 7/0006 • {-Security markings visible to the naked eye}
WARNING
 Groups [G07D 7/0006](#) to [G07D 7/002](#) are not complete pending a reorganisation. See also groups [G07D 7/124](#) to [G07D 7/127](#)
- G07D 7/0013 • {-Holograms}
 G07D 7/002 • {-Watermarks}
 G07D 7/0026 • {-Barcodes}
 G07D 7/0033 • {-Checkcodes, e.g. coded number derived from serial number and value}
 G07D 7/004 • {-using digital security elements}
WARNING
 This group is no longer used for classification of new documents as from January 1st, 2011. The backlog of this group is being continuously reclassified to groups [G07D 7/0006](#), [G07D 7/0046](#), [G07D 7/0093](#)
- U G07D 7/0046** • {Security markings invisible to the naked eye, e.g. "digital watermarks"}
 G07D 7/0053 • {-involving markings added to a pattern, e.g. interstitial points}
 G07D 7/006 • {-involving markings removed from an original pattern}
 G07D 7/0066 • {-involving markings the properties of which are altered from original properties}
 G07D 7/0073 • • {-involving markings displaced slightly from original positions within a pattern}
 G07D 7/008 • • {-involving markings of altered colours}
 G07D 7/0086 • • {-involving markings which are altered in dimension, e.g. thickened lines}
 G07D 7/0093 • {-Circuits in note}

- G07D 7/02
- using electric means, {e.g. detecting electric properties of banknotes-[G07D 7/004](#), [G07D 7/04](#), [G07D 7/06](#) take precedence}}
- G07D 7/04
- using magnetic means, e.g. detection of magnetic imprint, {detecting magnetic properties of banknotes-[G07D 7/004](#) takes precedence}}
- G07D 7/06
- using wave or particle radiation, {e.g. radiating waves onto the banknote-[G07D 7/004](#) takes precedence}}
- U G07D 7/12
- • Visible light, infra-red or ultra violet radiation
- G07D 7/124
- • • {-Optical security elements}
- WARNING
- Groups [G07D 7/124](#) to [G07D 7/127](#) are no longer used for the classification of new documents as from March 1, 2008. The backlog of these groups is being continuously reclassified to groups [G07D 7/0006](#) to [G07D 7/002](#)
- G07D 7/125
- • • • {-Holograms or other interface patterns}
- G07D 7/127
- • • • {-Watermarks}
- G07D 7/128
- • • {-Viewing devices}
- G07D 7/18
- Testing the stiffness { or other mechanical properties, e.g. wear or tear-[G07D 7/16](#) takes precedence}}
- U G07D 7/20
- Testing patterns thereon { e.g. recognition of patterns, image processing, comparing to a reference in a memory}
- G07D 7/2008
- • {-preprocessing, e.g. deblurring, averaging, normalisation, rotation}
- G07D 7/2016
- • {-feature extraction, e.g. segmentation, edge detection, Hough transformation}
- G07D 7/2025
- • {-Pattern matching}
- G07D 7/2033
- • • {-matching unique patterns, e.g. fingerprinting}
- G07D 7/2041
- • • {-matching a statistical distribution, e.g. of particle sizes orientations}
- G07D 7/205
- • • {-matching spectral properties}
- G07D 7/2058
- • • {-matching a template}
- G07D 7/2066
- • • {-matching with an overlay, e.g. by interference}
- G07D 7/2075
- • {-setting acceptance levels or parameters}
- G07D 7/2083
- • • {-learning}
- G07D 7/2091
- • • {-where a plurality of levels are set}
- U **G07D 11/00**
- Devices accepting coins or { accepting or dispensing} paper currency, e.g. depositing machines (apparatus freed or actuated by coins or the like [G07F](#); apparatus freed or actuated by paper currency [G07F 7/04](#); complete banking systems [G07F 19/00](#); { arrangements actuated by a coded-card for receiving or dispensing monies or the like and posting such transactions to existing accounts, e.g. automatic teller machines [ATMs] [G07F 19/20](#))**
- NOTES
- This group covers constructional or functioning aspects of devices handling paper currency, including of so-called Automatic Teller Machines [ATMs]; other aspects of ATMs, e.g. posting transactions to existing accounts or aspects related to the interaction with users, are covered by group [G07F 19/20](#)
- Informative reference:
- devices dispensing coins [G07D 1/00](#)
- G07D 11/0003
- {-Mechanical details}
- G07D 11/0006
- • {-Note containers}

- G07D 11/0009
 - • {-Secure note containers, e.g. for transport (coin boxes [G07F 9/06](#); locking means [E05B](#); safes [E05G](#); currency invalidating means [E05G 1/14](#))}
- G07D 11/0021
 - {-Handling paper currency, e.g. banknotes (handling paper sheets in general [B65H](#))}
 - NOTE
 - Informative reference- handling paper sheets in general [B65H](#)
- G07D 11/0027
 - • {-Aligning (position of banknote [G07D 7/168](#))}
- U G07D 11/0036
 - {Electronic and sensing details}
- G07D 11/0048
 - {-for checking and indicating machine condition, fault detection (registering or indicating the working of machines in general [G07C 3/00](#))}
- G07D 11/0084
 - {-Sorting or counting paper currency (sorting coins [G07D 3/00](#) - counting coins [G07D 9/00](#))}

Project: N/A (G07F)

G07F **COIN-FREED OR LIKE APPARATUS (-coin sorting [G07D 3/00](#) ; coin testing [G07D 5/00](#) ; { handling coins or paper currencies apart from payment activated apparatus [G07D](#); payment architectures, schemes or protocols [G06Q 20/00](#) })**

NOTES

This subclass does not cover constructions or details of apparatus which includes, or is combined with, coin-actuated mechanisms but is not specially adapted or modified for use therewith. Such constructions or details are covered by the relevant subclass for the particular apparatus.

In this subclass, the following term are used with the meaning indicated: o {"coin-freed" means "payment activated"} o "coins" covers also tokens or the like.

G07F 1/00 **Coin inlet arrangements; Coins specially adapted to operate coin-freed mechanisms (-coins in general [A44C-](#))**

G07F 3/00 **Coin testing or sorting means or arrangements for coin-freed apparatus (apparatus for testing coins for use apart from coin-freed apparatus [G07D](#))**

WARNING

The groups [G07F 3/00](#) to [G07F 3/027](#) are no longer used for the classification of new documents from October 1, 2007. The backlog of these groups is being continuously reclassified to the group [G07D 5/00](#) and subgroups

- U **G07F 5/00** **Coin-actuated mechanisms; Interlocks**
- G07F 5/18
 - specially adapted for controlling several coin-freed apparatus from one place (-interlocks per se [G07F 5/26-](#))
- G07F 5/24
 - with change-giving (-coin-changing mechanisms per se [G07D-](#))
- G07F 7/00** **Mechanisms actuated by objects other than coins to free or to actuate vending, hiring, coin or paper currency dispensing or refunding apparatus({-handling coins or paper currencies apart from coin-freed or like apparatus [G07D](#); complete banking systems [G07F 19/00-](#))}**
- G07F 7/02
 - by keys or other credit registering devices{ for producing a coded signal for use together with coded identity cards [G07F 7/10-](#)}
- G07F 7/08
 - by coded identity card or credit card {or other personal identification means (-without personal verification means [G07F 7/02-](#))}

- G07F 7/0806
- G07F 7/086
- G07F 7/0866
- {Details of the card (record carriers per se [G06K](#))}
 - {by passive credit-cards adapted therefor, e.g. constructive particularities to avoid counterfeiting, e.g. by inclusion of a physical or chemical security-layer (for security documents [G07D 7/00](#) ; for the reading of record-carriers in general [G06K 7/00](#) ; for the design of coded credit-cards [G06K 19/10](#))}
 - {by active credit-cards adapted therefor (~~G07F 7/1008~~ takes precedence)}
- NOTES**
- Attention is drawn to the note after group [G07F 7/1008](#) .
- The cards referred to in this group are transferable like regular cash money. They contain a monetary value represented by a coded number in a protected memory, to be loaded by cash payment or from account
- G07F 7/10
- G07F 7/1016
- together with a coded signal {e.g. in the form of personal identification information, like personal identification number (PIN) or biometric data}
 - {Devices or methods for securing the PIN and other transaction-data, e.g. by encryption (arrangements for secret communication, see [H04L 9/00](#))}
- G07F 9/00**
- Details other than those peculiar to special kinds or types of apparatus (coin inlet arrangements [G07F 1/00](#) ; coin testing arrangements [G07F 3/00](#) ; coin-actuated mechanisms, interlocks [G07F 5/00](#))**
- G07F 9/02
- G07F 9/10
- G07F 9/105
- Devices for alarm or indication, e.g. when empty; Advertising arrangements in coin-freed apparatus (alarms or warning devices indicating the interruption of flow to be metered [G07F 15/10](#))
 - Casings {or parts thereof}, e.g. with means for heating or cooling
 - {Heating or cooling means, for temperature and humidity control, for the conditioning of articles and their storage (dispensers for food articles requiring a processing by temperature treatment or conditioning before they are ready for dispensing [G07F 17/0064](#))}
- U G07F 11/00**
- Coin-freed apparatus for dispensing, or the like, discrete articles**
- U G07F 11/46
- G07F 11/48
- G07F 11/60
- from movable storage containers or supports
 - the storage containers or supports, e.g. magazine, being pivotally mounted (articles supported on pivotally mounted flaps or shelves in magazines [G07F 11/06](#))
 - the storage containers or supports being rectilinearly movable (endless belts or like conveyers [G07F 11/58](#))
- U G07F 13/00**
- Coin-freed apparatus for controlling dispensing of fluids, semiliquids or granular material from reservoirs**
- G07F 13/10
- with associated dispensing of containers, e.g. cups or other articles (dispensing discrete articles per se [G07F 11/00](#))
- G07F 15/00**
- Coin-freed apparatus with meter-controlled dispensing of liquid, gas or electricity (tariff-metering apparatus in general [G01D 4/00](#))**
- U G07F 15/003
- G07F 15/005
- {for electricity}
 - {dispensed for the electrical charging of vehicles (electrical charging as such, [B60L 11/00](#))}
- U G07F 17/00**
- Coin-freed apparatus for hiring articles; Coin-freed facilities or services**
- G07F 17/0014
- G07F 17/0021
- {for vending, access and use of specific services not covered anywhere else in [G07F 17/00](#) (meter-controlled dispensing of liquid, gas or electricity [G07F 15/00](#))}
 - {Access to services on a time-basis}

- G07F 17/0028 . . . {Use of a wired telephone or public communication device (-charging and metering the use of the telecommunication network [H04M 17/02-](#))}
 - G07F 17/0035 . . {Participation in a loyalty or discount scheme (-data processing for shopping and discounts [G06Q 30/00-](#))}
 - U G07F 17/0042 . {for hiring of objects}
 - G07F 17/005 . . {for the hiring of content carriers, e.g. of DVDs or CDs (-reverse vending for box-like objects such as videocassettes [G07F 7/069-](#))}
 - G07F 17/0057 . . {for the hiring or rent of vehicles e.g. cars, bicycles or wheelchairs (-car rental [G07B 15/00-](#))}
 - G07F 17/0064 . {for processing of food articles (-cooking vessels [A47J 37/00-](#))}
 - G07F 17/0092 . {for assembling and dispensing of pharmaceutical articles (-medical dispensers for private use, [A61J 7/00](#) ; data processing for medical purposes [G06F 19/00-](#))}
 - U G07F 17/04 . for anthropometrical measurements, such as weight, height, strength
 - G07F 17/045 . . {for weighing persons (-weighing apparatus in general [G07F 17/263-](#))}
 - U G07F 17/10 . for means for safe-keeping of property, left temporarily, e.g. by fastening the property
 - G07F 17/105 . . {for money boxes (-for saving clocks [G07F 17/0007-](#))}
 - G07F 17/14 . for fastenings for doors (-of containers for safe keeping [G07F 17/12-](#)); for turnstiles
 - G07F 17/24 . for parking meters (-devices for checking parking time [G07C 1/30-](#))
 - G07F 17/246 . . {provided with vehicle proximity-detectors (-detecting hidden masses, e.g. metal detectors, [G01V](#) , e.g. [G01V 3/00](#) ; proximity switches per se [H03K 17/00](#) ; traffic control systems [G08G 1/00-](#))}
 - G07F 17/248 . . {Housing construction (-casings for coin-freed apparatus [G07F 9/10-](#))}
 - G07F 17/26 . for printing, stamping, franking, typing or tele-printing apparatus (-ticket printing or the like apparatus [G07F 17/42-](#))
 - G07F 17/263 . . {for weighing devices (-for personal weighing apparatus [G07F 17/045-](#))}
 - G07F 17/266 . . {for the use of a photocopier or printing device (-photocopiers [H04N 1/00-](#))}
 - G07F 17/28 . for radio apparatus (-television subscription systems [H04N 7/16-](#))
 - G07F 17/30 . for musical instruments (-recording or playing apparatus [G11B-](#))
 - G07F 17/32 . for games, toys, sports or amusements, {e.g. casino games, online gambling or betting (game play without financial reward [A63F](#))}
 - G07F 17/3241 . . {Security aspects of a gaming system, e.g. detecting cheating, device integrity, surveillance (-computer security [G06F 21/00-](#))}
 - G07F 17/34 . . depending on the stopping of moving members {in a mechanical slot machine}, e.g. "fruit" machines
- NOTE
Classification in this group is given only in addition to one or more symbols already given in groups [G07F 17/3202](#) to [G07F 17/3283](#)
- G07F 17/38 . . Ball games; Shooting apparatus{(-ball games, e.g. football, golf, bowls, without coin collection [A63B-](#))}
 - G07F 17/42 . for ticket printing or like apparatus {e.g. apparatus for dispensing of printed paper tickets or payment cards}

G07F 19/00 Complete banking systems; Coded card-freed arrangements adapted for dispensing or receiving monies or the like and posting such transactions to existing accounts, e.g. automatic teller machines **{-data processing equipment for bank accounting [G06Q 40/02](#) ; { mechanisms in general actuated by objects other than coins [G07F 7/00](#) ; handling coins or paper currencies apart from payment activated apparatus [G07D](#) }**

WARNING

Groups [G07F 19/20](#) - [G07F 19/211](#) do not correspond to former or future IPC groups. Concordance CPC : IPC for these groups is as follows: - [G07F 19/20](#) - [G07F 19/211](#) : [G07F 19/00](#)

- U G07F 19/20 · {Automatic teller machines [ATMs]}
- G07F 19/202 · · {-Depositing operations within ATMs **{-depositing in general [G07D 11/00](#)-}**}
- G07F 19/203 · · {-Dispensing operations within ATMs **{-dispensing in general [G07D 11/00](#)-}**}

Project: N/A (G07G)

- U **G07G 1/00** **Cash registers (alarm indicators [G07G 3/00](#))**
- G07G 1/0009 · {-Details of the software in the checkout register, electronic cash register (ECR) or point of sale terminal (POS)}
- U G07G 1/0036 · {-Checkout procedures}
- G07G 1/0045 · · {-with a code reader for reading of an identifying code of the article to be registered, e.g. barcode reader or radio-frequency identity (RFID) reader}
- G07G 1/0054 · · · {-with control of supplementary check-parameters, e.g. weight or number of articles}
- G07G 1/0063 · · · · {-with means for detecting the geometric dimensions of the article of which the code is read, such as its size or height, for the verification of the registration}
- G07G 1/0072 · · · · {-with means for detecting the weight of the article of which the code is read, for the verification of the registration (weighing combined with recording means, e.g. in weighing scale, [G01G 19/415](#))}
- G07G 1/0081 · · · {-the reader being a portable scanner or data reader ([G07G 1/009](#) taking precedence)}
- G07G 1/009 · · · {-the reader being an RFID reader}

Project: N/A (G08B)

- U **G08B 3/00** **Audible signalling systems; Audible personal calling systems **{signalling devices actuated by tyre pressure [B60C 23/02](#); alarm locks [E05B 45/00](#), e.g. with mechanically-operated bells [E05B 45/02](#), electric [E05B 45/06](#)}; audible indication of time signals [G04B 21/00](#), [G04C 21/00](#); {sound producing devices, e.g. hooter, buzzer, [G10K](#); telephonic systems provided with personal calling arrangements [H04M 11/022](#)}****
- U G08B 3/10 · using electric transmission; using electromagnetic transmission **{(intercoms [H04M 11/02](#); distributing signals to two or more loudspeakers [H04R 3/12](#); loudspeakers for public address systems [H04R 27/00](#))}**
- G08B 3/1008 · · {-Personal calling arrangements or devices, i.e. paging systems (telephonic systems with personal calling arrangements [H04M 11/022](#); selective calling systems and call receivers [H04W 84/00](#), [H04W 84/00](#), [H04W 68/00](#))}

- U G08B 5/00** Visible signalling systems, e.g. personal calling systems, remote indication of seats occupied ({locks with visible signalling devices [E05B 39/00](#); electro-, magneto- or acousto-optic display devices [G02F](#)}; display of time signals [G04B 19/00](#), [G04C 17/00](#), [G04C 19/00](#), [G04G 9/00](#); for display of alphanumeric information [G09F](#); flags, banners [G09F](#); {display tubes [H01J 17/49](#), [H01K 7/04](#); electro-luminescent devices [H05B 33/00](#)})
- U G08B 5/22
G08B 5/221
G08B 5/222
- using electric transmission; using electro-magnetic transmission
 - • {-Local indication of seats occupied in a facility, e.g. in a theatre}
 - • {-Personal calling arrangements or devices, i.e. paging systems (selective calling systems and call receivers [H04W 84/00](#), [H04W 84/00](#), [H04W 68/00](#))}
- U G08B 7/00** Signalling systems according to more than one of groups [G08B 3/00](#) to [G08B 6/00](#) (combinations of display arrangements with audible advertising [G09F 27/00](#)); Personal calling systems according to more than one of groups [G08B 3/00](#) to [G08B 6/00](#) {(combinations of display devices with advertising [G09F](#))}
- G08B 7/06
- using electric transmission { e.g. involving audible and visible signalling through the use of sound and light sources-(walking aids for blind persons [A61H 3/06](#); facilitating escape from buildings [A62B 3/00](#))}
- G08B 7/062
- • {-indicating emergency exits (signs, boards or panels illuminated from behind, indicating exit way or orientation [G09F 2013/0459](#))}
- G08B 7/064
- • {-indicating houses needing emergency help, e.g. with a flashing light or sound}
- G08B 7/066
- • {-guiding along a path, e.g. evacuation path lighting strip}
- G08B 7/068
- • {-calling personnel in a restaurant, e.g. waiter call}
- U G08B 13/00** Burglar, theft, or intruder alarms (vehicle theft alarms [B60R 25/10](#); cycle theft alarms [B62H 5/00](#)){(fire or police telegraphic systems [G08B 25/00](#), [G08B 26/00](#), [H04M 11/04](#))}
- U G08B 13/02
- Mechanical actuation
- U G08B 13/12
- • by the breaking or disturbance of stretched cords or wires
- G08B 13/122
- • • {-for a perimeter fence (features peculiar to electrified fences [A01K 3/00](#); fences per se [E04H 17/00](#))}
- G08B 13/124
- • • • {-with the breaking or disturbance being optically detected, e.g. optical fibers in the perimeter fence}
- G08B 13/126
- • • {-for a housing, e.g. a box, a safe, a room (anti-theft means in containers [B65D 2211/00](#))}
- G08B 13/128
- • • • {-the housing being an electronic circuit unit, e.g. memory or CPU chip (protecting computer components in secure or tamper resistant housings [G06F 21/86](#); protecting computer input devices, e.g. keyboards [G06F 21/83](#))}
- U G08B 13/14
- • by lifting or attempted removal of hand-portable articles {(devices to prevent theft or loss of purses, luggage or hand carried bags [A45C 13/18](#))}
- G08B 13/1409
- • • {-for removal detection of electrical appliances by detecting their physical disconnection from an electrical system, e.g. using a switch incorporated in the plug connector}
- G08B 13/1418
- • • • {-Removal detected by failure in electrical connection between the appliance and a control centre, home control panel or a power supply}
- G08B 13/1427
- • • {-with transmitter-receiver for distance detection}

NOTE

Details thereof are further classified in the subgroups of [G08B 21/0202](#)

- G08B 13/1445
 - • • {-with detection of interference with a cable tethering an article, e.g. alarm activated by detecting detachment of article, breaking or stretching of cable (furniture, e.g. shelves for displaying merchandise, incorporating tethers to prevent theft [A47F 7/024](#), [A47F 5/0861](#))}
- G08B 13/1454
 - • • • {-Circuit arrangements thereof}
- G08B 13/1463
 - • • • {-Physical arrangements, e.g. housings (devices to prevent theft or loss of purses, luggage or hand carried bags [A45C 13/18](#))}
- U G08B 13/16
 - Actuation by interference with mechanical vibrations in air or other fluid
- U G08B 13/1654
 - • {using passive vibration detection systems}
- G08B 13/1672
 - • • {-using sonic detecting means, e.g. a microphone operating in the audio frequency range}
- G08B 13/1681
 - • • {-using infrasonic detecting means, e.g. a microphone operating below the audible frequency range}
- U G08B 13/18
 - Actuation by interference with heat, light or radiation of shorter wavelength; Actuation by intruding sources of heat, light or radiation of shorter wavelength {signalling devices using photo-electric devices in general [G09F](#)}
- U G08B 13/189
 - • using passive radiation detection systems
- U G08B 13/194
 - • • using image scanning and comparing systems
- U G08B 13/196
 - • • • using television cameras {(recognition of scenes under surveillance [G06K 9/00771](#); image analysis per se [G06T 7/00](#); television cameras [H04N 5/225](#); CCTV systems [H04N 7/18](#))}
- G08B 13/19602
 - • • • • {-Image analysis to detect motion of the intruder, e.g. by frame subtraction}
- G08B 13/19604
 - • • • • • {-involving reference image or background adaptation with time to compensate for changing conditions, e.g. reference image update on detection of light level change}
- G08B 13/19606
 - • • • • • {-Discriminating between target movement or movement in an area of interest and other non-signicative movements, e.g. target movements induced by camera shake or movements of pets, falling leaves, rotating fan}
- G08B 13/19608
 - • • • • • {-Tracking movement of a target, e.g. by detecting an object predefined as a target, using target direction and or velocity to predict its new position (analysis of motion by image processing per se [G06T 7/20](#))}
- G08B 13/1961
 - • • • • • {-Movement detection not involving frame subtraction, e.g. motion detection on the basis of luminance changes in the image}
- G08B 13/19613
 - • • • • • {-Recognition of a predetermined image pattern or behaviour pattern indicating theft or intrusion}
- G08B 13/19615
 - • • • • • • {-wherein said pattern is defined by the user}
- G08B 13/19617
 - • • • • • {-Surveillance camera constructional details}
- G08B 13/19619
 - • • • • • {-Details of casing}
- G08B 13/19621
 - • • • • • {-Portable camera}
- G08B 13/19623
 - • • • • • {-Arrangements allowing camera linear motion, e.g. camera moving along a rail cable or track}
- G08B 13/19626
 - • • • • • • {-optical details, e.g. lenses, mirrors, multiple lenses ([G08B 13/19628](#) takes precedence)}
- G08B 13/19628
 - • • • • • • {-of wide angled cameras and camera groups, e.g. omni-directional cameras, fish eye, single units having multiple cameras achieving a wide angle view}
- G08B 13/1963
 - • • • • • • {-Arrangements allowing camera rotation to change view, e.g. pivoting camera, pan-tilt and zoom (PTZ)}

- G08B 13/19632 {-Camera support structures, e.g. attachment means, poles}
- G08B 13/19634 {-Electrical details of the system, e.g. component blocks for carrying out specific functions}
- G08B 13/19636 {-pertaining to the camera}
- G08B 13/19639 {-Details of the system layout}
- G08B 13/19641 {-Multiple cameras having overlapping views on a single scene}
- G08B 13/19643 {-wherein the cameras play different roles, e.g. different resolution, different camera type, master-slave camera}
- G08B 13/19645 {-Multiple cameras, each having view on one of a plurality of scenes, e.g. multiple cameras for multi-room surveillance or for tracking an object by view hand-over}
- G08B 13/19647 {-Systems specially adapted for intrusion detection in or around a vehicle}
- G08B 13/1965 {-the vehicle being an aircraft}
- G08B 13/19652 {-Systems using zones in a single scene defined for different treatment, e.g. outer zone gives pre-alarm, inner zone gives alarm}
- G08B 13/19654 {-Details concerning communication with a camera}
- G08B 13/19656 {-Network used to communicate with a camera, e.g. WAN, LAN, Internet}
- G08B 13/19658 {-Telephone systems used to communicate with a camera, e.g. PSTN, GSM, POTS}
- G08B 13/1966 {-Wireless systems, other than telephone systems, used to communicate with a camera}
- G08B 13/19663 {-Surveillance related processing done local to the camera}
- G08B 13/19665 {-Details related to the storage of video surveillance data (television signal recording [H04N 5/76](#))}
- G08B 13/19667 {-Details related to data compression, encryption or encoding, e.g. resolution modes for reducing data volume to lower transmission bandwidth or memory requirements}
- G08B 13/19669 {-Event triggers storage or change of storage policy}
- G08B 13/19671 {-Addition of non-video data, i.e. metadata, to video stream}
- G08B 13/19673 {-Addition of time stamp, i.e. time metadata, to video stream}
- G08B 13/19676 {-Temporary storage, e.g. cyclic memory, buffer storage on pre-alarm}
- G08B 13/19678 {-User interface}
- G08B 13/1968 {-Interfaces for setting up or customising the system}
- G08B 13/19682 {-Graphic User Interface [GUI] presenting system data to the user, e.g. information on a screen helping a user interacting with an alarm system}
- G08B 13/19684 {-Portable terminal, e.g. mobile phone, used for viewing video remotely}
- G08B 13/19686 {-Interfaces masking personal details for privacy, e.g. blurring faces, vehicle license plates}
- G08B 13/19689 {-Remote control of cameras, e.g. remote orientation or image zooming control for a PTZ camera}
- G08B 13/19691 {-Signalling events for better perception by user, e.g. indicating alarms by making display brighter, adding text, creating a sound}
- G08B 13/19693 {-using multiple video sources viewed on a single or compound screen}

- G08B 13/19695 {-Arrangements wherein non-video detectors start video recording or forwarding but do not generate an alarm themselves}
- G08B 13/19697 {-Arrangements wherein non-video detectors generate an alarm themselves}
- U G08B 13/22 {-Electrical actuation {(G08B 13/2494 takes precedence)}
- U G08B 13/24 {-by interference with electromagnetic field distribution {(signals actuated by trains B61L; metal detectors using induction coils G01V 3/10; metal detectors combined with record carrier readers G06K 7/085)}
- G08B 13/2402 {-Electronic Article Surveillance [EAS]}, i.e. systems using tags for detecting removal of a tagged item from a secure area, e.g. tags for detecting shoplifting (mechanical aspects of the tags, e.g. related to locking E05B 73/0017; RFID readers G06K 7/00; RFID tags G06K 19/00; access control systems G07C 9/00; anti-theft control in point of sale systems G07G 3/003; security seals G09F 3/03)}
- G08B 13/2405 {-characterised by the tag technology used}
- G08B 13/2408 {-using ferromagnetic tags}
- G08B 13/2411 {-Tag deactivation}
- G08B 13/2414 {-using inductive tags}
- G08B 13/2417 {-having a radio frequency identification chip (radio frequency identification tags per se G06K 19/00; inventory or logistics in general G06Q 10/00)}
- G08B 13/242 {-Tag deactivation}
- G08B 13/2422 {-using acoustic or microwave tags}
- G08B 13/2425 {-Tag deactivation}
- G08B 13/2428 {-Tag details}
- G08B 13/2431 {-Tag circuit details}
- G08B 13/2434 {-Tag housing and attachment details (transponders in containers B65D 2203/10; anti-theft means in containers B65D 2211/00)}
- G08B 13/2437 {-Tag layered structure, processes for making layered tags}
- G08B 13/244 {-Tag manufacturing, e.g. continuous manufacturing processes}
- G08B 13/2442 {-Tag materials and material properties thereof, e.g. magnetic material details}
- G08B 13/2445 {-Tag integrated into item to be protected, e.g. source tagging (anti-theft means in containers B65D 2211/00)}
- G08B 13/2448 {-Tag with at least dual detection means, e.g. combined inductive and ferromagnetic tags, dual frequencies within a single technology, tampering detection or signalling means on the tag}
- G08B 13/2451 {-Specific applications combined with EAS}
- G08B 13/2454 {-Checking of authorisation of a person accessing tagged items in an EAS system}
- G08B 13/2457 {-Lending systems using EAS tags wherein the tags are reusable, e.g. they can be activated and deactivated more than once, e.g. for a library}
- G08B 13/246 {-Check out systems combined with EAS, e.g. price information stored on EAS tag (anti-theft systems in point of sale systems G07G 3/003)}
- G08B 13/2462 {-Asset location systems combined with EAS (inventory, tracking, logistic G06Q 10/00; entrance control systems G07C 9/00)}
- G08B 13/2465 {-Aspects related to the EAS system, e.g. system components other than tags}
- G08B 13/2468 {-Antenna in system and the related signal processing}

- G08B 13/2474 {-Antenna or antenna activator geometry, arrangement or layout (loop antennae [H01Q 1/22](#))}
- G08B 13/2477 {-Antenna or antenna activator circuit}
- G08B 13/248 {-EAS system combined with another detection technology, e.g. dual EAS and video or other presence detection system}
- G08B 13/2482 {-EAS methods, e.g. description of flow chart of the detection procedure}
- G08B 13/2485 {-Simultaneous detection of multiple EAS tags}
- G08B 13/2488 {-Timing issues, e.g. synchronising measures to avoid signal collision, with multiple emitters or a single emitter and receiver}
- G08B 13/2491 . . . {-Intrusion detection systems, i.e. where the body of an intruder causes the interference with the electromagnetic field}
- G08B 13/2494 {-by interference with electro-magnetic field distribution combined with other electrical sensor means, e.g. microwave detectors combined with other sensor means}

- U G08B 15/00** **Identifying, scaring or incapacitating burglars, thieves, or intruders, e.g. by explosives (burglar traps or the like, on safes [E05G 5/02](#); {devices to prevent loss of bags, trunks or travelling baskets by producing sound, piercing, gas-discharging or the like [A45C 13/24](#); alarm locks [E05B 45/00](#), e.g. with detonating alarm [E05B 45/04](#))}**
- G08B 15/001 . {-Concealed systems, e.g. disguised alarm systems to make covert systems}
- G08B 15/004 . {-using portable personal devices (hand-held or body-worn self-defence devices using repellent gases or chemicals [F41H 9/10](#))}
- G08B 15/008 . {-by simulating the existence of a security system, e.g. a mock video camera to scare thieves}

- U G08B 17/00** **Fire alarms; Alarms responsive to explosion (temperature-responsive elements [G01K](#); { automatic fire-extinguishing and alarm devices [A62C 35/00](#), [A62C 37/00](#); structural combination of lighting devices with smoke detectors [F21V 33/0076](#); arrangement of safety devices on stoves [F24C 7/08](#))}**
- G08B 17/005 . {-for forest fires, e.g. detecting fires spread over a large or outdoors area (fire fighting forest fires [A62C 3/02](#))}
- G08B 17/10 . Actuation by presence of smoke or gases {automatic alarm devices for analysing flowing fluid materials by the use of optical means-(turbidimetric analysis of gases, e.g. of smoke [G01N 21/534](#))}
- U G08B 17/12** . Actuation by presence of radiation or particles, e.g. of infra-red radiation, of ions { alarm or controlling circuits using ionisation chamber, proportional counters or Geiger-Müller tubes also functioning as u-v detectors [G01T 7/125](#); flame detection in burners [F23N 5/00](#)}
- G08B 17/125 . . {-by using a video camera to detect fire or smoke}

- U G08B 21/00** **Alarms responsive to a single specified undesired or abnormal operating condition and not elsewhere provided for {(alarms on gas pipes [F17D 3/01](#))}**
- U G08B 21/02** . Alarms for ensuring the safety of persons
- G08B 21/0202 . . {-Child monitoring systems using a transmitter-receiver system carried by the parent and the child}
- G08B 21/0205 . . . {-Specific application combined with child monitoring using a transmitter-receiver system}
- G08B 21/0208 {-Combination with audio or video communication, e.g. combination with "baby phone" function}

- G08B 21/0211 . . . {-Combination with medical sensor, e.g. for measuring heart rate, temperature}
- G08B 21/0213 . . . {-System disabling if a separation threshold is exceeded (disabling electrical appliances in case of unplugging [G08B 13/1409](#))}
- G08B 21/0216 . . . {-Alarm cancellation after generation}
- G08B 21/0219 . . . {-Circuit arrangements}
- G08B 21/0222 . . . {-Message structure or message content, e.g. message protocol}
- G08B 21/0225 . . . {-Monitoring making use of different thresholds, e.g. for different alarm levels}
- G08B 21/0227 . . . {-System arrangements with a plurality of child units}
- G08B 21/023 . . . {-Power management, e.g. system sleep and wake up provisions}
- G08B 21/0233 . . . {-System arrangements with pre-alarms, e.g. when a first distance is exceeded}
- G08B 21/0236 . . . {-Threshold setting}
- G08B 21/0238 . . . {-adding new units to the system}
- G08B 21/0241 . . . {-Data exchange details, e.g. data protocol}
- G08B 21/0244 . . . {-System arrangements wherein the alarm criteria uses signal delay or phase shift}
- G08B 21/0247 . . . {-System arrangements wherein the alarm criteria uses signal strength}
- G08B 21/025 . . . {-System arrangements wherein the alarm criteria uses absence of reply signal after an elapsed time}
- G08B 21/0252 . . . {-System arrangements wherein the child unit emits, i.e. the child unit incorporates the emitter}
- G08B 21/0255 . . . {-System arrangements wherein the parent unit emits, i.e. the parent unit incorporates the emitter}
- G08B 21/0258 . . . {-System arrangements wherein both parent and child units can emit and receive}
- G08B 21/0261 . . . {-System arrangements wherein the object is to detect trespassing over a fixed physical boundary, e.g. the end of a garden}
- G08B 21/0263 . . . {-System arrangements wherein the object is to detect the direction in which child or item is located}
- G08B 21/0266 . . . {-System arrangements wherein the object is to detect the exact distance between parent and child or surveyor and item}
- G08B 21/0269 . . . {-System arrangements wherein the object is to detect the exact location of child or item using a navigation satellite system, e.g. GPS}
- G08B 21/0272 . . . {-System arrangements wherein the object is to detect exact location of child or item using triangulation other than GPS}
- G08B 21/0275 . . . {-Electronic Article Surveillance [EAS]} tag technology used for parent or child unit, e.g. same transmission technology, magnetic tag, RF tag, RFID}
- G08B 21/0277 . . . {-Communication between units on a local network, e.g. Bluetooth, piconet, zigbee, Wireless Personal Area Networks [WPAN]}
- G08B 21/028 . . . {-Communication between parent and child units via remote transmission means, e.g. satellite network}
- G08B 21/0283 . . . {-via a telephone network, e.g. cellular GSM}
- G08B 21/0286 . . . {-Tampering or removal detection of the child unit from child or article.}
- G08B 21/0288 . . . {-Attachment of child unit to child/article}
- G08B 21/0291 . . . {-Housing and user interface of child unit}
- G08B 21/0294 . . . {-Display details on parent unit}

- G08B 21/0297
 - • {-Robbery alarms, e.g. hold-up alarms, bag snatching alarms}
- U G08B 21/04
 - • responsive to non-activity, e.g. of elderly persons ([G08B 21/06](#) takes precedence)
- G08B 21/0407
 - • • {-based on behaviour analysis}
- G08B 21/0415
 - • • • {-detecting absence of activity per se}
- G08B 21/0423
 - • • • {-detecting deviation from an expected pattern of behaviour or schedule}
- G08B 21/043
 - • • • {-detecting an emergency event, e.g. a fall}
- G08B 21/0438
 - • • {-Sensor means for detecting}
- G08B 21/0446
 - • • • {-worn on the body to detect changes of posture, e.g. a fall, inclination, acceleration, gait}
- G08B 21/0453
 - • • • {-worn on the body to detect health condition by physiological monitoring, e.g. electrocardiogram, temperature, breathing (detecting, measuring or recording for diagnostic purposes [A61B 5/00](#))}
- G08B 21/0461
 - • • • {-integrated or attached to an item closely associated with the person but not worn by the person, e.g. chair, walking stick, bed sensor}
- G08B 21/0469
 - • • • {-Presence detectors to detect unsafe condition, e.g. infrared sensor, microphone ([G08B 21/0476](#) takes precedence)}
- G08B 21/0476
 - • • • {-Cameras to detect unsafe condition, e.g. video cameras}
- G08B 21/0484
 - • • • {-Arrangements monitoring consumption of a utility or use of an appliance which consumes a utility to detect unsafe condition, e.g. metering of water, gas or electricity, use of taps, toilet flush, gas stove or electric kettle.}
- G08B 21/0492
 - • • • {-Sensor dual technology, i.e. two or more technologies collaborate to extract unsafe condition, e.g. video tracking and RFID tracking}
- U G08B 21/08
 - • responsive to the presence of persons in a body of water, e.g. a swimming pool; responsive to an abnormal condition of a body of water
- G08B 21/082
 - • • {-by monitoring electrical characteristics of the water}
- G08B 21/084
 - • • {-by monitoring physical movement characteristics of the water}
- G08B 21/086
 - • • {-by monitoring a perimeter outside the body of the water}
- G08B 21/088
 - • • {-by monitoring a device worn by the person, e.g. a bracelet attached to the swimmer}
- U G08B 21/18
 - Status alarms ([G08B 21/02](#) takes precedence)
- G08B 21/182
 - • {-Level alarms, e.g. alarms responsive to variables exceeding a threshold}
- G08B 21/185
 - • {-Electrical failure alarms}
- G08B 21/187
 - • {-Machine fault alarms}
- U G08B 21/24
 - • Reminder alarms, e.g. anti-loss alarms (devices to prevent loss of bags or the like [A45C 13/24](#))
- G08B 21/245
 - • • {-Reminder of hygiene compliance policies, e.g. of washing hands (Measuring quality of medical staff, [G06F 19/327](#))}
- U **G08B 25/00**
 - Alarm systems in which the location of the alarm condition is signalled to a central station, e.g. fire or police telegraphic systems {(signalling systems in general [G08C](#))}**
- G08B 25/001
 - {-Alarm cancelling procedures or alarm forwarding decisions, e.g. based on absence of alarm confirmation}
- G08B 25/002
 - {-Generating a prealarm to the central station}
- G08B 25/003
 - {-Address allocation methods and details}
- G08B 25/004
 - {-Alarm propagated along alternative communication path or using alternative communication medium according to a hierarchy of available ways to communicate, e.g. if Wi-Fi not available use GSM}

- G08B 25/005
 - {-Alarm destination chosen according to a hierarchy of available destinations, e.g. if hospital does not answer send to police station}
- G08B 25/006
 - {-Alarm destination chosen according to type of event, e.g. in case of fire phone the fire service, in case of medical emergency phone the ambulance}
- G08B 25/007
 - {-Details of data content structure of message packets; data protocols}
- G08B 25/008
 - {-Alarm setting and unsetting, i.e. arming or disarming of the security system}
- G08B 25/009
 - {-Signalling of the alarm condition to a substation whose identity is signalled to a central station, e.g. relaying alarm signals in order to extend communication range}
- U G08B 25/01
 - characterised by the transmission medium
- G08B 25/016
 - · {-Personal emergency signalling and security systems (emergency non-personal manually actuated alarm activators [G08B 25/12](#))}
- G08B 25/018
 - · {-Sensor coding by detecting magnitude of an electrical parameter, e.g. resistance}
- U G08B 27/00** **Alarm systems in which the alarm condition is signalled from a central station to a plurality of substations {(signalling systems in general [G08C](#))}**
 - G08B 27/001
 - {-Signalling to an emergency team, e.g. firemen}
 - G08B 27/003
 - {-Signalling to neighbouring houses}
 - G08B 27/005
 - {-with transmission via computer network}
 - G08B 27/006
 - {-with transmission via telephone network}
 - G08B 27/008
 - {-with transmission via TV or radio broadcast}
- U G08B 29/00** **Checking or monitoring of signalling or alarm systems; Prevention or correction of operating errors, e.g. preventing unauthorised operation {(arrangements for testing electric properties, arrangements for locating electric faults [G01R 31/00](#))}**
 - U G08B 29/18
 - Prevention or correction of operating errors ([G08B 29/02](#), [G08B 29/12](#) take precedence)
 - G08B 29/181
 - · {-due to failing power supply}
 - G08B 29/183
 - · {-Single detectors using dual technologies ([G08B 13/1672](#), [G08B 13/2448](#), [G08B 13/2494](#) take precedence)}
 - G08B 29/185
 - · {-Signal analysis techniques for reducing or preventing false alarms or for enhancing the reliability of the system}
 - G08B 29/186
 - · · {-Fuzzy logic; neural networks}
 - G08B 29/188
 - · · {-Data fusion; cooperative systems, e.g. voting among different detectors}

Project: N/A (G08G)

- U G08G 1/00** **Traffic control systems for road vehicles (arrangement of road signs or traffic signals [E01F 9/00](#); {(automatic vehicle control [B62D](#))})**

WARNING

Groups [G08G 1/22](#) - [G08G 1/20](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [G08G 1/20](#) : [G08G 1/123](#) - [G08G 1/22](#) : [G08G 1/16](#)

- U G08G 1/01
 - Detecting movement of traffic to be counted or controlled ([G08G 1/07](#) to [G08G 1/14](#) take precedence)
- U G08G 1/0104
 - · {Measuring and analyzing of parameters relative to traffic conditions}
- G08G 1/0108
 - · · {-based on the source of data}
- G08G 1/0112
 - · · · {-from the vehicle, e.g. floating car data [FCD]}

- G08G 1/0116 {from roadside infrastructure, e.g. beacons}
- G08G 1/012 {from other sources than vehicle or roadside beacons, e.g. mobile networks}
- G08G 1/0125 {Traffic data processing}
- G08G 1/0129 {for creating historical data or processing based on historical data}
- G08G 1/0133 {for classifying traffic situation}
- G08G 1/0137 {for specific applications}
- G08G 1/0141 {for traffic information dissemination}
- G08G 1/0145 {for active traffic flow control}
- U G08G 1/09 Arrangements for giving variable traffic instructions ({railroad crossing signals [B61L](#); reflectors [E01F](#), [G08B](#)}; indicating arrangements for variable information by selection or combination of individual elements [G09F 9/00](#))
- U G08G 1/091 {Traffic information broadcasting (broadcasting communication [H04H](#))}
- G08G 1/092 {Coding or decoding of the information}
- G08G 1/093 {Data selection, e.g. prioritizing information, managing message queues, selecting the information to be output}
- G08G 1/094 {Hardware aspects; Signal processing or signal properties, e.g. frequency bands}
- U G08G 1/0962 having an indicator mounted inside the vehicle, e.g. giving voice messages
- G08G 1/09623 {Systems involving the acquisition of information from passive traffic signs by means mounted on the vehicle ([G08G 1/0967](#) takes precedence)}
- G08G 1/09626 {where the origin of the information is within the own vehicle, e.g. a local storage device, digital map}
- U G08G 1/0967 Systems involving transmission of highway information, e.g. weather, speed limits (transmission of navigation instructions to the vehicle [G08G 1/0968](#))
- G08G 1/096708 {where the received information might be used to generate an automatic action on the vehicle control}
- G08G 1/096716 {where the received information does not generate an automatic action on the vehicle control}
- G08G 1/096725 {where the received information generates an automatic action on the vehicle control}
- G08G 1/096733 {where a selection of the information might take place}
- G08G 1/096741 {where the source of the transmitted information selects which information to transmit to each vehicle}
- G08G 1/09675 {where a selection from the received information takes place in the vehicle}
- G08G 1/096758 {where no selection takes place on the transmitted or the received information}
- G08G 1/096766 {where the system is characterised by the origin of the information transmission}
- G08G 1/096775 {where the origin of the information is a central station}
- G08G 1/096783 {where the origin of the information is a roadside individual element}
- G08G 1/096791 {where the origin of the information is another vehicle}
- U G08G 1/0968 Systems involving transmission of navigation instructions to the vehicle {(navigation or navigational instruments specially adapted for navigation in a road network [G01C 21/26](#))}
- G08G 1/096805 {where the transmitted instructions are used to compute a route}
- G08G 1/096811 {where the route is computed offboard}

- G08G 1/096816 {-where the complete route is transmitted to the vehicle at once}
- G08G 1/096822 {-where the segments of the route are transmitted to the vehicle at different locations and times}
- G08G 1/096827 {-where the route is computed onboard}
- G08G 1/096833 {-where different aspects are considered when computing the route}
- G08G 1/096838 {-where the user preferences are taken into account or the user selects one route out of a plurality}
- G08G 1/096844 {-where the complete route is dynamically recomputed based on new data}
- G08G 1/09685 {-where the complete route is computed only once and not updated}
- G08G 1/096855 {-where the output is provided in a suitable form to the driver (details on I/O arrangements for onboard navigation computers [G01C 21/36](#))}
- G08G 1/096861 {-where the immediate route instructions are output to the driver, e.g. arrow signs for next turn}
- G08G 1/096866 {-where the complete route is shown to the driver}
- G08G 1/096872 {-where instructions are given per voice}
- G08G 1/096877 {-where the input to the navigation device is provided by a suitable I/O arrangement (details of I/O arrangements for onboard navigation computers [G01C 21/36](#); I/O arrangements for general purpose computers [G06F 3/00](#))}
- G08G 1/096883 {-where input information is obtained using a mobile device, e.g. a mobile phone, a PDA}
- G08G 1/096888 {-where input information is obtained using learning systems, e.g. history databases}
- G08G 1/096894 {-where input is assisted by the navigation device, i.e. the user does not type the complete name of the destination, e.g. using zip codes, telephone numbers, progressively selecting from initial letters}
- U G08G 1/14 Indicating individual free spaces in parking areas
- G08G 1/141 {-with means giving the indication of available parking spaces}
- G08G 1/142 {-external to the vehicles}
- G08G 1/143 {-inside the vehicles}
- G08G 1/144 {-on portable or mobile units, e.g. personal digital assistant [PDA]}
- G08G 1/145 {-where the indication depends on the parking areas}
- G08G 1/146 {-where the parking area is a limited parking space, e.g. parking garage, restricted space}
- G08G 1/147 {-where the parking area is within an open public zone, e.g. city centre}
- G08G 1/148 {-Management of a network of parking areas}
- G08G 1/149 {-coupled to means for restricting the access to the parking space, e.g. authorization, access barriers, indicative lights}
- U G08G 1/16 Anti-collision systems (road vehicle drive control systems for predicting or avoiding probable or impending collision otherwise than by control of a particular sub-unit [B60W 30/08](#))
- G08G 1/165 {-for passive traffic, e.g. including static obstacles, trees}
- G08G 1/166 {-for active traffic, e.g. moving vehicles, pedestrians, bikes}
- G08G 1/167 {-Driving aids for lane monitoring, lane changing, e.g. blind spot detection}
- G08G 1/168 {-Driving aids for parking, e.g. acoustic or visual feedback on parking space}
- G08G 1/20 {-Monitoring the location of vehicles belonging to a group, e.g. fleet of vehicles, countable or determined number of vehicles}

- G08G 1/202
- G08G 1/205
- G08G 1/207
- G08G 1/22

G08G 5/00**Traffic control systems for aircraft; { e.g. air-traffic control [ATC] }**NOTES

1. This group covers arrangements, located in the aircraft or on the ground, for controlling aircraft within a traffic environment.
2. This group does not cover arrangements for control of position, course, altitude or attitude of aircraft not specific to a traffic environment, e.g. automatic pilots, which are covered by group [G05D 1/00](#).
3. In this group the following term is used with the meaning indicated: - "traffic" includes traffic on the ground and in the air.
4. Attention is drawn to the following places which might be interesting for search:
 - mechanical aspects of equipment for fitting in or to aircraft [B64D](#)
 - combined instruments indicating more than one navigational value [G01C 23/00](#)

- G08G 5/0004
- G08G 5/0008
- G08G 5/0013
- G08G 5/0017
- G08G 5/0021
- G08G 5/0026
- G08G 5/003
- G08G 5/0034
- G08G 5/0039
- G08G 5/0043
- G08G 5/0047
- G08G 5/0052
- G08G 5/0056
- G08G 5/006
- G08G 5/0065
- G08G 5/0069
- G08G 5/0073
- G08G 5/0078
- G08G 5/0082

- G08G 5/0086
 - • {-for monitoring terrain (radar or analogous systems specially adapted for terrain avoidance [G01S 13/94](#))}
- G08G 5/0091
 - • {-for monitoring atmospheric conditions (radar or analogous systems specially adapted for meteorological use [G01S 13/95](#); meteorology [G01W](#))}
- G08G 5/0095
 - {-Aspects of air-traffic control not provided for in the other subgroups of this main group}
- U G08G 5/02
 - Automatic { approach or} landing aids, i.e. systems in which flight data of incoming planes are processed to provide landing data (landing aids fitted in or to aircraft [B64D 45/04](#); visual or acoustic landing aids [B64F 1/18](#))
- G08G 5/025
 - • {-Navigation or guidance aids (radar or analogous systems specially adapted for landing purposes [G01S 13/913](#))}
- U G08G 5/04
 - Anti-collision systems
- G08G 5/045
 - • {-Navigation or guidance aids, e.g. determination of anti-collision maneuvers (radar or analogous systems specially adapted for anti-collision between aircraft [G01S 13/9303](#))}
- U G08G 5/06
 - for control when on the ground
- G08G 5/065
 - • {-Navigation or guidance aids, e.g. for taxiing or rolling}

Project: N/A (G09B)

- U **G09B 1/00**

Manually or mechanically operated educational appliances using elements forming, or bearing, symbols, signs, pictures, or the like which are arranged or adapted to be arranged in one or more particular ways (puzzle-games [A63F 9/00](#); advertising or displaying in general [G09F](#))
- U G09B 1/32
 - comprising elements to be used without a special support
- G09B 1/325
 - • {-the elements comprising interacting electronic components}
- U **G09B 5/00**

Electrically-operated educational appliances (working with questions and answers [G09B 7/00](#); simulators [G09B 9/00](#); advertising or displaying in general [G09F](#))

NOTE

Group [G09B 5/08](#) takes precedence over groups [G09B 5/02](#) to [G09B 5/06](#).
- U G09B 5/08
 - providing for individual presentation of information to a plurality of student stations
- U G09B 5/12
 - • different stations being capable of presenting different information simultaneously ([G09B 5/14](#) takes precedence)
- G09B 5/125
 - • • {-the stations being mobile}
- U **G09B 17/00**

Teaching reading (teaching lip-reading [G09B 21/00](#))
- U G09B 17/003
 - {electrically operated apparatus or devices}
- G09B 17/006
 - • {-with audible presentation of the material to be studied (audio and audio-visual teaching apparatus in general [G09B 5/04](#), [G09B 5/06](#))}
- U **G09B 19/00**

Teaching not covered by other main groups of this subclass (teaching or practice apparatus for gun-aiming or gun-laying [F41G 3/26](#))
- U G09B 19/003
 - {Repetitive work cycles; Sequence of movements}
- G09B 19/0038
 - • {-Sports}
- U G09B 19/0076
 - {Body hygiene; Dressing; Knot tying}
- G09B 19/0084
 - • {-Dental hygiene}
- G09B 19/0092
 - {-Nutrition}

- U G09B 21/00** Teaching, or communicating with, the blind, deaf or mute (audible presentation of material to be studied [G09B 5/04](#); devices or methods for replacing direct visual or auditory perception by another kind of perception [A61F 9/08](#), [A61F 11/04](#); audible indication of meter readings or of colour [G01D 7/12](#); watches for blind persons [G04B 25/02](#); methods or arrangements for reading or recognising printed or written characters [G06K 9/00](#); speech analysis, speech recognition [G10L](#); sound-recording or reproducing, per se [G11B](#))
- U G09B 21/001 · {Teaching or communicating with blind persons ([G09B 21/02](#) to [G09B 21/06](#) take precedence)}
- G09B 21/002 · · {-Writing aids for blind persons (devices for Braille writing [G09B 21/02](#))}
- U G09B 21/003 · · {using tactile presentation of the information, e.g. Braille displays}
- G09B 21/004 · · · {-Details of particular tactile cells, e.g. electro-mechanical or mechanical layout}
- G09B 21/005 · · · {-Details of specially-adapted software to access information, e.g. to browse through hyperlinked information}
- U G09B 21/02 · Devices for Braille writing (typewriters for Braille [B41J 3/32](#))
- G09B 21/025 · · {-wherein one tactile input is associated to a single finger}
- U G09B 23/00** Models for scientific, medical, or mathematical purposes, e.g. full-sized devices for demonstration purposes (in the nature of toys [A63H](#))
- U G09B 23/28 · for medicine
- U G09B 23/30 · · Anatomical models {[G09B 23/281](#) to [G09B 23/288](#) take precedence}
- G09B 23/303 · · · {-specially adapted to simulate circulation of bodily fluids}
- G09B 23/306 · · · {-comprising real biological tissue}

Project: N/A (G09F)

- U G09F 1/00** Cardboard or like show-cards of foldable or flexible material
- U G09F 1/04 · Folded cards
- U G09F 1/06 · · to be erected in three dimensions ([G09F 1/08](#) takes precedence)
- G09F 1/065 · · · {-Totem-like displays; Portable collapsible columnar displays}
- U G09F 3/00** Labels, tag tickets, or similar identification or indication means (medals or badges [A44C 3/00](#); making labels [B31D 1/02](#); sheets temporarily attached together [B42F](#); labelling [B65C](#); labels on record carriers [G11B 23/38](#), [G11B 23/40](#)); Seals; Postage or like stamps
- U G09F 3/02 · Forms or constructions (layered products [B32B](#))
- U G09F 3/0297 · · {including a machine-readable marking, e.g. a bar code (digitally marked record carriers in general [G06K 19/00](#))}
- G09F 3/0298 · · · {-Bar code orientation; Labels in which the bar code orientation is different}
- U G09F 3/03 · · of security seals {(means for indicating unauthorised opening of container closures [B65D](#), e.g. [B65D 27/30](#), [B65D 55/02](#); theft deterrent tags [E05B 73/0017](#))}
- G09F 3/0305 · · · {-characterised by the type of seal used}
- G09F 3/0311 · · · · {-having arrow-like sealing means}
- G09F 3/0317 · · · · {-having bolt like sealing means (means for preventing relative axial movement of a pin, spigot, shaft or the like and a member surrounding it [F16B 21/00](#))}
- G09F 3/0323 · · · · {-having clamp-like sealing means}
- G09F 3/0329 · · · · {-having electronic sealing means}

- G09F 3/0335 {-using RFID tags}
- G09F 3/0341 {-having label sealing means}
- G09F 3/0347 {-having padlock-type sealing means (padlocks in general [E05B 67/00](#))}
- G09F 3/0352 {-using cable lock}
- G09F 3/0358 {-using a rigid hasp lock}
- G09F 3/0364 {-having rotary sealing means}
- G09F 3/037 {-having tie-wrap sealing means}
- G09F 3/0382 {-Seals with transparent casing}
- G09F 3/0388 {-With semi-transparent casing}
- U G09F 3/08 Fastening or securing by means not forming part of the material of the label itself
- U G09F 3/18 Casings, frames or enclosures for labels
- U G09F 3/20 for adjustable, removable, or interchangeable labels
- G09F 3/208 {-Electronic labels, Labels integrating electronic displays}
- U G09F 9/00** **Indicating arrangements for variable information in which the information is built-up on a support by selection or combination of individual elements (in which the variable information is permanently attached to a movable support [G09F 11/00](#); abacus [G06C 1/00](#); slide-rules [G06G 1/00](#))**
- U G09F 9/30 in which the desired character or characters are formed by combining individual elements (panels comprising a number of electrodes in a single cell controlling light arriving from an independent light source, e.g. electro-optical or magneto-optical cell, [G02F 1/00](#))
- G09F 9/301 {-flexible foldable or roll-able electronic displays e.g. thin LCD, OLED}
- U G09F 9/302 characterised by the form or geometrical disposition of the individual elements
- G09F 9/3023 {-Segmented electronic displays}
- G09F 9/3026 {-Video wall, i.e. stackable semiconductor matrix display modules (video wall control systems [G06F 3/1446](#), [G09G 2300/026](#))}
- U G09F 11/00** **Indicating arrangements for variable information in which the complete information is permanently attached to a movable support which brings it to the display position (showcases or showcabinets with arrangements for continuously or intermittently moving the merchandise [A47F 3/08](#); using static means to present variable information [G09F 9/00](#))**
- U G09F 11/23 the advertising or display material forming part of rotating members, e.g. in the form of perforations, print, or transparencies on a drum or disc
- G09F 11/232 {-Disc card or folded disc shaped card information display devices}
- U G09F 13/00** **Illuminated signs; Luminous advertising ([G09F 9/00](#), [G09F 11/00](#) take precedence; control of displays in general using static means to present variable information [G09G](#))**
- G09F 13/005 {-Illumination controller or illuminated signs including an illumination control system}
- U G09F 15/00** **Boards, hoardings, pillars, or like structures for notices, placards, posters, or the like**
- U G09F 15/0006 {planar structures comprising one or more panels}
- U G09F 15/0025 {display surface tensioning means}
- G09F 15/0031 {-Tensioned curved signs; Signs with curved tensioning structures}
- U G09F 15/02 Bills, posters, or the like therefor

- G09F 15/025
- · {Poster carriers, i.e. devices for holding temporarily posters in order to transfer and apply them onto flat vertical surfaces}
- U G09F 17/00** **Flags; Banners; Mountings therefor**
- G09F 17/0091
- {Anti-foiling flagpoles; Sliding means to avoid foiling of flags on the poles}
- U G09F 19/00** **Miscellaneous advertising or display means not provided for elsewhere**
- U G09F 19/12
- using special optical effects (designs or pictures characterised by special light effects [B44F 1/00](#), e.g. changing pictures [B44F 1/10](#); projecting decorations in stage lighting [F21W 2111/06](#))
- U G09F 19/20
- · with colour-mixing effects
- G09F 19/205
- · · {Special effects using different wavelengths}
- U G09F 19/22
- Advertising or display means on roads, walls, or similar surfaces, e.g. illuminated (illuminated signs in general [G09F 13/00](#))
- G09F 19/226
- · {Building external wall displays; Facade advertisement}
- G09F 19/228
- · {Ground signs, i.e. display signs fixed on the ground}
- U G09F 21/00** **Mobile visual advertising**
- U G09F 21/02
- by a carrier person or animal
- G09F 21/026
- · {Advertising carried by a person, e.g. carried on the shoulders}
- U G09F 21/04
- by land vehicles
- G09F 21/048
- · {Advertisement panels on sides, front or back of vehicles}
- U G09F 23/00** **Advertising on or in specific articles, e.g. ashtrays, letter-boxes (on or in vehicles [G09F 21/00](#); containers, packaging-elements, or packages, with auxiliary means or provisions for displaying articles [B65D](#))**
- U G09F 23/06
- the advertising matter being combined with articles for restaurants, shops or offices (on paper articles [G09F 23/10](#))
- G09F 23/065
- · {Advertising in food vending machines}
- U G09F 27/00** **Combined visual and audible advertising or displaying, e.g. for public address**
- G09F 27/004
- {Displays including an emergency or alarm message}
- G09F 27/005
- {Signs associated with a sensor}
- G09F 27/007
- {Displays with power supply provided by solar cells or photocells}
- G09F 27/008
- {Sun shades, shades, hoods or louvers on electronic displays to minimize the effect of direct sun light on the display (rigidly arranged sunshade roofs with coherent surface [E04F 10/005](#))}

Project: N/A (G09G)

- U G09G 1/00** **Control arrangements or circuits, of interest only in connection with cathode-ray tube indicators; { General aspects or details, e.g. selection emphasis on particular characters, dashed line or dotted line generation; Preprocessing of data}(cathode-ray oscilloscopes [G01R 13/20](#); { radar display arrangements [G01S 7/04](#); display of digital non-picture data in television systems [H04N 7/0255](#))}**
- G09G 1/04
- Deflection circuits {Constructional details not otherwise provided for-(electron-optical arrangements [H01J 29/46](#), [H01J 37/04](#), [H01J 37/302](#))}
- G09G 1/06
- using single beam tubes ([G09G 1/26](#), [G09G 1/28](#) take precedence), {e.g. three-dimensional or perspective representation, rotation or translation of display pattern, hidden lines, shadows-([G09G 1/28](#) takes precedence; stereoscopic TV-systems, details thereof [H04N 13/00](#); oscilloscopes for three-dimensional representation [G01R 13/206](#); vectorscopes [G01R 13/208](#))}

- U G09G 1/14
 - • the beam tracing a pattern independent of the information to be displayed, this latter determining the parts of the pattern rendered respectively visible and invisible
- U G09G 1/16
 - • • the pattern of rectangular co-ordinates extending over the whole area of the screen, i.e. television type raster
- G09G 1/165
 - • • • {-Details of a display terminal using a CRT, the details relating to the control arrangement of the display terminal and to the interfaces thereto (details suitable for both CRT and flat panel [G09G 5/003](#); specific for a flat panel [G09G 3/2092](#))}
- G09G 1/167
 - • • • {-Details of the interface to the display terminal specific for a CRT (details suitable for both CRT and flat panel [G09G 5/006](#), specific for a flat panel [G09G 3/2096](#))}
- U G09G 3/00**
 - Control arrangements or circuits, of interest only in connection with visual indicators other than cathode-ray tubes (optical scanning systems in general [G02B 26/10](#))**
- G09G 3/001
 - {using specific devices not provided for in groups [G09G 3/02](#) to [G09G 3/36](#), e.g. using an intermediate record carrier such as a film slide; Projection systems; Display of non-alphanumerical information, solely or in combination with alphanumerical information, e.g. digital display on projected diapositive as background-{slide projectors per se [G03B 23/00](#) = 42 HP)}
- G09G 3/002
 - • {-to project the image of a two-dimensional display, such as an array of light emitting or modulating elements or a CRT}
- G09G 3/003
 - • {-to produce spatial visual effects}
- G09G 3/005
 - {-forming an image using a quickly moving array of imaging elements, causing the human eye to perceive an image which has a larger resolution than the array, e.g. an image on a cylinder formed by a rotating line of LEDs parallel to the axis of rotation}
- G09G 3/006
 - {-Electronic inspection or testing of displays and display drivers, e.g. of LED or LCD displays (testing individual LED's [G01R 31/2635](#); testing lamps [G01R 31/44](#); testing of optical features of LCD displays [G02F 1/1309](#))}
- G09G 3/007
 - {-Use of pixel shift techniques, e.g. by mechanical shift of the physical pixels or by optical shift of the perceived pixels }
- G09G 3/008
 - {-forming an image on an image carrier by relative movement of a writing unit to the image carrier, e.g. on a photoconductive rotating belt, or on an electronic blackboard}
- U G09G 3/02
 - by tracing or scanning a light beam on a screen
- G09G 3/025
 - • {-with scanning or deflecting the beams in two directions or dimensions}
- U G09G 3/20
 - for presentation of an assembly of a number of characters, e.g. a page, by composing the assembly by combination of individual elements arranged in a matrix {no fixed position being assigned to or needed to be assigned to the individual characters or partial characters}
- G09G 3/2003
 - • {-Display of colours (specific for liquid crystal displays [G09G 3/3607](#))}
- G09G 3/2007
 - • {-Display of intermediate tones}
- G09G 3/2011
 - • • {-by amplitude modulation}
- G09G 3/2014
 - • • {-by modulation of the duration of a single pulse during which the logic level remains constant}
- G09G 3/2018
 - • • {-by time modulation using two or more time intervals}
- G09G 3/2022
 - • • • {-using sub-frames}
- G09G 3/2025
 - • • • • {-the sub-frames having all the same time duration}
- G09G 3/2029
 - • • • • {-the sub-frames having non-binary weights}

- G09G 3/2033 {-with splitting one or more sub-frames corresponding to the most significant bits into two or more sub-frames}
 - G09G 3/2037 {-with specific control of sub-frames corresponding to the least significant bits}
 - G09G 3/204 {-the sub-frames being organized in consecutive sub-frame groups}
 - G09G 3/2044 . . . {-using dithering}
 - G09G 3/2048 {-with addition of random noise to an image signal or to a gradation threshold}
 - G09G 3/2051 {-with use of a spatial dither pattern}
 - G09G 3/2055 {-the pattern being varied in time}
 - G09G 3/2059 . . . {-using error diffusion}
 - G09G 3/2062 {-using error diffusion in time}
 - G09G 3/2066 {-with error diffusion in both space and time}
 - G09G 3/207 . . . {-by domain size control ([G09G 3/3637](#) takes precedence)}
 - G09G 3/2074 . . . {-using sub-pixels}
 - G09G 3/2077 . . . {-by a combination of two or more gradation control methods}
 - G09G 3/2081 {-with combination of amplitude modulation and time modulation (space and time error diffusion [G09G 3/2066](#))}
 - G09G 3/2085 . . {-Special arrangements for addressing the individual elements of the matrix, other than by driving respective rows and columns in combination}
 - G09G 3/2088 . . . {-with use of a plurality of processors, each processor controlling a number of individual elements of the matrix}
 - G09G 3/2092 . . {-Details of a display terminals using a flat panel, the details relating to the control arrangement of the display terminal and to the interfaces thereto (suitable for both CRT and flat panel [G09G 5/003](#); specific for a CRT [G09G 1/165](#))}
 - G09G 3/2096 . . . {-Details of the interface to the display terminal specific for a flat panel (suitable for both CRT and flat panel [G09G 5/006](#); specific for a CRT [G09G 1/167](#))}
 - U G09G 3/22 . . . using controlled light sources
 - U G09G 3/28 using luminous gas-discharge panels, e.g. plasma panels
 - G09G 3/2803 {-Display of gradations ([G09G 3/288](#) takes precedence)}
 - U G09G 3/288 using AC panels
- WARNING
This groups is incomplete pending reclassification; see also group [G09G 3/28](#)
- G09G 3/29 using self-shift panels { with sequential transfer of the discharges from an input position to a further display position-(tubes therefor [H01J 17/49](#))}
 - U G09G 3/291 controlling the gas discharge to control a cell condition, e.g. by means of specific pulse shapes
 - U G09G 3/292 for reset discharge, priming discharge or erase discharge occurring in a phase other than addressing
 - G09G 3/2922 {-Details of erasing}
 - G09G 3/2925 {-Details of priming}
 - G09G 3/2927 {-Details of initialising}
 - U G09G 3/293 for address discharge
 - G09G 3/2932 {-Addressed by writing selected cells that are in an OFF state}

- G09G 3/2935 {-Addressed by erasing selected cells that are in an ON state}
- G09G 3/2937 {-being addressed only once per frame}
- U G09G 3/294 for lighting or sustain discharge
- G09G 3/2942 {-with special waveforms to increase luminous efficiency}
- G09G 3/2944 {-by varying the frequency of sustain pulses or the number of sustain pulses proportionally in each subfield of the whole frame}
- G09G 3/2946 {-by introducing variations of the frequency of sustain pulses within a frame or non-proportional variations of the number of sustain pulses in each subfield}
- G09G 3/2948 {-by increasing the total sustaining time with respect to other times in the frame}
- U G09G 3/296 Driving circuits for producing the waveforms applied to the driving electrodes
- G09G 3/2965 {-using inductors for energy recovery}
- U G09G 3/298 using surface discharge panels
- G09G 3/2983 {-using non-standard pixel electrode arrangements}
- G09G 3/2986 {-with more than 3 electrodes involved in the operation}
- U G09G 3/30 using electroluminescent panels
- U G09G 3/32 semiconductive, e.g. diodes
- G09G 3/3208 {-organic, e.g. organic LEDs}
- G09G 3/3216 {-using a passive matrix}
- G09G 3/3225 {-using an active matrix}
- G09G 3/3233 {-pixel circuitry controlling the light emitting element by determining the driving current through the light emitting element}
- G09G 3/3241 {-the driving current through the light emitting element being set using a data current provided by the data driver, e.g. by using a two transistors current mirror}
- G09G 3/325 {-the data current flowing through the driving transistor during a setting phase, e.g. by using a switch to connect the driving transistor to the data driver}
- G09G 3/3258 {-pixel circuitry controlling the light emitting element by determining the voltage across the light emitting element}
- G09G 3/3266 {-Details of drivers for scan electrodes}
- G09G 3/3275 {-Details of drivers for data electrodes}
- G09G 3/3283 {-the data driver communicating data to pixel by means of a current, i.e the data driver applies a current for setting the pixel}
- G09G 3/3291 {-the data driver communicating data to pixel by means of a voltage, i.e the data driver applies a voltage for setting the pixel}
- U G09G 3/34 by control of light from an independent source
- G09G 3/3406 {-Control of illumination source (illumination devices structurally associated with liquid crystal cells **G02F1/13357**)}
- G09G 3/3413 {-Details of control of colour illumination sources}
- G09G 3/342 {-using several illumination sources separately controlled corresponding to different display panel areas, e.g. along one dimension such as lines}
- G09G 3/3426 {-the different display panel areas being distributed in two dimensions, e.g. matrix}
- G09G 3/3433 {-using light modulating elements actuated by an electric field and being other than liquid crystal devices and electrochromic devices (using liquid crystal devices [G09G 3/36](#); using electrochromic devices [G09G 3/38](#))}

- G09G 3/344
 - • • • {-based on particles moving in a fluid or in a gas, e.g. electrophoretic devices (electrophoretic devices per se [G02F 1/167](#))}
- G09G 3/3446
 - • • • • {-with more than two electrodes controlling the modulating element}
- G09G 3/3453
 - • • • {-based on rotating particles or microelements}
- G09G 3/346
 - • • • {-based on modulation of the reflection angle, e.g. micromirrors (micromirrors devices per se [G02B 26/0833](#))}
- G09G 3/3466
 - • • • {-based on interferometric effect}
- G09G 3/3473
 - • • • {-based on light coupled out of a light guide, e.g. due to scattering, by contracting the light guide with external means}
- G09G 3/348
 - • • • {-based on the deformation of a fluid drop, e.g. electrowetting}
- G09G 3/3486
 - • • {-using light modulating elements actuated by a magnetic field}
- G09G 3/3493
 - • • {-using light modulating elements actuated by a piezoelectric effect}
- U G09G 3/36
 - • • using liquid crystals
- G09G 3/3607
 - • • • {-for displaying colours or for displaying grey scales with a specific pixel layout, e.g. using sub-pixels (display of colours in flat matrix panels other than liquid crystal displays [G09G 3/2003](#); grey scales specific for television [H04N 3/127](#))}
- U G09G 3/3611
 - • • • {-Control of matrices with row and column drivers}
- U G09G 3/3622
 - • • • • {-using a passive matrix ([G09G 3/3674](#) to [G09G 3/3696](#) take precedence)}
- U G09G 3/3629
 - • • • • • {-using liquid crystals having memory effects, e.g. ferroelectric liquid crystals}
- G09G 3/3637
 - • • • • • • {-with intermediate tones displayed by domain size control (domain size control in flat matrix panels other than liquid crystal displays having memory effects [G09G 3/207](#))}
- U G09G 5/00** **Control arrangements or circuits for visual indicators common to cathode-ray tube indicators and other visual indicators (image data processing or generation, in general [G06T](#))**
- G09G 5/001
 - {-Arbitration of resources in a display system, e.g. control of access to frame buffer by video controller and/or main processor}
- G09G 5/003
 - {-Details of a display terminal, the details relating to the control arrangement of the display terminal and to the interfaces thereto (specific for a CRT [G09G 1/165](#); for a flat panel [G09G 3/2092](#))}
- G09G 5/005
 - • {-Adapting incoming signals to the display format of the display terminal}
- G09G 5/006
 - • {-Details of the interface to the display terminal (specific for a display terminal using a CRT [G09G 1/167](#); using a flat panel [G09G 3/2096](#); circuits for interfacing with colour displays [G09G 5/04](#))}
- G09G 5/008
 - • • {-Clock recovery}
- U G09G 5/02
 - characterised by the way in which colour is displayed {(details of colour display specific for CRTs [G09G 1/28](#); specific for flat matrix panels other than liquid crystal displays [G09G 3/2003](#); specific for liquid crystal displays [G09G 3/3607](#))}
- G09G 5/04
 - • {-using circuits for interfacing with colour displays}
- U G09G 2320/00** **Control of display operating conditions**
- U G09G 2320/06
 - Adjustment of display parameters
- G09G 2320/0693
 - • Calibration of display systems;

Project: N/A (G10C)

- U G10C 3/00** **Details or accessories**
- U G10C 3/16
 - Actions

G10C 3/165

- · {for plucking the strings, i.e. for instruments covered by group [G10C 1/06](#) (plucking mechanisms for keyboard-operated zithers [G10D 3/085](#))}

Project: N/A (G10D)**U G10D 9/00****Details of, or accessories for, wind-actuated musical instruments**

U G10D 9/02
G10D 9/026

- Mouthpieces; Reeds; { Ligatures}
- · {-Cupped mouthpieces}

U G10D 13/00**Percussion musical instruments; Details or accessories**

G10D 13/003

- {-Drumsticks; Mallets}

U G10D 13/02

- Drums; Tambourines {with drumheads}

G10D 13/026

- · {-Mountings or supports for individual drums (arrangements of several percussion instruments [G10D 13/00](#); supports for carrying musical instrument, while playing [G10G 5/005](#))}

Project: N/A (G10H)**U G10H 1/00****Details of electrophonic musical instruments (keyboards applicable also to other musical instruments [G10B](#), [G10C](#); arrangements for producing a reverberation or echo sound [G10K 15/08](#))**

U G10H 1/32

- Constructional details

U G10H 1/34

- · Switch arrangements, e.g. keyboards or mechanical switches peculiar to electrophonic musical instruments ({ [G10H 1/055](#) takes precedence}; keyboards applicable also to other musical instruments [G10B](#), [G10C](#))

U G10H 1/344

- · · {Structural association with individual keys (electrically operated wind-actuated organs [G10B 3/22](#))}

G10H 1/346

- · · · {-Keys with an arrangement for simulating the feeling of a piano key, e.g. using counterweights, springs, cams}

U G10H 1/36

- Accompaniment arrangements

U G10H 1/38

- · Chord

G10H 1/383

- · · {-Chord detection and/or recognition, e.g. for correction, or automatic bass generation}

U G10H 5/00**Instruments in which the tones are generated by means of electronic generators ([G10H 7/00](#) takes precedence)**

G10H 5/007

- {Real-time simulation of [G10B](#), [G10C](#), [G10D](#)-type instruments using recursive or non-linear techniques, e.g. waveguide networks, recursive algorithms (establishing the harmonic content of tones by non-linear elements [G10H 1/16](#); synthesising waveforms using a recursive algorithm [G10H 7/12](#))}

U G10H 2220/00**Input/output interfacing specifically adapted for electrophonic musical tools or instruments**

U G10H 2220/155

- User input interfaces for electrophonic musical instruments (graphical user interfaces specifically adapted for electrophonic musical instruments [G10H 2220/091](#); input means in general [G06F 3/00](#))

G10H 2220/185

- · Stick input, e.g. drumsticks with position or contact sensors (-stick for music conducting applications, e.g. conductor baton movement detection [G10H 2220/206](#))

Project: N/A (G10K)**G10K**

SOUND-PRODUCING DEVICES (- sound-producing toys [A63H 5/00](#) ; musical instruments or parts thereof, see the relevant subclass, e.g. [G10D](#)); **ACOUSTICS NOT OTHERWISE PROVIDED FOR** (- systems using the reflection or reradiation of acoustic waves [G01S 15/00](#) ; generating seismic energy [G01V 1/02](#) ; signalling or calling arrangements, alarm arrangements [G08B](#) ; piezo-electric electrostrictive or magnetostrictive elements in general [H01L 41/00](#) ; transmission systems using infrasonic, sonic, or ultrasonic waves [H04B 11/00](#) ; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#)-)

NOTES

This subclass covers arrangements for generating mechanical vibrations in fluids.

This subclass covers also the production of sounds which may not be audible to human beings but which are audible to animals.

In this subclass, the following terms are used with the meanings indicated:

- "acoustics" and "sound" cover the technical field dealing with mechanical vibrations at all infrasonic -, sonic - and ultrasonic frequencies. However, generation or transmission of mechanical waves, in general, is covered by subclass [B06B](#) , subject to the exception specified in Note (1) above.

G10K 1/00

Devices in which sound is produced by striking a resonating body, e.g. bell, chimes, gong (- combinations with clocks or watches [G04B](#) , [G04C](#) ; carillons [G10F 1/10](#) ; { for percussion instruments [G10D 13/00](#) })

G10K 1/06 · the resonating devices having the shape of a bell, plate, rod, or tube (-bells for towers [G10K 1/28](#)-)

G10K 1/062 · · electrically operated{ self-interrupting relays [H01H 51/34](#)-}

U G10K 1/063 · · · the sounding member being a bell

U G10K 1/064 · · · · Operating or striking mechanisms therefor

G10K 1/065 · · · · · for timed or repeated operation{ alarm-clocks [G04C 21/00](#)-}

U G10K 1/07 · · mechanically operated; Hand bells; Bells for animals

U G10K 1/072 · · · Operating or striking mechanisms therefor

G10K 1/076 · · · · for timed or repeated operation{ alarm-clocks [G04B 23/00](#)-}

U G10K 1/28 · Bells for towers or the like

U G10K 1/30 · · Details or accessories

G10K 1/36 · · · Means for silencing or damping (-means or arrangements for avoiding or reducing out-of-balance forces due to motion [F16F 15/00](#)-)

U G10K 7/00**Sirens**

G10K 7/02 · in which the sound-producing member is rotated manually or by a motor (-[G10K 7/06](#) takes precedence; { musical tops [A63H 1/28](#) })

G10K 7/06 · in which the sound-producing member is driven by a fluid, e.g. by a compressed gas(-fluidically operated vibrators [B06B 1/18](#)-)

- G10K 9/00** Devices in which sound is produced by vibrating a diaphragm or analogous element, e.g. fog horn, vehicle hooter, buzzer (-loudspeakers or like acoustic electromechanical transducers [H04R](#)){ arrangement or adaptation for ships [B63B 45/08](#) ; mechanically driven vibrators [B06B 1/10](#)}
- U G10K 9/12
- electrically operated
- NOTE
This group does not cover the construction of, or circuits for, broadband-transducers such as loudspeakers or microphones, which are covered by subclass [H04R](#) .
- G10K 9/122
- • using piezo-electric driving means{(-[G10K 9/121](#) takes precedence-)}
- G10K 9/128
- • using magnetostrictive driving means{(-[G10K 9/121](#) takes precedence-)}
- G10K 9/18
- Details, e.g. bulb, pump, piston, switch, casing{ cones, diaphragms [G10K 13/00](#)}
- G10K 11/00** Methods or devices for transmitting, conducting or directing sound in general; Methods or devices for protecting against, or for damping, noise or other acoustic waves in general ({ protective devices for the ears [A61F 11/06](#) } ; sound insulation for vehicles [B60R 13/08](#) ; sound insulation for aircraft [B64C 1/40](#) ; sound insulating materials, see the relevant places, e.g. [C04B 26/00](#) to [C04B 38/00](#) ; reduction of noise on permanent way [E01B 19/00](#) ; absorption of air-transmitted noise from road or railway traffic [E01F 8/00](#) ; noise insulation, absorption or reflection in buildings [E04B 1/74](#) ; room acoustics [E04B 1/99](#) ; sound insulation in floors [E04F 15/20](#) ; gas-flow silencers or exhaust apparatus for machines or engines in general, for internal-combustion engines [F01N](#) ; intake silencers for internal-combustion engines [F02M 35/00](#) ; suppression of undesired vibrations [F16F 7/00](#) to [G10K 15/00](#) ; preventing noise in valves [F16K 47/02](#) ; noise absorbers in pipes [F16L 55/02](#) ; arrangements for suppressing noise in direct-contact trickle coolers [F28C 1/10](#) ; silencers for weapons [F41](#)-)
- G10K 11/002
- {Devices for damping, suppressing, obstructing or conducting sound in acoustic devices (-[G10K 1/06](#) to [G10K 1/10](#) take precedence; for electro-mechanical transducers for communication [H04R 3/002](#)-)}
- G10K 11/004
- {Mounting transducers e.g. provided with mechanical moving or orienting device (-mountings specially adapted to a particular sound-producing device, see the preceding groups [G10K 1/00](#) to [G10K 9/00](#) , e.g. [G10K 1/26](#) , [G10K 1/28](#) , [G10K 9/22](#) ; arrangements of sonic watch equipment on submarines [B63G 8/39](#) ; buoys [B63B 22/00](#)-)}
- U G10K 11/006
- • {Transducer mounting in underwater equipment, e.g. sonobuoys}
- G10K 11/008
- • • {Arrays of transducers (-seismic streamers, see [G01V 1/20](#)-)}
- U G10K 11/02
- Mechanical acoustic impedances; Impedance matching, e.g. by horns; Acoustic resonators
- G10K 11/025
- • {horns for impedance matching (-see provisionally also [G10K 11/28](#)-)}
- G10K 11/08
- Non-electric sound-amplifying devices, e.g. non-electric megaphones (-amplifying by horns [G10K 11/02](#) ; amplifying by focusing [G10K 11/26](#)-)
- G10K 11/16
- Methods or devices for protecting against, or damping of, acoustic waves, e.g. sound (-[G10K 11/36](#) takes precedence-)
- NOTE
This group does not cover protecting against, or damping of, acoustic waves adapted for particular applications, which are covered by the subclasses for these applications, provided that there is a specific provision for this aspect.

- G10K 11/161
- • {in systems with fluid flow (-G10K 11/162 takes precedence; gas flow silencers or exhaust apparatus for machines or engines in general or for internal combustion engine F01N , noise absorbers in pipes or pipe systems F16L 55/02 ; noise absorption in air conditioning and ventilation F24F 13/24 ; silencing exhaust or propulsion jets in aircraft B64D 33/06-)}
- G10K 11/18
- Methods or devices for transmitting, conducting, or directing sound (-G10K 11/02 , G10K 11/36 take precedence; medical stethoscopes A61B 7/02-)
- G10K 11/20
- • Reflecting arrangements (-G10K 11/28 takes precedence-)
- G10K 11/26
- • Sound-focusing or directing, e.g. scanning{ horns for impedance matching G10K 11/02 ; megaphones G10K 11/08 }
- G10K 11/28
- • • using reflection, e.g. parabolic reflector{(-hearing aids A61F 11/008-)}
- G10K 11/34
- • • using electrical steering of transducer arrays, e.g. beam steering{(-constructional aspects B06B 1/0607 , B06B 1/085-)}
- G10K 11/35
- • • using mechanical steering of transducers {or their beams}
- G10K 11/36
- Devices for manipulating acoustic surface waves (-electro-acoustic amplifiers H03F 13/00 ; networks comprising electro-acoustic elements H03H 9/00-)
- G10K 13/00**
- Cones, diaphragms, or the like, for emitting or receiving sound in general (-for electromechanical transducers H04R 7/00-)**
- U G10K 15/00**
- Acoustics not otherwise provided for**
- G10K 15/02
- Synthesis of acoustic waves (synthesis of speech G10L)
- NOTE**
see provisionally G10H e.g. G10H 1/26
- G10K 15/04
- Sound-producing devices (-G10K 15/02 takes precedence-)
- G10K 15/043
- • {producing shock waves (-G10K 15/046 , G10K 15/06 take precedence; generating seismic energy G01V 1/02-)}
- G10K 15/08
- Arrangements for producing a reverberation or echo sound{ modifying acoustic properties to change reverberation time G10K 11/002-}
- G10K 2210/00**
- Details of active noise control [ANC] covered by G10K 11/178 but not provided for in any of its subgroups**
- U G10K 2210/10**
- Applications
- G10K 2210/107
- • Combustion, e.g. burner noise control of jet engines (-internal combustion engines G10K 2210/121-)
- G10K 2210/112
- • Ducts (-vehicle exhausts G10K 2210/12822-)
- U G10K 2210/30**
- Means
- U G10K 2210/321**
- • Physical
- U G10K 2210/3229**
- • • Transducers
- G10K 2210/32291
- • • • Plates or thin films, e.g. PVDF (-foil-type piezo-electric elements B06B 1/0688-)

Project: N/A (G10L)

- U G10L 13/00**
- Speech synthesis; Text to speech systems**
- U G10L 13/02**
- Methods for producing synthetic speech; Speech synthesisers
- G10L 2013/021
- • {-Overlap-add techniques}
- U G10L 13/033**
- • Voice editing, e.g. manipulating the voice of the synthesiser
- G10L 13/0335
- • • {-Pitch control}

- U G10L 13/04
 - Details of speech synthesis systems, e.g. synthesiser structure or memory management
- G10L 13/043
 - • {-Synthesisers specially adapted to particular applications}
 - WARNING
 - This group is no longer used for the classification of new documents as from September 1, 2012. The backlog is being reclassified to [G10L 13/00](#) and subgroups.
- U G10L 13/08
 - Text analysis or generation of parameters for speech synthesis out of text, e.g. grapheme to phoneme translation, prosody generation or stress or intonation determination
- G10L 2013/083
 - {-Special characters, e.g. punctuation marks}
- G10L 13/086
 - {-Detection of language}
- U G10L 13/10
 - Prosody rules derived from text; Stress or intonation
- G10L 2013/105
 - • {-Duration}
- U G10L 15/00** **Speech recognition ([G10L 17/00](#) takes precedence)**
- U G10L 15/02
 - Feature extraction for speech recognition; Selection of recognition unit
- G10L 2015/022
 - {-Demisyllables, biphones or triphones being the recognition units}
- G10L 2015/025
 - {-Phonemes, fenemes or fenones being the recognition units}
- G10L 2015/027
 - {-Syllables being the recognition units}
- U G10L 15/06
 - Creation of reference templates ; Training of speech recognition systems, e.g. adaptation to the characteristics of the speaker's voice ([G10L 15/14](#) takes precedence)
- G10L 15/063
 - {-Training}
- G10L 2015/0631
 - • {-Creating reference templates; Clustering}
- G10L 2015/0633
 - • • {-using lexical or orthographic knowledge sources}
- G10L 2015/0635
 - • • {-updating or merging of old and new templates; Mean values; Weighting}
- G10L 2015/0636
 - • • • {-Threshold criteria for the updating}
- G10L 2015/0638
 - • • {-Interactive procedures}
- U G10L 15/065
 - Adaptation
- U G10L 15/07
 - • to the speaker
- G10L 15/075
 - • • {-supervised, i.e. under machine guidance}
- U G10L 15/08
 - Speech classification or search
- G10L 2015/081
 - {-Search algorithms, e.g. Baum-Welch or Viterbi}
- G10L 2015/085
 - {-Methods for reducing search complexity, pruning}
- G10L 2015/086
 - {-Recognition of spelled words}
- G10L 2015/088
 - {-Word spotting}
- U G10L 15/14
 - using statistical models, e.g. hidden Markov models [HMMs] ([G10L 15/18](#) takes precedence)
- G10L 15/142
 - • • {-Hidden Markov Models [HMMs]}
- U G10L 15/18
 - using natural language modelling
- G10L 15/1807
 - • • {-using prosody or stress}
- G10L 15/1815
 - • • {-Semantic context, e.g. disambiguation of the recognition hypotheses based on word meaning}
- G10L 15/1822
 - • • {-Parsing for meaning understanding}
- U G10L 15/22
 - Procedures used during a speech recognition process, e.g. man-machine dialogue

- G10L 15/222
 - U G10L 15/26
 - G10L 15/265
- • {-Barge in, i.e. overridable guidance for interrupting prompts}
 - Speech to text systems ([G10L 15/08](#) takes precedence)
 - • {-Speech recognisers specially adapted for particular applications (devices for signalling identity of wanted subscriber in a telephonic communication equipment controlled by voice recognition [H04M 1/271](#); speech interaction details in interactive information services in a telephonic communication system [H04M 3/4936](#))}
- WARNING
This group is no longer used for the classification of new documents as from September 1, 2012. The backlog is being reclassified to [G10L 15/00](#) and subgroups.
- U G10L 17/00** **Speaker identification or verification**
- G10L 17/005
- • {-Speaker recognisers specially adapted for particular applications ([G07C 9/00071](#) takes precedence)}
- WARNING
This group is no longer used for the classification of new documents as from September 1, 2012. The backlog is being reclassified to [G10L 17/00](#) and subgroups.
- U G10L 19/00** **Speech or audio signal analysis-synthesis techniques for redundancy reduction, e.g. in vocoders; Coding or decoding of speech or audio signal, using source filter models or psychoacoustic analysis (in musical instruments [G10H](#))**
- G10L 2019/0001
 - G10L 2019/0002
 - G10L 2019/0003
 - G10L 2019/0004
 - G10L 2019/0005
 - G10L 2019/0006
 - G10L 2019/0007
 - G10L 2019/0008
 - G10L 2019/0009
 - G10L 2019/001
 - G10L 2019/0011
 - G10L 2019/0012
 - G10L 2019/0013
 - G10L 2019/0014
 - G10L 2019/0015
 - G10L 2019/0016
 - G10L 19/0017
 - G10L 19/0019
- • {-Codebooks }
 - • • {-Codebook adaptations}
 - • • {-Backward prediction of gain}
 - • • {-Design or structure of the codebook}
 - • • • {-Multi-stage vector quantisation}
 - • • • {-Tree or treillis structures; Delayed decisions}
 - • • {-Codebook element generation}
 - • • • {-Algebraic codebooks}
 - • • • {-Orthogonal codebooks}
 - • • • {-Interpolation of codebook vectors}
 - • • {-Long term prediction filters, i.e. pitch estimation}
 - • • {-Smoothing of parameters of the decoder interpolation}
 - • • {-Codebook search algorithms}
 - • • • {-Selection criteria for distances}
 - • • • {-Viterbi algorithms}
 - • • {-Codebook for LPC parameters}
 - • • {-Lossless audio signal coding; Perfect reconstruction of coded audio signal by transmission of coding error ([G10L 19/24](#) takes precedence)}
 - • • {-Vocoders specially adapted for particular applications}
- WARNING
This group is no longer used for the classification of new documents as from September 1, 2012. The backlog is being reclassified to [G10L 19/00](#) and subgroups.
- U G10L 19/02**
- using spectral analysis, e.g. transform vocoders or subband vocoders

- G10L 19/0204
 - • {-using subband decomposition}
- G10L 19/0212
 - • {-using orthogonal transformation}
- U G10L 19/04
 - using predictive techniques
- U G10L 19/16
 - • Vocoder architecture
- G10L 19/167
 - • • {-Audio streaming, i.e. formatting and decoding of an encoded audio signal representation into a data stream for transmission or storage purposes}
- G10L 19/173
 - • • {-Transcoding, i.e. converting between two coded representations avoiding cascaded coding-decoding}
- U G10L 19/26
 - • Pre-filtering or post-filtering
- G10L 19/265
 - • • {-Pre-filtering, e.g. high frequency emphasis prior to encoding}
- U G10L 21/00**

Processing of the speech or voice signal to produce another audible or non-audible signal, e.g. visual or tactile, in order to modify its quality or its intelligibility (G10L 19/00 takes precedence)
- U G10L 21/003
 - Changing voice quality, e.g. pitch or formants
- U G10L 21/007
 - • characterised by the process used
- U G10L 21/013
 - • • Adapting to target pitch
- G10L 2021/0135
 - • • • {-Voice conversion or morphing}
- U G10L 21/02
 - Speech enhancement, e.g. noise reduction or echo cancellation (reducing echo effects in line transmission systems [H04B 3/20](#) ; echo suppression in hands-free telephones [H04M 9/08](#))
- G10L 21/0202
 - • {-Applications}

WARNING
This group is no longer used for the classification of new documents as from September 1, 2012. The backlog is being reclassified to [G10L 21/00](#) and subgroups.
- G10L 21/0205
 - • • {-Enhancement of intelligibility of clean or coded speech}

WARNING
This group is no longer used for the classification of new documents as from September 1, 2012. The backlog is being reclassified to [G10L 21/0364](#), [G10L 21/057](#).
- U G10L 21/0208
 - • Noise filtering
- G10L 2021/02082
 - • • {-the noise being echo, reverberation of the speech}
- G10L 2021/02085
 - • • {-Periodic noise}
- G10L 2021/02087
 - • • {-the noise being separate speech, e.g. cocktail party}
- U G10L 21/0216
 - • • characterised by the method used for estimating noise
- G10L 2021/02161
 - • • • {-Number of inputs available containing the signal or the noise to be suppressed}
- G10L 2021/02163
 - • • • • {-Only one microphone}
- G10L 2021/02166
 - • • • • {-Microphone arrays; Beamforming}
- G10L 2021/02168
 - • • • {-the estimation exclusively taking place during speech pauses}
- U G10L 21/0316
 - • by changing the amplitude
- U G10L 21/0364
 - • • for improving intelligibility
- G10L 2021/03643
 - • • • {-Diver speech}
- G10L 2021/03646
 - • • • {-Stress or Lombard effect}
- U G10L 21/04
 - Time compression or expansion
- U G10L 21/057
 - • for improving intelligibility

- G10L 2021/0575 . . . {-Aids for the handicapped in speaking}
- U G10L 21/06 . Transformation of speech into a non-audible representation, e.g. speech visualisation or speech processing for tactile aids ([G10L 15/26](#) takes precedence)
- G10L 2021/065 . . {-Aids for the handicapped in understanding}
- U G10L 21/10 . . transforming into visible information
- G10L 2021/105 . . . {-Synthesis of the lips movements from speech, e.g. for talking heads}
- U G10L 25/00 **Speech or voice analysis techniques not restricted to a single one of groups [G10L 15/00-G10L 21/00](#)****
- U G10L 25/78 . Detection of presence or absence of voice signals (switching of direction of transmission by voice frequency in two-way loud-speaking telephone systems [H04M 9/10](#))
- G10L 2025/783 . . {-based on threshold decision}
- G10L 2025/786 . . . {-Adaptive threshold}
- U G10L 25/90 . Pitch determination of speech signals
- G10L 2025/903 . . {-using a laryngograph}
- G10L 2025/906 . . {-Pitch tracking}
- U G10L 25/93 . Discriminating between voiced and unvoiced parts of speech signals ([G10L 25/90](#) takes precedence)
- G10L 2025/932 . . {-Decision in previous or following frames}
- G10L 2025/935 . . {-Mixed voiced class; Transitions}
- G10L 2025/937 . . {-Signal energy in various frequency bands}

Project: N/A (G11B)**G11B**

INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER ({ producing carriers of sound records for needle playback [B29C 39/00](#) } ; recording measured values in a way that does not require playback through a transducer [G01D](#); photosensitive materials or processes for photographic purposes [G03C](#); electrography, electrophotography, magnetography [G03G](#); recording or playback apparatus using mechanically marked tape, e.g. punched paper tape, or using unit records, e.g. punched or magnetically marked cards, [G06K](#); transferring data from one type of record carrier to another [G06K 1/18](#) ; printing of data from record carriers [G06K 3/00](#) ; arrangements for producing a permanent visual presentation of the output data [G06K 15/00](#) ; arrangements or circuits for control of indicating devices using static means to present variable information [G09G](#); coding, decoding or code conversion, in general [H03M](#); circuits for coupling output of reproducer to radio receiver [H04B 1/20](#) ; circuits {or arrangements} specially adapted for {pictorial or} television signal recording{ [H04N 1/21](#) } , [H04N 5/76](#) , [H04N 9/79](#) ; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor [H04R](#)-)

NOTES

This subclass covers :

- recording or playback of information by relative movement between a record track and a transducer, the transducer directly producing, or being directly actuated by, modulation in the track being recorded or played-back, and the extent of modulation corresponding to the signal being recorded or played-back;

- apparatus and machines for recording or playback, and parts thereof such as heads;
- record carriers for use with such apparatus and machines;
- associated working of other apparatus with such apparatus and machines;
- { relative positioning or movement of transducers and record carriers before, during or after transducing operation, e.g. for accessing record carriers or parts thereof, or for track change, selection or acquisition or for track following or for accessing parts of tracks; }
- { driving or moving of heads or record carriers or both heads and record carriers for increasing, maintaining or decreasing the relative speed before, during or after transducing operation }

In this subclass, the following terms or expressions are used with the meanings indicated :

- "head" includes any means for converting sinusoidal or non-sinusoidal electric wave-forms into variations of the physical condition of at least the adjacent surface of the record carrier, or vice versa;
- "record carrier" means a body, such as a cylinder, disc, card, tape, or wire, capable of permanently holding information, which can be read-off by a sensing element movable relatively to the record carrier.

Documents concerning relative positioning or movement of transducers and record carriers are classified in groups [G11B 3/00](#) to [G11B 7/00](#) and [G11B 21/00](#) when only the transducer is controlled and in groups [G11B 15/00](#) , [G11B 17/00](#) and [G11B 19/00](#) when only the record carrier is controlled. When both record carrier and head are controlled, the documents are classified in [G11B 15/1808](#), [G11B 15/1816](#) , [G11B 19/00](#) and [G11B 27/002](#).

When a plurality of record carriers are controlled, the documents are classified in [G11B 15/68](#) , [G11B 17/08](#) , [G11B 17/22](#) and [G11B 27/002](#).

By "access" is meant an operation including a relative movement for positioning between record carrier and head before, during or after transducing; this operation including "seek", "select", "change", "acquire" and "follow" functions for at least a part of a track on at least one record carrier. By "programmed access" is meant a sequence of access operations the result of the sequence being to acquire a wanted sequence of parts of tracks or a wanted sequence of tracks. Relative movement between head and record carrier also covers the movement of a coupling beam such as a light beam between the head and a stationary record carrier.

"Movement of the head" also covers any virtual movement or any physical movement such as obtained by switching between successive transducing parts of the head or by moving the transducing zone of the head, i.e. by "scanning". If different transducing parts of the head are switchable, the number of transducing parts should be much smaller than the number of individual storage areas of the record carrier.

Attention is drawn to the notes of subclass [G11C](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G11B 5/65](#) covered by [G11B 5/64](#) to [G11B5/64D3](#)

G11B 5/667	covered by	G11B 5/66
G11B 5/673	covered by	G11B 5/66
G11B 7/16	covered by	G11B 7/135
G11B 7/18	covered by	G11B 7/135
G11B 7/30	covered by	G11B 7/00
G11B 9/12	- G11B 9/14	covered by
G11B 9/00		
G11B 11/24	- G11B 11/26	covered by
G11B 11/00		
G11B 13/08	covered by	G11B

G11B 3/00

Recording by mechanical cutting, deforming or pressing, e.g. of grooves or pits; Reproducing by mechanical sensing; Record carriers therefor (~~G11B 11/00~~, { [G11B 13/00](#) }take precedence;{ recording by cutting or deforming using laser beam [G11B 7/00](#), using electron beam [G11B 9/10](#) })

- G11B 3/003
 - {Devices for transmitting, directing, amplifying sound (in general [G10K 11/18](#)-)}
- G11B 3/02
 - Arrangements of heads (styli [G11B 3/44](#)-)
- G11B 3/04
 - • Multiple, convertible, or alternative transducing arrangements{ contains no documents see [G11B 3/42](#)-}
- G11B 3/08
 - • Raising, lowering, traversing otherwise than for transducing, arresting, or holding-up heads against record carriers{ for transducing [G11B 3/12](#), [G11B 3/34](#)-}
- G11B 3/085
 - • • {using automatic means} (~~G11B 3/095~~ takes precedence; { if particularly adapted for record-changers see [G11B 17/16](#) and subgroups })
- G11B 3/09
 - • • using manual means only (~~G11B 3/095~~ takes precedence-)
- G11B 3/091
 - • • • {using magnetic means (~~G11B 3/093~~ takes precedence-)}
- G11B 3/092
 - • • • {using mechanical means (~~G11B 3/093~~ takes precedence-)}
- G11B 3/10
 - • Arranging, supporting, or driving of heads or of transducers relatively to record carriers{ guiding record carriers [G11B 17/00](#), driving record carriers [G11B 19/00](#)-}
- G11B 3/12
 - • • Supporting in balanced, counterbalanced or loaded operative position {during transducing}, e.g. loading in direction of traverse
- G11B 3/121
 - • • • {-By using mechanical means not provided for in [G11B 3/14](#), [G11B 3/20](#), e.g. using cams-}
- G11B 3/122
 - • • • • {Providing horizontal force; e.g. anti-skating (~~G11B 3/124~~ takes precedence-)}
- U G11B 3/125
 - • • • • {by using electric or magnetic means}
- G11B 3/127
 - • • • • {Providing horizontal force, e.g. anti-skating force (~~G11B 3/128~~ takes precedence-)}
- G11B 3/14
 - • • • • by using effects of gravity or inertia, e.g. counterweight (~~G11B 3/28~~ takes precedence-)
- G11B 3/145
 - • • • • • {Providing horizontal force; e.g. anti-skating force (~~G11B 3/18~~ takes precedence-)}
- G11B 3/20
 - • • • • by elastic means, e.g. spring (~~G11B 3/28~~ takes precedence-)
- U G11B 3/30
 - • • Supporting in an inoperative position
- G11B 3/31
 - • • • Construction of arms{ for transmitting, directing or amplifying sound [G11B 3/003](#)-}
- U G11B 3/44
 - Styli, e.g. sapphire, diamond
- G11B 3/46
 - • Constructions or forms {Disposition or mounting}, e.g. attachment of point to shank{ attachment of stylus directly to transducer [H04R 1/16](#)-}

- G11B 3/48
 - • • Needles {contains no documents}
- G11B 3/54
 - • Storing; manipulating, e.g. feeding styli to and from heads (-needle boxes, receptacles for needles [B65D 85/24](#)-)
- G11B 3/56
 - • Sharpening (-grinding [B24B 3/00](#) , [B24B 19/00](#)-)
- G11B 3/58
 - Cleaning record carriers or styli, e.g. removing shavings or dust {or electrostatic charges}(brushes [A46B](#); cleaning in general [B08B](#) ;{ carrying-off electrostatic charges in general [H05F 3/00](#))}
- G11B 3/60
 - Turntables for record carriers (forming rotor of dynamo-electric motor [H02K](#))
- NOTE
contains no documents, see [G11B 19/2009](#)
- G11B 3/64
 - Re-recording, i.e. transcribing information from one grooved record carrier on to one or more similar or dissimilar record carriers{(by varying the order of the information [G11B 27/029](#) , [G11B 27/036](#)-)}
- U G11B 3/68
 - Record carriers
- G11B 3/687
 - • {Testing thereof (-investigating chemical or physical properties of materials [G01N](#)-)}
- G11B 3/70
 - • characterised by the selection of material or structure; Processes or apparatus specially adapted for manufacturing record carriers (-processes involving a single technical art and for which provision exists elsewhere, see the relevant places, e.g. [B29D 17/00](#)-)
- G11B 3/702
 - • • {for video discs with grooves (-[G11B 3/705](#) takes precedence-)}
- G11B 5/00**
 - Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor (-[G11B 11/00](#) { and [G11B 13/00](#) }take precedence)**
- NOTE
Subgroups [G11B 5/02](#) to [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) to [G11B 5/016](#)
- G11B 5/004
 - Recording on, or reproducing or erasing from, magnetic drums (-[G11B 19/00](#) takes precedence-)
- G11B 5/008
 - Recording on, or reproducing or erasing from, magnetic tapes,{sheets, e.g. cards,}or wires (-[G11B 15/00](#) { [G11B 19/00](#) }take precedence;{ bulk transferring of information magnetisation for re-recording [G11B 5/865](#) ; marking record carriers in digital fashion [G06K](#))}
- G11B 5/00804
 - • {magnetic sheets (-rotating sheets [G11B 5/012](#)-)}
- U G11B 5/00813
 - • {magnetic tapes}
- G11B 5/00847
 - • • {on transverse tracks (-[G11B 5/00878](#) takes precedence-)}
- G11B 5/012
 - Recording on, or reproducing or erasing from, magnetic discs (-[G11B 17/00](#) , [G11B 19/00](#) take precedence-)
- G11B 5/02
 - Recording, reproducing, or erasing methods; Read, write or erase circuits therefor (-timing or synchronising arrangements [G11B 27/10](#)-)
- U G11B 5/10
 - Structure or manufacture of housings or shields for heads
- G11B 5/105
 - • Mounting of head within housing {or assembling of head and housing (-[G11B 5/3103](#) takes precedence-)}
- U G11B 5/11
 - • Shielding of head against electric or magnetic fields
- G11B 5/115
 - • • Shielding devices arranged between heads or windings ({ [G11B 5/265](#) } , [G11B 5/29](#) take precedence-)
- U G11B 5/127
 - Structure or manufacture of heads, e.g. inductive
- G11B 5/1272
 - • {Assembling or shaping of elements (-[G11B 5/1278](#) takes precedence-)}

- G11B 5/133
 - • with cores composed of particles, e.g. with dust core, with ferrite core {with cores composed of isolated magnetic particles (-in thin films [G11B 5/31-](#))}
- G11B 5/147
 - • with cores being composed of metal sheets, i.e. laminated cores {with cores composed of isolated magnetic layers, e.g. sheets (-in thin films [G11B 5/31-](#))}
- G11B 5/1475
 - • • {Assembling or shaping of elements (-[G11B 5/153](#) takes precedence-)}
- G11B 5/187
 - • Structure or manufacture of the surface of the head in physical contact with, or immediately adjacent to the recording medium; Pole pieces; Gap features (-[G11B 5/265](#) , { [G11B 5/29](#) } , [G11B 5/31](#) take precedence-)
- G11B 5/193
 - • • the pole pieces being ferrite {or other magnetic particles (-[G11B 5/1871](#) takes precedence; in thin film [G11B 5/31-](#))}
- G11B 5/21
 - • • the pole pieces being of ferrous sheet metal {or other magnetic layers (-[G11B 5/1871](#) takes precedence; in thin film [G11B 5/31-](#))}
- G11B 5/23
 - • • Gap features{(-[G11B 5/1871](#) , [G11B 5/1875](#) , [G11B 5/265](#) , [G11B 5/29](#) , [G11B 5/488](#) and subgroups, [G11B 5/4907](#) and subgroups, [G11B 5/4969](#) and subgroups take precedence-)}
- G11B 5/235
 - • • • Selection of material for gap filler{ [G11B 5/232](#) takes precedence-}
- G11B 5/245
 - • • comprising means for controlling the reluctance of the magnetic circuit {in a head with single gap, for co-operation with one track; (-[G11B 5/255](#) takes precedence; for plural gaps or plural tracks [G11B 5/127](#) , [G11B 5/265](#) , [G11B 5/29](#) , [G11B 5/49](#) and subgroups-)}
- U G11B 5/2452
 - • • • {where the dimensions of the effective gap are controlled}
- G11B 5/2455
 - • • • • {the magnetic circuit including at least one magnetic thin film of controllable properties (-for scanning [G11B 5/4938-](#))}
- G11B 5/2457
 - • • • • {disposed immediately adjacent to the gap (-"composite" pole pieces [G11B 5/1877-](#))}
- G11B 5/255
 - • • comprising means for protection against wear{ in thin film structures [G11B 5/3106-](#)}
- G11B 5/265
 - • Structure or manufacture of a head with more than one gap for erasing, recording or reproducing on the same track (-[G11B 5/33](#) takes precedence { in thin film structures [G11B 5/31](#) })
- G11B 5/2652
 - • • {with more than one gap simultaneously operative (-with controlled single gap [G11B 5/245-](#))}
- G11B 5/29
 - • Structure or manufacture of unitary devices formed of plural heads for more than one track{ [G11B 5/33](#) , [G11B 5/49](#) and subgroups take precedence; in thin film structure [G11B 5/31-](#)}
- G11B 5/31
 - • using thin films{(-[G11B 5/1274](#) , [G11B 5/1278](#) , [G11B 5/1874](#) , [G11B 5/1875](#) , [G11B 5/33](#) , [G11B 5/49](#) take precedence; magnetic thin film structures [H01F 10/00-](#))}
- U G11B 5/3103
 - • • {Structure or manufacture of integrated heads or heads mechanically assembled and electrically connected to a support or housing}
- G11B 5/3106
 - • • • {where the integrated or assembled structure comprises means for conditioning against physical detrimental influence, e.g. wear, contamination (-[G11B 5/3133](#) takes precedence-)}
- G11B 5/3109
 - • • {Details (-[G11B 5/3103](#) takes precedence-)}
- G11B 5/3116
 - • • • {Shaping of layers, poles or gaps for improving the form of the electrical signal transduced, e.g. for shielding, contour effect, equalizing, side flux fringing, cross talk reduction between heads or between heads and information tracks (-[G11B 5/3113](#) , [G11B 5/245](#) take precedence-)}
- U G11B 5/313
 - • • • {Disposition of layers}

- G11B 5/3133 {including layers not usually being a part of the electromagnetic transducer structure and providing additional features, e.g. for improving heat radiation, reduction of power dissipation, adaptations for measurement or indication of gap depth or other properties of the structure (~~G11B 5/3106~~ takes precedence)}
- G11B 5/314 {where the layers are extra layers normally not provided in the transducing structure, e.g. optical layers (~~G11B 5/3196~~ takes precedence)}
- G11B 5/3143 {including additional layers for improving the electromagnetic transducing properties of the basic structure, e.g. for flux coupling, guiding or shielding (~~G11B 5/3116~~ , ~~G11B 5/312~~ take precedence)}
- G11B 5/3176 . . . {Structure of heads comprising at least in the transducing gap regions two magnetic thin films disposed respectively at both sides of the gaps (~~G11B 5/2455~~ , ~~G11B 5/265~~ take precedence; composite magnetic head structures, e.g. "Metal-In-Gap" heads are classified in ~~G11B 5/127~~ or ~~G11B 5/187~~ and subgroups)}
- U G11B 5/3189 . . . {Testing}
- U G11B 5/3193 {of films or layers, e.g. continuity test}
- G11B 5/3196 {of thin magnetic films, e.g. functional testing of the transducing properties (~~G11B 5/455~~ takes precedence)}
- G11B 5/325 . . Erasing heads using permanent magnets (~~general details therefor G11B 5/133 to G11B 5/255~~)
- G11B 5/33 . . Structure or manufacture of flux-sensitive heads, {i.e. for reproduction only; Combination of such heads with means for recording or erasing only} ({ Single head using magnetic domains for scanning ~~G11B 5/4946~~ ; multiple head for scanning ~~G11B 5/4907~~ and subgroups } ; general details therefor ~~G11B 5/133 to G11B 5/255~~)
- G11B 5/332 . . . {using thin films (~~G11B 5/372~~ , ~~G11B 5/3903~~ take precedence)}
- G11B 5/37 . . . using galvano-magnetic devices, e.g. Hall-effect devices (~~G11B 5/39~~ takes precedence){using Hall or Hall-related effect, e.g. planar-Hall effect or pseudo-Hall effect}
- G11B 5/376 {in semi-conductors (~~G11B 5/372~~ takes precedence)}
- G11B 5/39 . . . using magneto-resistive devices {or effects}
- U G11B 5/3903 {using magnetic thin film layers or their effects, the films being part of integrated structures}
- U G11B 5/3906 {Details related to the use of magnetic thin film layers or to their effects}
- G11B 5/3912 {Arrangements in which the active read-out elements are transducing in association with active magnetic shields, e.g. magnetically coupled shields (~~G11B 5/3916~~ takes precedence)}
- G11B 5/3967 {Composite structural arrangements of transducers, e.g. inductive write and magnetoresistive read (~~G11B 5/3906~~ takes precedence)}
- G11B 5/40 . . Protective measures on heads, e.g. against excessive temperature (~~G11B 5/31~~ takes precedence; protection against wear ~~G11B 5/255~~){ protective structure of the head: see under structures, e.g. ~~G11B 5/3106~~}
- G11B 5/41 . . Cleaning of heads{ of record carriers ~~G11B 23/50~~}
- G11B 5/455 . . Arrangements for functional testing of heads{(testing of the manufacturing process ~~G11B 5/127~~); Measuring arrangements for heads (~~measuring electric or magnetic properties G01R~~ ; { measuring properties for shaping or assembling elements ~~G11B 5/127~~)}
- G11B 5/465 . . Arrangements for demagnetisation of heads (~~demagnetisation in general H01F 13/00~~)

- G11B 5/48
 - Disposition or mounting of heads {or head supports}relative to record carriers{ mounting of head within housing [G11B 5/105](#) ; arrangements of heads, e.g. for scanning the record carrier to increase the relative speed(-driving of both record carriers and head [G11B 15/18](#) ; guiding record carriers [G11B 15/60](#) ; head selecting circuits [G11B 15/12-](#))}
 - G11B 5/4806
 - • {specially adapted for disk drive assemblies, e.g. assembly prior to operation, hard or flexible disk drives (-[G11B 5/488](#) to [G11B 5/54](#) take precedence-)}
 - G11B 5/4813
 - • • {Mounting or aligning of arm assemblies, e.g. actuator arm supported by bearings, multiple arm assemblies, arm stacks or multiple heads on single arm (-[G11B 5/484](#) takes precedence-)}
 - G11B 5/4826
 - • • {Mounting, aligning or attachment of the transducer head relative to the arm assembly, e.g. slider holding members, gimbals, adhesive (-[G11B 5/484](#) takes precedence; details of head housings or structures [G11B 5/10](#) , [G11B 5/127](#) ; adjustment relative to the record carrier [G11B 5/56-](#))}
 - G11B 5/4833
 - • • {Structure of the arm assembly, e.g. load beams, flexures, parts of the arm adapted for controlling vertical force on the head (-[G11B 5/484](#) takes precedence-)}
 - G11B 5/488
 - • {Disposition of heads (-[G11B 5/49](#) , [G11B 5/52](#) take precedence-)}
 - G11B 5/49
 - • Fixed mounting {or arrangements, e.g. one head per track}
 - G11B 5/4907
 - • • {Details for scanning (-[G11B 5/4969](#) takes precedence-)}
 - G11B 5/4915
 - • • • {Structure of specially adapted heads (-[G11B 5/3906](#) takes precedence-)}
 - U G11B 5/4969
 - • • {Details for track selection or addressing}
 - G11B 5/4984
 - • • • {Structure of specially adapted switching heads (-[G11B 5/3958](#) takes precedence-)}
 - G11B 5/52
 - • with simultaneous movement of head and record carrier, e.g. rotation of head (-[G11B 5/588](#) takes precedence-)
 - U G11B 5/53
 - • • Disposition or mounting of heads on rotating support
 - G11B 5/538
 - • • • {Disposition or mounting of pole pieces on rotating support (-magnetic switching of fixed head arrangements [G11B 5/49-](#))}
 - G11B 5/54
 - • with provision for moving the head into or out of its operative position or across tracks (-[G11B 5/58](#) takes precedence-)
 - U G11B 5/55
 - • • Track change, selection or acquisition by displacement of the head
 - U G11B 5/5504
 - • • • {across tape tracks}
 - G11B 5/5508
 - • • • • {Control circuits therefor (-[G11B 5/5513](#) takes precedence-)}
 - U G11B 5/5513
 - • • • • {Specially adapted for transducing in both travelling directions of tape}
 - G11B 5/5517
 - • • • • • {Controlled by automatic tape drive reversing arrangement (-reversing tape drive arrangements [G11B 15/444-](#))}
 - G11B 5/5521
 - • • • • {across disc tracks (-spiral track following [G11B 5/596](#))}
- NOTE
For groups [G11B 5/5526](#) to [G11B 5/5582](#) , see provisionally [G11B 5/5521](#) and [G11B 5/596](#)
- G11B 5/5526
 - • • • • • {Control therefor; circuits, track configurations or relative disposition of servo-information transducers and servo-information tracks for control thereof (-[G11B 5/556](#) takes precedence-)}
 - U G11B 5/553
 - • • • • • {Details}
 - G11B 5/5547
 - • • • • • • {"Seek" control and circuits therefor (-[G11B 5/5556](#) takes precedence-)}
 - G11B 5/5552
 - • • • • • {using fine positioning means for track acquisition separate from the coarse (e.g. track changing) positioning means}(e.g. track changing)positioning means}

- G11B 5/5569 {details of specially adapted mobile parts, e.g. electromechanical control devices (-motors in general [H02K](#)-)}
- G11B 5/56 . . with provision for moving the head {support}for the purpose of adjusting the position of the head relative to the record carrier, e.g. manual adjustment for azimuth correction or track centering (-[G11B 5/52](#) , [G11B 5/54](#) , [G11B 5/58](#) take precedence-)
- G11B 5/58 . . with provision for moving the head for the purpose of maintaining alignment of the head relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following{ spacing means incorporated in the head structure [G11B 5/187](#) , [G11B 5/255](#) , [G11B 5/3106](#)-}
- U G11B 5/584 . . . for track following on tapes
- G11B 5/588 by controlling the position of the rotating heads (-by controlling the speed of the record carrier [G11B 15/467](#) ; by controlling speed of the heads [G11B 15/473](#) ; { by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement [G11B 15/1841](#) })
- G11B 5/592 using bimorph elements supporting the heads{ see provisional also [G11B 5/588](#)-}
- G11B 5/596 . . . for track following on disks((-[G11B 5/5526](#) , [G11B 5/5552](#) , [G11B 5/5565](#) , [G11B 5/5582](#) take precedence))
- NOTE**
For groups [G11B 5/59605](#) to [G11B 5/59633](#) , see provisionally [G11B 5/5521](#) and [G11B 5/596](#)
- G11B 5/59605 {Circuits (-[G11B 5/59627](#) to [G11B 5/59688](#) take precedence-)}
- G11B 5/59616 {Synchronisation; Clocking (-[G11B 5/59622](#) takes precedence-)}
- G11B 5/59627 {Aligning for runout, eccentricity or offset compensation (-[G11B 5/5534](#) , [G11B 5/59677](#) , [G11B 5/59688](#) take precedence-)}
- G11B 5/59633 {Servo formatting (-[G11B 5/59627](#) , [G11B 5/59677](#) , [G11B 5/59683](#) , [G11B 5/59688](#) take precedence-)}
- G11B 5/59644 {Acquisition or selection of servo format from a system reference (-after track seek [G11B 5/5556](#)-)}
- G11B 5/5965 {Embedded servo format (-[G11B 5/59655](#) takes precedence-)}
- G11B 5/62 . Record carriers characterised by the selection of the material (-selection of magnetic materials in general [H01F 1/00](#) ; thin magnetic films [H01F 10/00](#)-)
- NOTE**
This group does not cover compositions, materials or processes, per se, which are covered by the relevant subclasses of section B or C.
- G11B 5/627 . . of leaders for magnetic tapes e.g. non-magnetic strips on the tapes or for connection (-constructional features [G11B 23/26](#)-)
- U G11B 5/64 . . Comprising only the magnetic material without bonding agent
- U G11B 5/645 . . . {characterised by the film material}
- G11B 5/647 {containing Fe or Ni (-**G11B5/64D3** takes precedence-)}
- G11B 5/65 . . . Characterized by its composition (-[G11B 5/66](#) takes precedence-)
- G11B 5/653 {containing Fe or Ni (-[G11B 5/656](#) takes precedence-)}
- U G11B 5/68 . . comprising one or more layers of magnetisable material homogeneously mixed with a bonding agent
- U G11B 5/70 . . . on a base layer
- U G11B 5/702 characterised by the bonding agent

- G11B 5/7023 · · · · {containing polyesters, polyethers, silicones, polyvinyl resins, polyacrylresins or epoxy resins (-G11B 5/7022 takes precedence-)}
- G11B 5/7025 · · · · {containing cellulosic derivates (-G11B 5/7022 takes precedence-)}
- U G11B 5/706 · · · · characterised by the composition of the magnetic material
- U G11B 5/70605 · · · · {metals or alloys}
- G11B 5/70615 · · · · {containing Fe metal or alloys (-G11B 5/70621 takes precedence-)}
- U G11B 5/70626 · · · · {containing non-metallic substances}
- U G11B 5/70642 · · · · {iron oxides}
- G11B 5/70647 · · · · {with a skin (-G11B 5/70657 takes precedence-)}
- U G11B 5/70652 · · · · {gamma - Fe₂ O₃}
- G11B 5/70663 · · · · {Preparation processes specially adapted therefor, e.g. using stabilising agents (-G11B 5/70668 and G11B 5/70673 take precedence-)}

- G11B 5/84 · Processes or apparatus specially adapted for manufacturing record carriers (-processes involving a single technical art, in general, and for which provision exists elsewhere, see the relevant places, e.g. B29 , C23 , C25D ; apparatus or processes for applying homogeneous magnetic films to substrates in general H01F 41/14-)

- G11B 5/852 · · Orientation in a magnetic field (-G11B 5/845 takes precedence-)
- G11B 5/86 · Re-recording, i.e. transcribing information from one magnetisable record carrier on to one or more similar or dissimilar record carriers((-by varying the order of the information G11B 27/029 , G11B 27/036-))

- G11B 7/00** **Recording or reproducing by optical means, e.g. recording using a thermal beam of optical radiation {by modifying optical properties or the physical structure}, reproducing using an optical beam at lower power {by sensing optical properties}; Record carriers therefor; (-G11B 11/00 , G11B 13/00 take precedence-)**

- G11B 7/002 · Recording, reproducing or erasing systems characterised by the shape {or form}of the carrier
- G11B 7/0025 · · with cylinders or cylinder-like carriers {or cylindrical sections or flat carriers loaded onto a cylindrical surface}, e.g. truncated cones
- U G11B 7/003 · · with webs{, filaments or wires}, e.g. belts, spooled tapes or films of quasi-infinite extent
- G11B 7/0032 · · {for moving-picture soundtracks, i.e. cinema (-cameras or projectors with sound recording or reproducing means G03B 31/02-)}
- G11B 7/0033 · · with cards {or other card-like flat carriers, e.g. flat sheets of optical film}
- G11B 7/004 · Recording, reproducing or erasing methods; Read, write or erase circuits therefor((-magneto-optical systems G11B 11/105-)}
- G11B 7/0045 · · Recording (-G11B 7/006 . G11B 7/0065 take precedence-)
- G11B 7/00456 · · {Recording strategies, e.g. pulse sequences (-G11B 7/0062 takes precedence-)}
- G11B 7/005 · · Reproducing (-G11B 7/0065 takes precedence-)
- G11B 7/0055 · · Erasing (-G11B 7/006 , G11B 7/0065 take precedence-)
- G11B 7/006 · · Overwriting (-G11B 7/0065 takes precedence-)
- U G11B 7/007 · Arrangement of the information on the record carrier, e.g. form of tracks, {actual track shape, e.g. wobbled, or cross-section, e.g. v-shaped; Sequential information structures, e.g. sectoring or header formats within a track}

- G11B 7/00736
- {Auxiliary data, e.g. lead-in, lead-out, Power Calibration Area [PCA], Burst Cutting Area (BCA), control information (-sector headers or addresses in prepits [G11B 7/00745](#); address data in track wobble [G11B7/007T](#))}
- WARNING
Not complete, see also [G11B 7/007](#) and [G11B 7/00745](#)
- G11B 7/00745
- {Sectoring or header formats within a track (-formats in general [G11B 20/12](#)-)}
- G11B 7/013
- • for discrete information, i.e. where each information unit is stored at a distinct discrete location {e.g. digital information formats within a data block or sector}
- U G11B 7/08
- Disposition or mounting of heads or light sources relatively to record carriers
- G11B 7/085
- • with provision for moving the light beam into, or out of, its operative position, {or across tracks, otherwise than during the transducing operation, e.g. for adjustment or preliminary positioning or track change or selection} (-modulating by information signals [G11B 7/12](#) ; controlling the position or direction of light beams, i.e. deflection, [G02F 1/29](#)-)
- U G11B 7/09
- • with provision for moving the light beam or focus plane for the purpose of maintaining alignment of the light beam relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following
- G11B 7/0901
- • • {for track following only (-[G11B 7/0925](#) , [G11B 7/094](#) , [G11B 7/0941](#) , [G11B 7/0943](#) , [G11B 7/0945](#) , [G11B 7/0946](#) , [G11B 7/0948](#) take precedence-)}
- G11B 7/0908
- • • {for focusing only (-[G11B 7/0925](#) , [G11B 7/094](#) , [G11B 7/0941](#) , [G11B 7/0943](#) , [G11B 7/0945](#) , [G11B 7/0946](#) , [G11B 7/0948](#) take precedence-)}
- G11B 7/0917
- • • • {-Focus-error methods other than those covered by [G11B 7/0909](#) to [G11B 7/0916](#)-}
- G11B 7/0925
- • • {Electromechanical actuators for lens positioning (-[G11B 7/0857](#) takes precedence-)}
- G11B 7/0927
- • • • {for focusing only (-[G11B 7/0937](#) takes precedence-)}
- G11B 7/0929
- • • • {for tracking only (-[G11B 7/0937](#) takes precedence-)}
- G11B 7/093
- • • • {for focusing and tracking (-[G11B 7/0932](#) to [G11B 7/0937](#) take precedence-)}
- G11B 7/0941
- • • {Methods and circuits for servo gain or phase compensation during operation, (-for initialising servos [G11B 7/0945](#)-)}
- G11B 7/0948
- • • {specially adapted for detection and avoidance or compensation of imperfections on the carrier, e.g. dust, scratches, dropouts (-[G11B 7/095](#) takes precedence-)}
- G11B 7/10
- • Interchangeable mountings, e.g. for replacement of head without readjustment {including interchangeable electrical adjuster boards}
- G11B 7/12
- Heads, e.g. forming of the optical beam spot or modulation of the optical beam (-disposition or mounting of head elements within housing or with provision for moving of light source, optical beam or detector, irrelevant to the transducing method [G11B 7/08](#) ; { modulating lasers [H01S 3/10](#) ; controlling the intensity, colour, phase, polarisation or direction of light beams arriving from an independent light source, e.g. switching gating or modulating [G02F 1/00](#) })
- U G11B 7/1205
- • {Integrated head arrangements, e.g. source and detectors mounted on the same substrate}
- U G11B 7/1206
- • • {where the integrated structure includes a waveguide}
- G11B 7/1208
- • • • {where the waveguide includes means for electro- or acousto-optical deflection (-electro- or acousto-optical deflection in general [G02F 1/29](#) , [G02F 1/33](#)-)}

- U G11B 7/123
 - • Integrated head arrangements, e.g. with source and detectors mounted on the same substrate
- U G11B 7/124
 - • • the integrated head arrangements including waveguides
- G11B 7/1245
 - • • • the waveguides including means for electro-optical or acousto-optical deflection{(-electro- or acousto-optical deflection in general [G02F 1/29](#) , [G02F 1/33](#)-)}
- G11B 7/125
 - • Optical beam sources therefor, e.g. laser control circuitry specially adapted for optical storage devices; Modulators, e.g. means for controlling the size or intensity of optical spots or optical traces{(-electro-, magneto-, or acousto-optical modulators [G02F 1/00](#) ; optical diaphragms [G03B 9/02](#)-)}

WARNING
For all subgroups of [G11B 7/125](#) , see also provisional [G11B 7/125](#)
- G11B 7/128
 - • • Modulators (-[G11B 7/1245](#) takes precedence-)
- G11B 7/13
 - • Optical detectors therefor{(-optical detectors per se [G01J](#); demodulating light, transferring the modulation of modulated light, frequency changing of light [G02F 2/00](#)-)}

WARNING
For all subgroups of [G11B 7/13](#) , see provisional also [G11B 7/13](#)
- U G11B 7/135
 - • Means for guiding the beam from the source to the record carrier or from the record carrier to the detector

WARNING
For all subgroups of [G11B 7/135](#) , see provisional also [G11B 7/135](#)
- G11B 7/1353
 - • • Diffractive elements, e.g. holograms or gratings{(-diffraction gratings per se [G02B 5/18](#) ; holograms per se [G02B 5/32](#) ; grating systems [G02B 27/44](#)-)}
- U G11B 7/1372
 - • • Lenses
- G11B 7/1374
 - • • • Objective lenses{(-optical objectives per se [G02B 9/00](#)-)}
- G11B 7/1376
 - • • • Collimator lenses{(-collimators per se [G02B 27/30](#)-)}
- G11B 7/1381
 - • • Non-lens elements for altering the properties of the beam, e.g. knife edges, slits, filters or stops (-[G11B 7/1353](#) - [G11B 7/1369](#) take precedence-)
- G11B 7/1392
 - • • Means for controlling the beam wavefront, e.g. for correction of aberration{(-optical systems for aberration correction per se [G02B 27/00](#)-)}
- G11B 7/1395
 - • • Beam splitters or combiners (-[G11B 7/1353](#) , [G11B 7/1356](#) take precedence-){(-beam splitting or combining per se [G02B 27/10](#)-)}

WARNING
Not complete, see also [G11B 7/1359](#) - [G11B 7/1381](#)
- G11B 7/24
 - Record carriers characterised by shape, structure or physical properties, or by the selection of the material (-characterised by the arrangement of information on the carrier [G11B 7/007](#)-)
- G11B 7/24018
 - • Laminated disks (-[G11B 7/24015](#) takes precedence-)

NOTE
When classifying in this group, classification is also made in group [G11B 7/2403](#) if the subject matter disclosed in the context of a laminated disk is of more general application
- G11B 7/24027
 - • • Layers; Shape, structure or physical properties thereof (-[G11B 7/24021](#) , [G11B 7/24024](#) take precedence-)
- U G11B 7/2403
 - • Layers; Shape, structure or physical properties thereof

- G11B 7/24035 . . . Recording layers (-substrates also used as recording layers [G11B 7/24047-](#))
- G11B 7/24044 for storing optical interference patterns, e.g. holograms; for storing data in three dimensions, e.g. volume storage (-[G11B 7/24038](#) takes precedence-)
- U G11B 7/24047 . . . Substrates
- G11B 7/2405 being also used as track layers of pre-formatted layers (-tracks or pits [G11B 7/2407-](#))
- G11B 7/24065 . . . Layers assisting in recording or reproduction below the optical diffraction limit, e.g. non-linear optical layers or structures (-cover layers for near-field media [G11B 7/24059-](#))
- G11B 7/2407 . . Tracks or pits; Shape, structure or physical properties thereof (-layout of tracks or pits used as the identification information [G11B 7/007-](#))
- U G11B 7/24073 . . . Tracks
- G11B 7/24079 Width or depth (-[G11B 7/24076](#) takes precedence-)
- G11B 7/24097 . . Structures for detection, control, recording operation or replay operation; Special shapes or structures for centering or eccentricity prevention (-within laminated disks [G11B 7/24021-](#)); Arrangements for testing, inspecting or evaluating; Containers, cartridges or cassettes

NOTE

When classifying in this group, classification is also made in group [G11B 23/00](#) if the subject matter disclosed in the context of an optical record carrier is of more general application

- U G11B 7/241 . . characterised by the selection of the material
- U G11B 7/242 . . . of recording layers
- U G11B 7/243 comprising inorganic materials only, e.g. ablative layers
- U G11B 2007/24302 {Metals or metalloids}
- G11B 2007/24304 {group 2 or 12 elements (e.g. *Be, Ca, Mg, Zn, Cd*)}(~~e.g. *Be, Ca, Mg, Zn, Cd*~~)
- G11B 2007/24308 {transition metal elements of group 11 (*Cu, Ag, Au*)}(~~*Cu, Ag, Au*~~)
- G11B 2007/2431 {group 13 elements (*B, Al, Ga, In*)}(~~*B, Al, Ga, In*~~)
- G11B 2007/24312 {group 14 elements (e.g. *Si, Ge, Sn*)}(~~e.g. *Si, Ge, Sn*~~)
- G11B 2007/24314 {group 15 elements (e.g. *Sb, Bi*)}(~~e.g. *Sb, Bi*~~)
- G11B 2007/24316 {group 16 elements (i.e. *chalcogenides, Se, Te*)}(~~i.e. *chalcogenides, Se, Te*~~)
- U G11B 2007/24318 {Non-metallic elements}
- G11B 2007/24326 {Halides (*F, Cl, Br...*)}(~~*F, Cl, Br...*~~)
- U G11B 7/244 comprising organic materials only
- G11B 7/249 containing organometallic compounds (-[G11B 7/246](#) takes precedence-)
- U G11B 7/252 . . . of layers other than recording layers

NOTE

In group [G11B 7/252](#) , multi-aspect classification is applied, so that if subject matter is characterised by aspects covered by more than one of its subgroups, the subject matter should be classified in each of those subgroups.

- U G11B 7/254 of protective topcoat layers
- U G11B 2007/25408 {consisting essentially of inorganic materials}

- G11B 2007/25411 {containing transition metal elements (Zn, Fe, Co, Ni, Pt)}{Zn, Fe, Co, Ni, Pt}}
- G11B 2007/25414 {containing Group 13 elements (B, Al, Ga)}{B, Al, Ga}}
- G11B 2007/25417 {containing Group 14 elements (C, Si, Ge, Sn)}{C, Si, Ge, Sn}}
- U G11B 7/257 of layers having properties involved in recording or reproduction, e.g. optical interference layers or sensitising layers or dielectric layers, which are protecting the recording layers
- U G11B 2007/25705 {consisting essentially of inorganic materials}
- G11B 2007/25706 {containing transition metal elements (Zn, Fe, Co, Ni, Pt)}{Zn, Fe, Co, Ni, Pt}}
- G11B 2007/25708 {containing group 13 elements (B, Al, Ga)}{B, Al, Ga}}
- G11B 2007/2571 {containing group 14 elements except carbon (Si, Ge, Sn, Pb)}{Si, Ge, Sn, Pb}}
- G11B 2007/25718 {containing halides (F, Cl, Br, I)}{F, Cl, Br, I}}
- G11B 7/26 Apparatus or processes specially adapted for the manufacture of record carriers (-processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B29, G03-){ manufacture of intermediate mediums, e.g. matrixes for processing G11B 23/0057-}
- G11B 7/263 {Preparing and using a stamper, e.g. pressing or injection molding substrates (-production of optical record carriers, e.g. optical discs B29D 17/005-)}
- G11B 7/266 {Sputtering or spin-coating layers (-sputtering in general C23C 14/24 ; spin-coating in general B05D 1/005-)}
- WARNING
Not complete, see also G11B 7/26
- G11B 7/268 {Post-production operations, e.g. initialising phase-change recording layers, checking for defects (-investigating the presence of flaws or contamination in optical discs G01N 21/9506)}
- WARNING
Not complete, see also G11B 7/26
- G11B 9/00** **Recording or reproducing using a method not covered by one of the main groups G11B 3/00 to G11B 7/00-; Record carriers therefor (-G11B 11/00 takes precedence-){ driving or moving of heads G11B 21/02-}**
- G11B 9/06 using record carriers having variable electrical capacitance; Record carriers therefor (-G11B 9/02 takes precedence-)
- G11B 9/061 {Record carriers characterised by their structure or form or by the selection of the material; Apparatus or processes specially adapted for the manufacture of record carriers (-processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B05D, F16N, C08L-)}
- U G11B 9/063 {characterised by the selection of the material}
- G11B 9/065 {Additional layers for lubrication, wear protection or elimination of electrostatic charges of the interface between record carrier and head (-G11B 9/066, G11B 9/067 and G11BR4R take precedence-)}
- G11B 9/066 {Electrically conductive layers (-G11B 9/068 takes precedence-)}
- G11B 9/067 {Dielectric layers; Processes for providing electrical conductivity to them (-G11B 9/068 takes precedence-)}
- G11B 9/10 using electron beam; Record carriers therefor (-G11B 9/08 takes precedence-){ see provisional also G11B 11/03-}
- U G11B 9/12 using near-field interactions; Record carriers therefor

- G11B 9/14
- • using microscopic probe means{, i.e. recording or reproducing by means directly associated with the tip of a microscopic electrical probe as used in Scanning Tunneling Microscopy [STM] or Atomic Force Microscopy [AFM] for inducing physical or electrical perturbations in a recording medium; Record carriers or media specially adapted for such transducing of information (-marking using electrical current [B41M 5/20](#) ; measuring roughness or irregularity of surfaces [G01B 7/34](#) ; details of scanning-probe microscopes [G01Q](#)-)}
- G11B 9/1418
- • • {Disposition or mounting of heads or record carriers (-[G11B 17/00](#) and [G11B 19/00](#) take precedence-)}
- U G11B 9/1427
- • • • {with provision for moving the heads or record carriers relatively to each other or for access to indexed parts without effectively imparting a relative movement}
- U G11B 9/1436
- • • • • {with provision for moving the heads or record carriers relatively to each other}
- G11B 9/1454
- • • • • • {Positioning the head or record carrier into or out of operative position or across information tracks; Alignment of the head relative to the surface of the record carrier (-[G11B 9/1445](#) takes precedence-)}
- G11B 11/00**
- Recording on or reproducing from the same record carrier wherein for these two operations the methods are covered by different main groups of groups [G11B 3/00](#) to [G11B 7/00](#) or by different subgroups of group [G11B 9/00](#) ; Record carriers therefor{ driving or moving of heads [G11B 3/02](#) , [G11B 5/48](#) , [G11B 7/08](#) , [G11B 21/02](#) }**
- NOTE
- Groups [G11B 11/00](#) to [G11B 11/14](#) mainly cover:
- combined systems or apparatus comprising both recording and reproducing using different methods;
 - record carriers therefor.
- Reading only or recording only using mechanical, magnetic, optical or other methods is covered by groups [G11B 3/00](#) to [G11B 9/08](#)
- U G11B 11/002
- {using recording by perturbation of the physical or electrical structure}
- G11B 11/005
- • {with reproducing by using non-optical beam of radiation or particles, e.g. electrons, directly interacting with the memorised information (-[G11B 11/007](#) takes precedence-)}
- G11B 11/007
- • {with reproducing by means directly associated with the tip of a microscopic electrical probe as defined in [G11B 9/14](#)-(details of heads [G11B 9/1409](#) ; disposition or mounting of heads [G11B 9/1418](#)-)}
- G11B 11/03
- using recording by deforming with non-mechanical means, e.g. laser, beam of particles(-[G11B 11/002](#) takes precedence; see provisional also [G11B 3/68](#) to [G11B 3/72](#)-)}
- G11B 11/05
- • with reproducing by capacitive means{ [G11B 9/07](#) takes precedence-}
- G11B 11/08
- using recording by electric charge or by variation of electric resistance or capacitance(-[G11B 11/002](#) , [G11B 11/10](#) take precedence-)}
- G11B 11/10
- using recording by magnetic means {or other means for magnetisation or demagnetisation of a record carrier, e.g. light induced spin magnetisation; Demagnetisation by thermal or stress means in the presence or not of an orienting magnetic field}
- G11B 11/105
- • using a beam of light or a magnetic field for recording,{by change of magnetisation}and a beam of light for reproducing,{i.e. magneto-optical,}e.g. light-induced thermo-magnetic recording,{spin magnetisation recording,}Kerr {or Faraday}effect reproducing
- U G11B 11/10502
- • • {characterised by the transducing operation to be executed}

- G11B 11/10504 {Recording (-for shaping of magnetic domains [G11B 11/10528](#) , for compensation of shift [G11B 11/1053-](#))}
- G11B 11/10515 {Reproducing (-compensating pit shift [G11B 11/1053-](#))}
- G11B 11/10517 {Overwriting or erasing (-[G11B 11/10526](#) takes precedence-)}
- U G11B 11/1055 . . . {Disposition or mounting of transducers relative to record carriers}
- G11B 11/10552 {Arrangements of transducers relative to each other, e.g. coupled heads, optical and magnetic head on the same base (-for relative movement of transducers [G11B 11/10573-](#))}
- G11B 11/10554 {the transducers being disposed on the same side of the carrier (-flying heads [G11B 11/1058-](#))}
- G11B 11/11 . . using a beam,{e.g. of electrons or X-rays}other than a beam of light {or a magnetic field}for recording
- G11B 11/12 . using recording by optical means (-[G11B 11/03](#) takes precedence-){
[G11B 11/10](#) takes precedence-}
- G11B 11/16 . using recording by mechanical cutting, deforming or pressing((-[G11B 11/002](#) takes precedence-))
- U G11B 11/24 . using recording by near-field interactions
- G11B 11/26 . . using microscopic probe means{, i.e. recording by means directly associated with the tip of a microscopic electrical probe as used in scanning tunneling microscopy [STM] or atomic force microscopy [AFM] for inducing physical or electrical perturbations in a recording medium (-marking using electrical current [B41M 5/20](#) ; measuring roughness or irregularity of surfaces [G01B 7/34](#) ; details of scanning-probe microscopes [G01Q-](#))}
- G11B 13/00** **Recording simultaneously or selectively by methods covered by different main groups{ among [G11B 3/00](#) , [G11B 5/00](#) , [G11B 7/00](#) and [G11B 9/00](#)}; Record carriers therefor {not otherwise provided for}; Reproducing therefrom {not otherwise provided for (-[G11B 9/14](#) , [G11B 11/002](#) take precedence; driving or moving of heads [G11B 3/02](#) , [G11B 5/48](#) , [G11B 7/08](#) , [G11B 21/02-](#))}**
- NOTE
This group is limited to the combination of recording and reproducing on the same record carrier by more than one of the different method covered by groups [G11B 3/00](#) , [G11B 5/00](#) , [G11B 7/00](#) and [G11B 9/00](#)
- G11B 13/04 . magnetically {or by magnetisation}and optically {or by radiation, for changing or sensing optical properties}
- G11B 15/00** **Driving, starting or stopping record carriers of filamentary or web form; Driving both such record carriers and heads; Guiding such record carriers or containers therefor; Control thereof; Control of operating function (-driving or guiding heads [G11B 3/00](#) to [G11B 7/00](#) , [G11B 21/00-](#))**
- G11B 15/005 . {Programmed access in sequence to indexed parts of tracks of operating tapes, by driving or guiding the tape (-access by driving of both record carrier and head [G11B 15/1816](#) ; see prov. also [G11B 15/602-](#))}
- U G11B 15/02 . Control of operating function, e.g. switching from recording to reproducing
- G11B 15/04 . . Preventing, inhibiting, or warning against accidental erasing or double recording (-[G11B 15/05](#) takes precedence-)
- G11B 15/05 . . by sensing features present on or derived from record carrier or container (-[G11B 15/16](#) takes precedence-)

NOTEsee provisional also [G11B 15/02](#)

- U G11B 15/06
 - • • by sensing auxiliary features on record carriers or containers, e.g. to stop machine near the end of a tape
- G11B 15/08
 - • • by photoelectric sensing (~~G11B 15/07~~ takes precedence)
- G11B 15/10
 - • Manually-operated control; Solenoid-operated control{ [G11B 15/44](#) takes precedence }
- G11B 15/12
 - • Masking of heads; {circuits for}Selecting or switching of heads between operative and inoperative functions {or between different operative functions or for selection between operative heads}; Masking of beams, e.g. of light beams{ track selection by moving the magnetic head [G11B 5/54](#) }
- G11B 15/18
 - Driving; Starting; Stopping; Arrangements for control or regulation thereof{ [G11B 15/56](#) takes precedence; handling tapes or filamentary material in general [B65H 23/00](#) }
- G11B 15/1808
 - • {Driving of both record carrier and head}{~~G11B 15/467~~ takes precedence; mounting of head [G11B 5/52](#) }
- G11B 15/1816
 - • • {Programmed access in sequence to indexed parts of operating tapes cooperating with rotating heads (~~see provisional also [G11B 15/005](#)~~)}
- U G11B 15/1825
 - • • {driving or moving the head in a direction which cuts across the direction of travel of the tape, e.g. for helicoïdal scanning}
- G11B 15/1833
 - • • • {with head driven in a plane, cyclically around an axis, e.g. on headwheel (~~construction of headwheel [G11B 5/53](#) , [G11B 21/16](#) ; disposition of heads on headwheel [G11B 5/531](#) , [G11B 21/02](#)~~)}
- G11B 15/1841
 - • • • • {with provision for information tracking by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement, e.g. for skew or time base correction (~~in the direction which cuts across tracks, i.e. for track following [G11B 3/38](#) , [G11B 5/588](#) , [G11B 7/085](#) , [G11B 21/08](#) , [G11B 21/10](#) ; by controlling headwheel rotation [G11B 15/4733](#) , by guiding the tape [G11B 15/602](#)~~)}
- G11B 15/1875
 - • • {adaptations for special effects or editing}{~~signal processing or indexing therefor [G11B 27/00](#)~~}
- G11B 15/22
 - • Stopping means (~~slowing-down preparatory to stopping or speed-changing [G11B 15/48](#) ; speed-controlling by mechanical linkage [G11B 15/50](#) ; brake constructions in general [F16D](#)~~){ [G11B 15/06](#) takes precedence; inside container [G11B 23/04](#) }
- G11B 15/26
 - • Driving record carriers by members acting directly or indirectly thereon{ [G11B 15/44](#) takes precedence; Driving features inside container, see [G11B 23/04](#) and subgroups }
- U G11B 15/28
 - • • through rollers driving by frictional contact with the record carrier, e.g. capstan; Multiple arrangements of capstans or drums coupled to means for controlling the speed of the drive; Multiple capstan systems alternately engageable with record carrier to provide reversal
- G11B 15/29
 - • • • through pinch-rollers {or tape rolls}{~~[G11B 15/295](#) takes precedence~~}
- G11B 15/38
 - • Driving record carriers by pneumatic means{ pneumatic control for capstans driving the record carrier by frictional contact [G11B 15/285](#) }
- G11B 15/385
 - • • {directly, e.g. by rotating drum}{~~guiding record carrier on rotating drum [G11B 15/61](#)~~}
- G11B 15/43
 - • Control or regulation of mechanical tension of record carrier, e.g. tape tension (~~controlling tension in filamentary material in general [B65H 59/00](#)~~) { by speed regulation [G11B 15/46](#) ; by using reserve loops [G11B 15/56](#) }
- U G11B 15/44
 - • Speed-changing arrangements; Reversing arrangements; Drive transfer means therefor
- G11B 15/444
 - • • {reversing arrangements}{~~[G11B 15/442](#) takes precedence~~}

- G11B 15/46
 - Controlling, regulating, or indicating speed{ dependent on position of tape in reserve, loop [G11B 15/56](#) , [G11B 15/58](#)}
- G11B 15/467
 - in arrangements for recording or reproducing wherein both record carriers and heads are driven{ see provisional also [G11B 15/1808](#)}
- U G11B 15/473
 - by controlling the speed of the heads
 - NOTE
 - see prov. also [G11B 5/588](#)
- G11B 15/4731
 - {control of headwheel rotation}{(-disposition or construction of headwheel motor [G11B 5/53](#) , [G11B 21/02](#)-)}
- G11B 15/54
 - by stroboscope; by tachometer}{(-speedometers or tachometers [G01P](#)-)}
- G11B 15/56
 - the record carrier having reserve loop, e.g. to minimise inertia during acceleration}{measuring or control in connection therewith}
- G11B 15/60
 - Guiding record carrier}{(-guiding devices structurally associated with magazines or cassettes [G11B 23/04](#)-)}
- G11B 15/61
 - on drum, e.g. drum containing rotating heads{ [G11B 15/66](#) takes precedence-}
- U G11B 15/66
 - Threading; Loading; Automatic self-loading
- U G11B 15/665
 - by extracting loop of record carrier from container
- U G11B 15/6653
 - {to pull the record carrier against drum}
- G11B 15/6655
 - {using one loading ring, i.e. "C-type"}(-[G11B 15/6658](#) takes precedence-)}
- U G11B 15/67
 - by extracting end of record carrier from container or spool
- G11B 15/672
 - {Extracting end of record carrier (from container or single reel}{(-[G11B 15/671](#) takes precedence-)}
- G11B 15/673
 - {Threading end of record carrier externally to single reel}{(-[G11B 15/671](#) takes precedence-)}
- G11B 15/674
 - {Threading or attaching end of record carrier on or to single reel}{(-[G11B 15/671](#) takes precedence-)}
- G11B 15/675
 - Guiding containers {e.g. loading, ejecting cassettes}
- G11B 15/6751
 - {with movement of the cassette parallel to its main side, i.e. front loading}{(-[G11B 15/67544](#) takes precedence-)}
- U G11B 15/68
 - Automatic cassette changing arrangements;{automatic tape changing arrangements}
- U G11B 15/682
 - {with fixed magazines having fixed cassette storage cells, e.g. in racks}
- G11B 15/683
 - {wherein the recorder or player is moved according to the location of a selected cassette}{(-[G11B 15/684](#) takes precedence-)}
- G11B 15/70
 - The record carrier being an endless loop record carrier{ inside container [G11B 15/1891](#)-}
- G11B 17/00**
 - Guiding record carriers not specifically of filamentary or web form, or of supports therefor (-guiding cards or sheets [G06K 13/00](#)-)**
- U G11B 17/02
 - Details
- U G11B 17/022
 - Positioning or locking of single discs
- U G11B 17/028
 - of discs rotating during transducing operation
- G11B 17/03
 - in containers or trays}{(-[G11B 17/032](#) , [G11B 17/035](#) take precedence-)}
- G11B 17/032
 - Positioning by moving the door or the cover}{(-[G11B 17/035](#) takes precedence-)}
- G11B 17/04
 - Feeding or guiding single record carrier to or from transducer unit}{(-guiding during transducing operation [G11B 17/34](#)-)}

- U G11B 17/041 • . . . specially adapted for discs contained within cartridges
- U G11B 17/043 • Direct insertion, i.e. without external loading means
- G11B 17/0434 • {with mechanism for subsequent vertical movement of the disc (~~G11B 17/0438~~ takes precedence)}
- G11B 17/0436 • {with opening mechanism of the cartridge shutter (~~G11B 17/0438~~ takes precedence)}
- U G11B 17/22 • from random access magazine of disc records
- G11B 17/221 • . {with movable magazine (~~G11B 17/24~~ to ~~G11B 17/28~~ take precedence)}
- G11B 17/228 • . {Control systems for magazines (~~G11B 17/225~~ takes precedence)}
- G11B 17/32 • Maintaining desired spacing between record carrier and head, e.g. by fluid-dynamic spacing { damping of vibrations of record carriers on turntables by fluid-dynamic means [G11B 19/2018](#)}
- G11B 17/34 • Guiding record carriers during transducing operation, e.g. for track following (~~G11B 17/32~~ takes precedence)}
- G11B 19/00 Driving, starting, stopping record carriers not specifically of filamentary or web form, or of supports therefor; Control thereof; Control of operating function (~~guiding such record carriers [G11B 17/00](#)~~); {Driving both disc and head}**
- U G11B 19/02 • Control of operating function, e.g. switching from recording to reproducing
- G11B 19/027 • . {Remotely controlled (~~remote control systems in general [G08C](#)~~)}
- G11B 19/08 • . by using devices external to the driving mechanisms, e.g. coin-freed switch (~~coin actuated mechanisms [G07F 5/00](#)~~)
- G11B 19/12 • . by sensing distinguishing features of {or on}records, e.g. diameter {end mark}
- G11B 19/122 • . . {involving the detection of an identification or authentication mark (~~record carriers indicating unauthorised or prior use [G11B 23/28](#)~~)}
- G11B 19/124 • . . {involving the detection of diameter of disks (~~feeding or guiding of a single record carrier [G11B 17/04](#) and subgroups~~)}
- U G11B 19/20 • Driving; Starting; Stopping; Control thereof
- G11B 19/2009 • . {Turntables, hubs and motors for disk drives; Mounting of motors in the drive (~~means for clamping of disk to turntable [G11B 17/022](#) and subgroups~~)}
- G11B 19/22 • . Brakes other than speed-regulating brakes (~~brake constructions in general [F16D](#)~~)
- G11B 19/28 • . Speed controlling, regulating, or indicating (~~G11B 19/24~~ takes precedence; speedometers or tachometers [G01P](#))}
- U G11B 20/00 Signal processing not specific to the method of recording or reproducing; Circuits therefor**
- G11B 20/00086 • {Circuits for prevention of unauthorised reproduction or copying, e.g. piracy (~~indicating unauthorised use of record carriers in general [G11B 23/28](#)~~; scrambling for television signal recording [H04N 5/913](#); network architectures or network protocols for network security [H04L 63/00](#); cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#))}
- U G11B 20/00166 • . {involving measures which result in a restriction to authorised contents recorded on or reproduced from a record carrier, e.g. music or software}
- G11B 20/00181 • . . {using a content identifier, e.g. an international standard recording code [ISRC]} or a digital object identifier [DOI]}
- U G11B 20/0021 • . {involving encryption or decryption of contents recorded on or reproduced from a record carrier}

- G11B 20/00217
 - • • {the cryptographic key used for encryption and/or decryption of contents recorded on or reproduced from the record carrier being read from a specific source (-key distribution or management [H04L 9/08](#)-)}
- U G11B 20/00253
 - • • • {wherein the key is stored on the record carrier}
- G11B 20/00282
 - • • • • {the key being stored in the content area, e.g. program area, data area or user area (-key stored in a management area [G11B 20/00297](#)-)}
- U G11B 20/02
 - Analogue recording or reproducing
- G11B 20/06
 - • Angle-modulation recording (-angle modulation [H03C](#) ; demodulation of angle modulated oscillations [H03D](#)-)
- G11B 20/08
 - • Pulse-modulation recording or reproducing (-pulse-code-modulation recording [G11B 20/10](#) ; pulse modulation or pulse demodulation [H03K](#)-)
- G11B 20/10
 - Digital recording or reproducing (-digital computers in which at least part of the computation is effected electrically, arrangements for handling digital data [G06F](#) ; transmission of digital information [H04L](#)-)
- U G11B 20/10009
 - • {Improvement or modification of read or write signals}
- G11B 20/10018
 - • • {analog processing for digital recording or reproduction (-[G11B 20/10037](#) to [G11B 20/10481](#) take precedence-)}
- G11B 20/10027
 - • • • {adjusting the signal strength during recording or reproduction, e.g. variable gain amplifiers (-optimum power control for optical discs [G11B 7/125](#)-)}
- U G11B 20/10046
 - • • {filtering or equalising, e.g. setting the tap weights of an FIR filter}
- G11B 20/10194
 - • • • {using predistortion during writing (-[G11B 20/10055](#) takes precedence-)}
- G11B 20/10203
 - • • • • {baseline correction (-~~DC correction by choosing codewords of the modulation code [G11B 20/1426](#)~~ ~~DC correction by choosing codewords of the modulation code [G11B 20/1426](#)~~-)}
- G11B 20/10212
 - • • • • {compensation for data shift (*e.g. pulse crowding effects*)}(~~e.g. pulse crowding effects~~)
- G11B 20/10222
 - • • {clock-related aspects, e.g. phase or frequency adjustment or bit synchronisation (-dedicated sync patterns in the modulation code [G11B 20/1403](#)-)}
- U G11B 20/10268
 - • • {bit detection or demodulation methods}
- G11B 20/10287
 - • • • {using probabilistic methods, e.g. maximum likelihood detectors (-[G11B 20/10277](#) takes precedence-)}
- U G11B 20/10481
 - • • {optimisation methods}
- G11B 20/10509
 - • • • {iterative methods, e.g. trial-and-error, interval search, gradient descent or feedback loops (-[G11B 20/10518](#) takes precedence-)}
- G11B 20/10527
 - • {Audio or video recording; Data buffering arrangements (-[G11B 20/12](#) to [G11B 20/18](#) take precedence-)}
- G11B 20/12
 - • Formatting, e.g. arrangement of data block or words on the record carriers((-within interface between computers and data recorders [G06F 3/06](#)-)}
- U G11B 20/1201
 - • • {on tapes}
- G11B 20/1211
 - • • • {with different data track configurations (-longitudinal control tracks with transverse user data tracks [G11B 20/1207](#)-)}
- G11B 20/1215
 - • • {on cards (-optical aspect of optical cards [G11B 7/0033](#)-)}
- U G11B 20/1217
 - • • {on discs}
- U G11B 2020/1218
 - • • • {wherein the formatting concerns a specific area of the disc}
- G11B 2020/1222
 - • • • • {ECC block, i.e. a block of error correction encoded symbols which includes all parity data needed for decoding (-pure error correction aspects [G11B 20/18](#)-)}

- G11B 20/1261 . . . {on films, e.g. for optical moving-picture soundtracks (-optical aspect [G11B 7/0032](#)-)}
- U G11B 2020/1264 . . . {wherein the formatting concerns a specific kind of data}
- U G11B 2020/1265 {Control data, system data or management information, i.e. data used to access or process user data}
- G11B 2020/1287 {Synchronisation pattern, e.g. VCO fields (-specific bit sequences of sync patterns [G11B 20/1403](#) ; A/V synchronisation [G11B 27/00](#)-)}
- U G11B 20/18 . . . Error detection or correction; Testing,{e.g. of drop-outs}
- G11B 20/1806 . . . {Pulse code modulation systems for audio signals (-[G11B 20/1803](#) takes precedence-)}
- G11B 20/1813 {by adding special bits or symbols to the coded information (-[G11B 20/1809](#) takes precedence-)}
- G11B 20/1833 . . . {by adding special lists or symbols to the coded information (-[G11B 20/1806](#) , [G11B 20/1866](#) take precedence-)}
- G11B 20/1866 . . . {by interleaving (-[G11B 20/1809](#) takes precedence-)}
- U G11B 20/22 . . . for reducing distortions
- G11B 20/225 . . . {for reducing wow or flutter (-by controlling the speed of the record carrier [G11B 15/46](#) , [G11B 19/28](#)-)}
- U G11B 21/00 Head arrangements not specific to the method of recording or reproducing**
- U G11B 21/02 . . . Driving or moving of heads
- G11B 21/03 . . . for correcting time base error (-during transducing operation, by driving or moving the head in a direction more or less parallel to the direction of travel of the recording medium, e.g. tangential direction on a rotating disc (-by driving or moving the head in a direction which cuts across the direction of travel of the recording medium [G11B 15/1808](#) , [G11B 15/467](#)-)}
- G11B 21/04 . . . Automatic feed mechanism producing a {progressive}transducing traverse of the head in a direction which cuts across the direction of travel of the recording medium, e.g. helical scan,{e.g. by lead-screw (-[G11B 19/20](#) , [G11B 21/08](#) and [G11B 21/10](#) take precedence-)}
- G11B 21/06 . . . the record carrier having {mechanical}means to ensure traverse movement of the head,{e.g. grooves}
- G11B 21/08 . . . Track changing or selecting (-[G11B 21/12](#) takes precedence-){during transducing operation}
- G11B 21/10 . . . Track finding or aligning by moving the head {Provisions for maintaining alignment of the head relative to the track during transducing operation, i.e. track following (-characterised by the track access method [G11B 21/08](#)-)}
- G11B 21/12 . . . Raising and lowering; Back-spacing or forward-spacing along track; Returning to starting position (-otherwise than during transducing operation)
- G11B 23/00 Record carriers not specific to the method of recording or reproducing; Accessories, e.g. containers, specially adapted for co-operation with the recording or reproducing apparatus {Intermediate mediums; Apparatus or processes specially adapted for their manufacture (-processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B29](#) , [B41M](#) , [B05D](#) , [C08L](#) , [F16N](#)-)}**

NOTE

In group [G11B 23/00](#) , recording or reproducing apparatus does not include the record carriers.

- G11B 23/0007
- {-Circuits or methods for reducing noise, for correction of distortion, or for changing density of recorded information, volume compression or expansion circuits per se [H03G 7/00](#)-}
- NOTE**
This group is closed down and will in due course be transferred to [G11B 20/22](#) and [G11B 20/24](#) and subgroups
- G11B 23/0014
- {record carriers not specifically of filamentary or web form ([G11B 23/0057](#) takes precedence-)}
- U G11B 23/0021
- · {discs}
- U G11B 23/0028
- · · {Details}
- G11B 23/0035
- · · · {means incorporated in the disc, e.g. hub, to enable its guiding, loading or driving (-means for driving the head [G11B 21/06](#) ; guiding the disc for centering or locking [G11B 17/022](#) ; turntables or spindles for driving [G11B 19/2009](#)-)}
- G11B 23/0042
- · · · · {with provision for auxiliary features (-sensing such features [G11B 17/00](#) , [G11B 19/02](#)-)}
- G11B 23/005
- · · {flexible discs (-[G11B 23/0035](#) takes precedence-)}
- G11B 23/0057
- {Intermediate mediums, i.e. mediums provided with an information structure not specific to the method of reproducing or duplication such as matrixes for mechanical pressing of an information structure (-for record carriers with directly readable mechanical information [G11B 3/685](#)-); record carriers having a relief information structure provided with or included in layers not specific for a single reproducing method; apparatus or processes specially adapted for their manufacture}
- U G11B 23/0064
- · {mediums or carriers characterised by the selection of the material}
- G11B 23/0071
- · · {additional layers for lubrication or wear protection (-lubricating means not integrated in the record carrier structure [G11B 23/50](#)-)}
- G11B 23/02
- Containers; Storing means {both adapted to cooperate with the recording or reproducing means}(-cabinets, cases, stands, modified to store record carriers [G11B 33/04](#) ; storing webs, tapes, or filamentary material in general [B65H 75/00](#)-)}
- G11B 23/021
- · {comprising means for reducing influence of physical parameters, e.g. temperature change, moisture (-combined with means for reconditioning or cleaning [G11B 23/507](#)-)}
- U G11B 23/03
- · Containers for flat record carriers
- U G11B 23/0301
- · · {Details}
- G11B 23/0308
- · · · {Shutters (-[G11B 23/0317](#) takes precedence-)}
- U G11B 23/032
- · · {for rigid discs}
- U G11B 23/0321
- · · · {rigid cartridges for single discs}
- G11B 23/0322
- · · · · {comprising latching or movable handling devices (-[G11B 17/032](#) takes precedence-)}
- U G11B 23/0323
- · · · {for disc-packs}
- G11B 23/0325
- · · · · {comprising latching or movable handling devices (-[G11B 17/038](#) takes precedence-)}
- U G11B 23/033
- · · for flexible discs
- U G11B 23/0335
- · · · {for disc packs}
- G11B 23/0337
- · · · · {comprising latching or movable handling devices (-[G11B 23/0325](#) and [G11B 17/038](#) take precedence-)}

- G11B 23/04
 - • Magazines; Cassettes {for webs or filaments}{-[G11B 23/12](#) takes precedence; { cassettes with sealing or locking means [G11B 23/28](#) ; dummy cassettes for locking in the drive [G11B 33/005](#) }}
- U G11B 23/041
 - • • {Details}
- G11B 23/042
 - • • • {Auxiliary features}{-sensing such features [G11B 15/06](#)-)}
- U G11B 23/08
 - • • for housing webs or filaments having two distinct ends
- U G11B 23/087
 - • • • using two different reels or cores
- U G11B 23/08707
 - • • • • {Details}
- G11B 23/08714
 - • • • • • {Auxiliary features}{-sensing such features [G11B 15/06](#)-)}
- G11B 23/08721
 - • • • • • {Brakes for tapes or tape reels}{-[G11B 23/08707](#) takes precedence-)}
- G11B 23/113
 - • Apparatus or processes specially adapted for the manufacture of magazines or cassettes {e.g. initial loading into container}{processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B21](#), [B29](#), [B65](#)}
- G11B 23/16
 - Record carriers with single-track for recording at spaced intervals along the track thereof, e.g. for speech or language training {contains no documents}
- G11B 23/18
 - Record carriers with multiple tracks, e.g. with complementary and partial tracks such as paired "stereo" tracks {contains no documents}
- G11B 23/28
 - Indicating {or preventing}prior or unauthorized use,{e.g. cassettes with sealing or locking means, write-protect devices for discs}{-write-protect devices for tapes [G11B 23/042](#) , [G11B 23/08714](#) ; dummy cassettes for locking in the drive [G11B 33/005](#)-)}
- G11B 23/30
 - with provision for auxiliary signals}{-sensing such signals [G11B 15/06](#)-}
- G11B 23/38
 - Visual features other than those contained in record tracks or represented by sprocket holes {the visual signals being auxiliary signals}
- G11B 23/44
 - • Information for display simultaneously with playback of the record, e.g. photographic matter {-associated working of cameras or projectors with sound recording or reproducing means [G03B 31/00](#)-}
- G11B 23/50
 - Reconditioning of record carriers; Cleaning of record carriers; {Carrying-off electrostatic charges} (-[G11B 3/58](#) takes precedence; { carrying off electrostatic charges in general [H05F 3/00](#) })
- G11B 25/00**
 - Apparatus characterised by the shape of record carrier employed but not specific to the method of recording or reproducing}{-individual parts of apparatus [G11B 3/00](#) to [G11B 23/00](#) , [G11B 33/00](#)-},{e.g. dictating apparatus; Combinations of such apparatus}**
- U G11B 25/04
 - using flat record carriers, e.g. disc, card
- G11B 25/046
 - • {using stationary discs, or cards provided with a circular recording area}{-automatic feed mechanism producing a transducing t traverse of the head across stationary disc tracks [G11B 21/043](#) ; driving heads relatively to stationary record carriers for mechanical transducing [G11B 3/40](#)-)}
- G11B 25/10
 - Apparatus capable of using record carriers defined in more than one of the sub-groups [G11B 25/02](#) to [G11B 25/08](#) ; {Adaptor devices therefor}
- U G11B 27/00**
 - Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel**
- G11B 27/002
 - {Programmed access in sequence to a plurality of record carriers or indexed parts, e.g. tracks, thereof; e.g. for editing; {-transfer of record carriers from magazine [G11B 15/68](#) , [G11B 17/10](#) ; [G11B 17/22](#)-)}
- G11B 27/005
 - {Reproducing at a different information rate from the information rate of recording}{-for television signals [H04N 5/783](#)-)}

- G11B 27/02
- Editing, e.g. varying the order of information signals recorded on, or reproduced from, record carriers (~~arrangements for sorting or merging computer data on continuous record carriers [G06F 7/22](#) ; mixing of video signals [H04N 5/265](#)~~)
- WARNING**
For groups [G11B 27/022](#) to [G11B 27/038](#) , see provisionally also [G11B 27/02](#) , [G11B 27/029](#) and [G11B 27/036](#)
- U G11B 27/022
- • Electronic editing of analogue information signals, e.g. audio or video signals
- G11B 27/024
- • • on tapes (~~[G11B 27/028](#) , [G11B 27/029](#) take precedence~~)
- G11B 27/026
- • • on discs (~~[G11B 27/028](#) , [G11B 27/029](#) take precedence~~)
- U G11B 27/031
- • Electronic editing of digitised analogue information signals, e.g. audio or video signals
- G11B 27/032
- • • on tapes (~~[G11B 27/036](#) , [G11B 27/038](#) take precedence~~)
- G11B 27/034
- • • on discs (~~[G11B 27/036](#) , [G11B 27/038](#) take precedence~~)
- G11B 27/04
- • using differential drive of record carrier and head{ transferred to [G11B 15/1875](#)}
- G11B 27/06
- • Cutting and rejoining; Notching, or perforating record carriers otherwise than by recording styli (~~record carriers with provision for splicing [G11B 23/20](#)~~)
- U G11B 27/10
- Indexing; Addressing; Timing or synchronising; Measuring tape travel
- G11B 27/102
- • {Programmed access in sequence to addressed parts of tracks of operating record carriers (~~access by moving the head [G11B 3/08](#) , [G11B 5/54](#) , [G11B 7/085](#) , [G11B 21/022](#) ; by moving the record carrier [G11B 15/005](#) , [G11B 17/005](#) , by driving of both record carrier and head [G11B 15/1816](#)~~)}
- U G11B 27/11
- • by using information not detectable on the record carrier
- U G11B 27/13
- • • the information being derived from movement of the record carrier, e.g. using tachometer
- G11B 27/15
- • • • using mechanical sensing means{ see provisionally also [G11B 27/13](#)}
- G11B 27/17
- • • • using electrical sensing means{ see provisionally also [G11B 27/13](#)}
- U G11B 27/19
- • by using information detectable on the record carrier
- G11B 27/24
- • • by sensing features on the record carrier other than the transducing track (~~for controlling purposes [G11B 15/00](#) , [G11B 17/00](#)~~); {sensing signals or marks recorded by another method than the main recording}
- G11B 27/28
- • • by using information signals recorded by the same method as the main recording{ [G11B 27/22](#) takes precedence}
- G11B 27/34
- • Indicating arrangements (~~indicating measured values in general [G01D](#)~~) { indicating means incorporated in magazine or cassette [G11B 23/046](#) and [G11B 23/0875](#)}
- G11B 27/36
- Monitoring, i.e. supervising the progress of recording or reproducing{ for digital recording [G11B 20/00](#) and s.gr.; for monitoring, testing or measuring of TV recorders of the type covered by [H04N 5/76](#) and subgroups, see [H04N 17/06](#)}
- G11B 31/00**
- Arrangements for the associated working of recording or reproducing apparatus with related apparatus** (~~with cameras or projectors [G03B 31/00](#) ; { recording/reproducing of music for electrophonic musical instruments [G10H 1/0033](#) ; automatic arrangements for answering calls or for recording messages for absent subscribers [H04M 1/64](#) ; telephonic communication systems adapted for combination with dictation recording and playback systems [H04M 11/10](#) ; connection of TV recorder with other related apparatus, e.g. TV camera or receiver, in which the TV signal is significantly involved [H04N](#) , e.g. [H04N 5/225](#) , [H04N 5/765](#) ; combination of radio or TV with other apparatus, e.g. with vehicles [H05K 11/00](#) }~~)

- G11B 33/00** **Constructional parts, details or accessories not provided for in the preceding groups** **(-containers, packaging elements or packages specially adapted for record carriers [B65D 85/00](#)-)**
- G11B 33/02 · Cabinets; Cases; Stands; Disposition of apparatus therein or thereon **(-furniture aspects [A47B](#) , e.g. [A47B 81/06](#) ; { showing stands, hangers or shelves adapted for particular articles [A47F 7/00](#) ; albums for record carriers, e.g. discs [B42F 5/005](#) ; suspended filing appliances for record carriers, e.g. discs [B42F 15/0005](#) ; fastening devices for wings, e.g. covers [E05C](#) ; for holding wings in one or more opened positions [E05C 17/00](#) ; hinges [E05D](#) ; closers or openers of wings, e.g. with braking or counter-balancing devices [E05F](#))}**
- G11B 33/027 · {Covers **(-[G11B 33/022](#) takes precedence; with means for guiding the record carrier [G11B 17/34](#)-)}**
- G11B 33/04 · · modified to store record carriers **(-containers, storing means adapted for cooperation with the recording or reproducing apparatus [G11B 23/02](#)-)}**
- G11B 33/0405 · · · {for storing discs **(-anti-theft cases with locking means [E05B 73/0023](#)-)}**
- G11B 33/0411 · · · · {Single disc boxes **(-[G11B 33/0461](#) takes precedence-)}**
- G11B 33/0433 · · · · {Multiple disc containers **(-[G11B 33/0461](#) takes precedence-)}**
- G11B 33/10 · Indicating arrangements; Warning arrangements **(-[G11B 15/04](#) , [G11B 19/04](#) , [G11B 27/34](#) , [G11B 27/36](#) take precedence-)}**
- U G11B 33/14 · Reducing influence of physical parameters, e.g. temperature change, moisture, dust
- U G11B 33/1446 · · {Reducing contamination, e.g. by dust, debris}
- G11B 33/1466 · · · {sealing gaskets, **(-gasket in general [F16J](#)-)}**
- U G11B 2220/00** **Record carriers by type**
- G11B 2220/60 · Solid state media **(details of solid state memory devices [G11C](#))**
- G11B 2220/61 · · wherein solid state memory is used for storing A/V content **(storing computer data in solid state memories [G06F](#))**

Project: N/A (G11C)**G11C**

STATIC STORES **(-information storage based on relative movement between record carrier and transducer [G11B](#); semiconductor devices for storage [H01L](#), e.g. [H01L 27/108](#) to [H01L 27/115](#) ; pulse technique in general [H03K](#), e.g. electronic switches [H03K 17/00](#) ; { using a static store as a picture recording medium [H04N 5/907](#))}**

NOTE

This subclass covers devices or arrangements for storage of digital or analogue information in which no relative movement takes place between an information storage element and a transducer; which incorporate a selecting-device for writing-in or reading-out the information into or from the store

This subclass does not cover elements not adapted for storage and not provided with such means as referred to in Note (3) below, which elements are classified in the appropriate subclass, e.g. of [H01](#), [H03K](#).

In this subclass, the following terms are used with the meaning indicated:

- "storage element" is an element which can hold at least one item of information and is provided with means for writing-in or reading-out this information;

- "memory" is a device, including storage elements, which can hold information to be extracted when desired.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

G11C 8/02 covered by G11C 8/00
, H03K 17/00
G11C 11/4193 covered by
G11C 11/00
G11C 11/4195 covered by
G11C 11/00
G11C 11/4197 covered by
G11C 11/00

G11C 5/00

Details of stores covered by G11C 11/00

- G11C 5/005 • {Circuit means for protection against loss of information of semiconductor storage devices (-manufacturing semi-conductor by using bombardement with radiation H01L 21/26 ; error detection, monitoring G06F 11/00-)}
- U G11C 5/02 • Disposition of storage elements, e.g. in the form of a matrix array
- G11C 5/025 • • {Geometric lay-out considerations of storage- and peripheral-blocks in a semiconductor storage device (-geometrical lay-out of the components in integrated circuits, H01L 27/0207-)}
- G11C 5/14 • Power supply arrangements (-in general G05F , H02J , H02M-), {e.g. Power down/chip (de)selection, layout of wiring/power grids, multiple supply levels}
- G11C 5/141 • • {Battery and back-up supplies (-back-up supplies per se H02J 9/061-)}
- G11C 5/142 • • {Contactless power supplies, e.g. RF, induction, IR (-in general H02J 5/00-)}
- G11C 5/143 • • {Detection of memory cassette insertion/removal; Continuity checks of supply and ground lines (-in general G01R 31/02-); Detection of supply variations/ interruptions/levels (-G11C 5/148 takes precedence-); Switching between alternative supplies (-back-up supplies per se H02J 9/061-), (-G11C 5/141 takes precedence-)}
- G11C 5/145 • • {Applications of charge pumps (-charge pumps per se H02M 3/07-); Boosted voltage circuits (-for logic circuits or inverting circuits H03K 19/00-); Clamp circuits therefor (-G11C 5/141 takes precedence-)}
- G11C 5/146 • • • {Substrate bias generators (-G11C 5/141 takes precedence; in general G05F 3/205-)}
- G11C 5/147 • • {Voltage reference generators, voltage and current regulators (-in general G05F 3/24-); Internally lowered supply level (-in general G05F 1/462-); Compensation for voltage drops (-G11C 5/141 takes precedence-)}

G11C 7/00

Arrangements for writing information into, or reading information out from, a digital store (-G11C 5/00 takes precedence; auxiliary circuits for stores using semiconductor devices G11C 11/4063 , G11C 11/413 , G11C11/4193-)

- G11C 7/06 • Sense amplifiers; Associated circuits, {e.g. timing or triggering circuits} (-amplifiers per se H03F , H03K-)
- G11C 7/10 • Input/output (I/O) data interface arrangements, e.g. I/O data control circuits, I/O data buffers (-level conversion circuits in general H03K 19/0175-)
- U G11C 7/1015 • • {Read-write modes for single port memories, i.e. having either a random port or a serial port}
- G11C 7/103 • • • {using serially addressed read-write data registers (-G11C 7/1036 takes precedence-)}

- U G11C 7/1051
 - • {Data output circuits, e.g. read-out amplifiers, data output buffers, data output registers, data output level conversion circuits}
- G11C 7/1069
 - • • {I/O lines read out arrangements (-global or local sense amplifiers for bit lines [G11C 7/06](#)-)}
- G11C 8/00**

Arrangements for selecting an address in a digital store (-for stores using transistors [G11C 11/407](#) , [G11C 11/413](#) ; { switching or gating circuits for general use [H03K 17/00](#) })
- G11C 8/04
 - using a sequential addressing device, e.g. shift register, counter{(-~~FIFO [G06F 5/06](#) ; FIFO [G06F 5/06](#) ; LIFO [G06F 7/78](#) ; multidimensional memory addressing [G06F 12/0207](#)-)}~~
- G11C 8/06
 - Address interface arrangements, e.g. address buffers{(-level conversion circuits in general [H03K 19/0175](#)-)}
- G11C 8/16
 - Multiple access memory array, e.g. addressing one storage element via at least independent addressing line groups{(-multiport memories in general [G11C 7/1075](#)-)}
- G11C 11/00**

Digital stores characterised by the use of particular electric or magnetic storage elements; Storage elements therefor (-[G11C 14/00](#) to [G11C 21/00](#) take precedence-)
- G11C 11/02
 - using magnetic elements{(-using multibit magnetic storage elements [G11C 11/5607](#) ; counters with magnetic elements [H03K 23/76](#) ; pulse generators, static switches, logic circuits with such elements [H03K 3/45](#) , [H03K 17/80](#) , [H03K 19/16](#) ; measurement of magnetic variables [G01R 33/00](#)-)}
- G11C 11/04
 - • using rod-type storage elements{ contains no documents; see [G11C 11/06085](#) , [G11C 11/14](#) , [G11C 11/155](#)-}
- U G11C 11/06
 - • using single-aperture storage elements, e.g. ring core; using multi-aperture plates in which each individual aperture forms a storage element
- G11C 11/06085
 - • • {Multi-aperture structures or multi-magnetic closed circuits, each aperture storing a "bit", realised by rods, plates, grids, waffle-irons, (i.e. [grooved plates](#)) or similar devices}(i.e. ~~grooved plates~~ or similar devices}
- G11C 11/061
 - • • using element with single aperture or magnetic loop for storage, one element per bit, and for destructive read-out{ contains no documents, see [G11C 11/06007](#) , [G11C 11/06014](#) , [G11C 11/06021](#) , [G11C 11/06028](#)-}
- G11C 11/063
 - • • bit organised, such as 2 1/2D, 3D organisation, i.e. for selection of an element by means of at least two coincident parital currents both for reading and for writing{ contains no documents; see [G11C 11/06035](#)-}
- G11C 11/065
 - • • word organised, such as 2D organisation, or linear selection, i.e. for selection of all the elements of a word by means of a single full current for reading{ contains no documents; see [G11C 11/06042](#)-}
- G11C 11/067
 - • • using elements with single aperture or magnetic loop for storage, one element per bit, and for non-destructive read-out{ contains no documents, see [G11C 11/0605](#) to [G11C 11/06071](#)-}
- G11C 11/08
 - • using multi-aperture storage elements, e.g. using transfluxors; using plates incorporating several individual multi-aperture storage elements (-[G11C 11/10](#) takes precedence; using multi-aperture plates in which each individual aperture forms a storage element [G11C 11/06](#)-)
- U G11C 11/14
 - • using thin-film elements
- G11C 11/15
 - • • using multiple magnetic layers (-[G11C 11/155](#) takes precedence-)
- G11C 11/16
 - • using elements in which the storage effect is based on magnetic spin effect{(-sensors using magnetoresistive multilayer structures [G01R 33/093](#) ; thin layer magnetic read heads for magnetic discs [G11B 5/31](#) ; non-reciprocal magnetic elements in waveguides [H01P](#); composition of ferromagnetic material [H01F 1/00](#) ; gyrators [H03H 7/002](#)-)}

- G11C 11/19
 - using non-linear reactive devices in resonant circuits{ contains no documents, see [G11C 11/20](#)-}
- G11C 11/20
 - • using parametrons,{i.e. ferroresonant triggers; with overcritical feedback magnetic amplifiers or similar (-pulse generators using parametrons and ferroresonant devices [H03K 19/162](#) , [H03K 19/164](#) ; counters using such elements [H03K 23/001](#)-)}
- U G11C 11/21
 - using electric elements
- G11C 11/22
 - • using ferroelectric elements{(-using multibit ferroelectric storage elements [G11C 11/5657](#) ; pulse generators using ferroelectric elements [H03K 3/45](#) ; counters using such elements [H03K 23/76](#)-)}
- G11C 11/23
 - • using electrostatic storage on a common layer, e.g. Forrester-Haef tubes, {William tubes} (-[G11C 11/22](#) takes precedence; { construction of Williams tubes [H01J 31/00](#) })
- G11C 11/24
 - • using capacitors (-[G11C 11/22](#) takes precedence; using a combination of semiconductor devices and capacitors [G11C 11/34](#) , e.g. [G11C 11/40](#)-)
- G11C 11/26
 - • using discharge tubes{(-counters using such elements [H03K 25/00](#)-)}
- G11C 11/265
 - • • {counting tubes, e.g. decatrons, trochotrons (-counters using such elements [H03K 29/00](#)-)}
- G11C 11/28
 - • • using gas-filled tubes{ counting tubes [G11C 11/265](#) ; pulse generators, electronic switches, logic circuits using such elements [H03K 3/37](#) , [H03K 17/52](#) , [H03K 19/04](#)-}
- G11C 11/30
 - • • using vacuum tubes{ counting tubes [G11C 11/265](#) ; pulse generators, electronic switches, logic circuits using such elements [H03K 3/37](#) , [H03K 17/52](#) , [H03K 19/04](#)-}
- G11C 11/34
 - • using semiconductor devices{(-processes or apparatus for the manufacture or treatment of semiconductor or solid state devices [H01L 21/00](#) ; integrated circuit devices [H01L 27/00](#) ; generating electric pulses, e.g. bistable devices using semiconductor devices [H03K 3/00](#)-)}
- G11C 11/35
 - • • with charge storage in a depletion layer, e.g. charged coupled devices{(-in shift registers [G11C 19/282](#)-)}
- G11C 11/39
 - • • using thyristors {or the avalanche or negative resistance type, e.g. PNPN, SCR, SCS, UJT}
- U G11C 11/40
 - • • using transistors
- U G11C 11/401
 - • • • forming cells needing refreshing or charge regeneration,{i.e. dynamic cells}
- U G11C 11/4063
 - • • • • Auxiliary circuits, e.g. for addressing, decoding, driving, writing, sensing or timing
- U G11C 11/407
 - • • • • for memory cells of the field-effect type
- G11C 11/4076
 - • • • • • Timing circuits (-for regeneration management [G11C 11/406](#)-)
- G11C 11/4078
 - • • • • • Safety or protection circuits, e.g. for preventing inadvertent or unauthorised reading or writing; Status cells; Test cells (-protection of memory contents during checking or testing [G11C 29/52](#)-)
- U G11C 11/409
 - • • • • • Read-write (R-W) circuits
- G11C 11/4093
 - • • • • • Input/output (I/O) data interface arrangements, e.g. data buffers (-level conversion circuits in general [H03K 19/0175](#)-)
- G11C 11/41
 - • • • forming {static}cells with positive feedback, i.e. cells not needing refreshing or charge regeneration, e.g. bistable multivibrator or Schmitt trigger
- G11C 11/412
 - • • • • using field-effect transistors only{(-latent image memory [G11C 7/20](#) ; multi-port cells [G11C8/160](#)-)}

- G11C 11/4125 {Cells incorporating circuit means for protection against loss of information (-in general [G11C 5/005](#)-)}
- G11C 11/413 Auxiliary circuits, e.g. for addressing, decoding, driving, writing, sensing, timing, power reduction (-in general [G11C 5/00](#) to [G11C 8/00](#)-)
- G11C 11/44 using super-conductive elements, e.g. cryotron{(-pulse generators using such elements [H03K 3/38](#) ; counters [H03K 23/001](#)-)}
- G11C 11/48 using displaceable coupling elements, e.g. ferromagnetic cores, to produce change between different states of mutual or self-inductance{ contains no documents; see [G11C 17/00](#) and subgroups }
- G11C 11/50 using actuation of electric contacts to store the information (-mechanical stores [G11C 23/00](#) ; switches providing a selected number of consecutive operations of the contacts by a single manual actuation of the operating part [H01H 41/00](#)-)
- G11C 11/56 using storage elements with more than two stable states represented by steps, e.g. of voltage, current, phase, frequency (-counting arrangements comprising multi-stable elements of this type [H03K 25/00](#) , [H03K 29/00](#)-)
- G11C 11/5614 {using conductive bridging RAM [CBRAM]} or programming metallization cells [PMC]}
- G11C 13/00** **Digital stores characterised by the use of storage elements not covered by groups [G11C 11/00](#) , [G11C 23/00](#) to [G11C 25/00](#)**
- G11C 13/0002 {using resistance random access memory [RRAM]} elements]}
- U G11C 13/0009 {RRAM elements whose operation depends upon chemical change}
- G11C 13/0011 {comprising conductive bridging RAM [CBRAM]} or programming metallization cells [PMCs]}
- G11C 13/02 using elements whose operation depends upon chemical change{{(-[G11C 13/0009](#) takes precedence-)}; -using electrochemical charge [G11C 11/00](#)
- G11C 13/04 using optical elements {using other beam accessed elements, e.g. electron, ion beam (-using electrostatic memory tubes [G11C 11/23](#) ; recording of television signals [H04N 5/76](#)-)}
- G11C 13/041 {using photochromic storage elements} (-[G11C 13/042](#) takes precedence-)}
- G11C 13/042 {using information stored in the form of an interference pattern (-hologram, lippman; holography [G03H](#) , [G02B 5/32](#)-)}
- G11C 13/047 {using electro-optical elements (-[G11C 13/042](#) takes precedence-)}
- G11C 13/06 using magneto-optical elements (-magneto-optics in general [G02F](#)-){ [G11C 13/042](#) takes precedence }
- G11C 14/00** **Digital stores characterised by arrangements of cells having volatile and non-volatile storage properties for back-up when the power is down{ bistable elements storing the actual state when the supply voltage fails [H03K 3/02335](#) , [H03K 3/0375](#) , [H03K 3/2865](#) , [H03K 3/356008](#) }**
- U G11C 14/0009 {in which the volatile element is a DRAM cell}
- G11C 14/0036 {and the nonvolatile element is a magnetic RAM [MRAM]} element or ferromagnetic cell]}
- U G11C 14/0054 {in which the volatile element is a SRAM cell}
- G11C 14/0081 {and the nonvolatile element is a magnetic RAM [MRAM]} element or ferromagnetic cell]}

- G11C 15/00** Digital stores in which information comprising one or more characteristic parts is written into the store and in which information is read-out by searching for one or more of these characteristic parts, i.e. associative or content-addressed stores (in which information is addressed to a specific location [G11C 11/00](#) ; { selection information using addressing means, e.g. hashing, tree addressing, chaining [G06F 11/22](#) ; information retrieval systems using a computer [G06F 17/30](#) })
- G11C 16/00** Erasable programmable read-only memories (G11C 14/00 takes precedence)
- G11C 16/02
- electrically programmable (programmable multibit digital storage elements [G11C 11/5621](#))
- U G11C 16/04
- • using variable threshold transistors, e.g. FAMOS
- G11C 16/0408
- • • {comprising cells containing floating gate transistors (G11C 16/0483 , [G11C 16/0491](#) take precedence)}
- U G11C 16/0441
- • • • {comprising cells containing multiple floating gate devices, e.g. separate read-and-write FAMOS transistors with connected floating gates}
- G11C 16/0458
- • • • • {comprising plural independent floating gates which store independent data (for storage of more than two stable states at a single floating gate [G11C 11/5621](#))}
- G11C 16/0466
- • • {comprising cells with charge storage in an insulating layer, e.g. MNOS, SNOS (G11C 16/0483 , [G11C 16/0491](#) take precedence)}
- G11C 16/0475
- • • • {comprising plural independent storage sites which store independent data (for storage of more than two stable states at a single storage site [G11C 11/5621](#))}
- G11C 16/06
- • Auxiliary circuits, e.g. for writing into memory (in general [G11C 7/00](#))
- G11C 17/00** Read-only memories programmable only once; Semi-permanent stores, e.g. manually-replaceable information cards ({ multibit read-only memories [G11C 11/5692](#) ; } erasable programmable read-only memories [G11C 16/00](#) ; coding, decoding or code conversion, in general [H03M](#); { combination of ROM and RAM [G11C 11/005](#) , [G11C 14/00](#) ; for electrical control of combustion engines [F02D 41/2406](#) })
- G11C 17/005
- {with a storage element common to a large number of data, e.g. perforated card (G11C 17/02 , [G11C 17/04](#) take precedence)}
- G11C 17/02
- using magnetic or induction elements (G11C 17/14 takes precedence)
- G11C 17/04
- using capacitive elements (G11C 17/06 , [G11C 17/14](#) take precedence)
- G11C 17/06
- using diode elements (G11C 17/14 takes precedence)
- G11C 17/08
- using semiconductor devices, e.g. bipolar elements (G11C 17/06 , [G11C 17/14](#) take precedence)
- U G11C 17/14
- in which contents are determined by selectively establishing, breaking or modifying connecting links by permanently altering the state of coupling elements, e.g. PROM
- U G11C 17/16
- • using electrically-fusible links
- G11C 17/165
- • • {Memory cells which are electrically programmed to cause a change in resistance, e.g. to permit multiple resistance steps to be programmed rather than conduct to or from non-conduct change of fuses and antifuses (digital stores using resistance random access memory elements [G11C 13/0002](#))}
- G11C 17/18
- • Auxiliary circuits, e.g. for writing into memory (in general [G11C 7/00](#))

- G11C 19/00** Digital stores in which the information is moved stepwise, e.g. shift register ~~(-counting chains [H03K 23/00](#)-){stack stores, push-down stores (-linear pulse counters [H03K 23/54](#) , pulse distributors [H03K 5/15](#) , methods and arrangements for shifting data [G06F 5/01](#)-)}~~
- G11C 19/02 • using magnetic elements ~~(-[G11C 19/14](#) takes precedence-)~~
- G11C 19/06 • • using structures with a number of apertures or magnetic loops, e.g. transfluxors {laddic}
- G11C 19/08 • • using thin films in plane structure{ thin magnetic films and apparatus or processes specially adapted for manufacturing or assembling the same [H01F 10/00](#) , [H01F 41/14](#)-}
- G11C 19/085 • • • {Generating magnetic fields therefor, e.g. uniform magnetic field for magnetic domain stabilisation ~~(-coil construction [H01F 5/00](#) ; electromagnets [H01F 7/06](#)-)}~~
- G11C 19/0858 • • • {Generating, replicating or annihilating magnetic domains *(also comprising different types of magnetic domains, e.g. "Hard Bubbles")*~~(also comprising different types of magnetic domains, e.g. "Hard Bubbles")~~~~(-[G11C 19/0866](#) takes precedence-)}~~
- G11C 19/0866 • • • {Detecting magnetic domains ~~(-measuring or detecting magnetic fields in general [G01R 33/02](#)-)}~~
- G11C 19/0875 • • • {Organisation of a plurality of magnetic shift registers ~~(-FIFO [G06F 5/06](#) ; FIFO [G06F 5/06](#) ; LIFO [G06F 7/78](#)-)}~~
- G11C 19/0883 • • • • {-Means for switching magnetic domains from one path into another path, i.e. transfer switches, swap gates, decoders logic circuits using magnetic domains [H03K 19/168](#)-}
- G11C 19/14 • using magnetic elements in combination with active elements, e.g. discharge tubes, semiconductor elements{ contains no documents, see provisionally [G11C 19/02](#) to [G11C 19/10](#)-}
- G11C 19/18 • using capacitors as main elements of the stages{ if capacitors are used as auxiliary stage in between main stages with other elements, the latter take precedence; [G11C 19/005](#) takes precedence-}
- U G11C 19/182 • • {in combination with semiconductor elements, e.g. bipolar transistors, diodes}
- G11C 19/188 • • • {Organisation of a multiplicity of shift registers, e.g. regeneration, timing, input-output circuits ~~(-FIFO [G06F 5/06](#) ; FIFO [G06F 5/06](#) ; LIFO [G06F 7/78](#)-)}~~
- G11C 19/20 • using discharge tubes ~~(-[G11C 19/14](#) takes precedence-)~~
- G11C 19/202 • • {with vacuum tubes ~~(-[G11C 19/207](#) takes precedence-)}~~
- G11C 19/205 • • {with gas-filled tubes ~~(-[G11C 19/207](#) takes precedence-)}~~
- G11C 19/28 • using semiconductor elements ~~(-[G11C 19/14](#) takes precedence-)~~
- G11C 19/287 • • {Organisation of a multiplicity of shift registers ~~(-FIFO [G06F 5/06](#) ; FIFO [G06F 5/06](#) ; LIFO [G06F 7/78](#)-)}~~
- G11C 19/34 • using storage elements with more than two stable states represented by steps, e.g. of voltage, current, phase, frequency{(in RAM multistable cells [G11C 11/56](#) ; in capacitive analog stores [G11C 27/04](#)-)}
- G11C 19/36 • • using {multistable}semiconductor elements
- G11C 21/00** Digital stores in which the information circulates {continuously}~~(-stepwise [G11C 19/00](#)-)~~
- G11C 21/005 • {using electrical delay line ~~(-construction of such lines [H03H 7/30](#) , [H03H 11/26](#)-)}~~
- G11C 21/02 • using electromechanical delay lines, e.g. using a mercury tank{ construction of such lines [H03H 9/00](#)-}

G11C 23/00	Digital stores characterised by movement of mechanical parts to effect storage, e.g. using balls; Storage elements therefor (storing by actuating contacts G11C 11/50)
G11C 25/00	Digital stores characterised by the use of flowing media; Storage elements therefor{(multiple fluid-circuit element arrangements for performing digital operations F15C 1/12-)}
G11C 27/00	Electric analogue stores, e.g. for storing instantaneous values{(integrating circuits acting as stores G06G 7/18 ; pulse counters with step by step integration and static storage H03K 25/00-)}
G11C 27/02	• Sample-and-hold arrangements (G11C 27/04 takes precedence; sampling electrical signals, in general H03K -)
G11C 27/024	• • {using a capacitive memory element (G11C 27/04 takes precedence-)}
G11C 27/026	• • • {associated with an amplifier (G11C 27/028 takes precedence-)}
G11C 27/04	• Shift registers (charge coupled devices per se H01L 29/76 -)
G11C 29/00	Checking stores for correct operation; {Subsequent repair}; Testing stores during standby or offline operation{(testing of electronic circuits in general G01R 31/28 ; error detection or error correction in computer memories during normal operation G06F 11/1008 , G06F 11/1666 ; testing of computers during standby G06F 11/22-)}
	<u>WARNING</u>
	Groups G11C 29/70 to G11C 29/886 do not correspond to former or current IPC groups.
	Concordance CPC : IPC for these groups is the following: - G11C 29/70 - G11C 29/886 : G11C 29/00
G11C 29/006	• {at wafer scale level, i.e. WSI (for test and configuration during manufacture H01L 22/00 -)}
U G11C 29/04	• Detection or location of defective memory elements,{e.g. cell construction details, timing of test signals}
U G11C 29/08	• • Functional testing, e.g. testing during refresh, power-on self testing (POST) or distributed testing
U G11C 29/12	• • • Built-in arrangements for testing, e.g. built-in self testing (BIST){or interconnection details}
U G11C 29/18	• • • • Address generation devices; Devices for accessing memories, e.g. details of addressing circuits
G11C 29/26	• • • • • Accessing multiple arrays (G11C 29/24 takes precedence-)
G11C 29/48	• • • Arrangements in static stores specially adapted for testing by means external to the store, e.g. using direct memory access [DMA] or using auxiliary access paths (external testing equipment G11C 29/56 -)
U G11C 29/70	• {Masking faults in memories by using spares or by reconfiguring}
U G11C 29/78	• • {using programmable devices}
U G11C 29/785	• • • {with redundancy programming schemes}
G11C 29/787	• • • • {using a fuse hierarchy (for memories using fuses in general G11C 17/16 -)}
G11C 29/789	• • • • • {using non-volatile cells or latches (erasable programmable memory cells in general G11C 16/00 -)}
U G11C 2207/00	Indexing scheme relating to arrangements for writing information into, or reading information out from, a digital store
G11C 2207/16	• Solid state audio (deprecated, only for historical reasons, G06F 3/16 , G11B -)

- U G11C 2207/22 · Control and timing of internal memory operations
- G11C 2207/2209 · · Concurrent read and write (for multi-port memory [G11C 7/1075](#))
- G11C 2207/2281 · · Timing of a read operation (sense amplifier timing [G11C 7/06](#) , [G11C 7/08](#))
- G11C 2207/229 · · Timing of a write operation (sense amplifier timing [G11C 7/06](#) , [G11C 7/08](#))
- U G11C 2211/00 Indexing scheme relating to digital stores characterized by the use of particular electric or magnetic storage elements; Storage elements therefor**
- G11C 2211/56 · Indexing scheme relating to [G11C 11/56](#) and sub-groups for features not covered by these groups
- G11C 2213/00 Indexing scheme relating to [G11C 13/00](#) for features not covered by this group**
- G11C 2216/00 Indexing scheme relating to [G11C 16/00](#) and subgroups, for features not directly covered by these groups**
- U G11C 2229/00 Indexing scheme relating to checking stores for correct operation, subsequent repair or testing stores during standby or offline operation**
- G11C 2229/70 · Indexing scheme relating to [G11C 29/70](#) , for implementation aspects of redundancy repair

Project: N/A (G21B)

- U G21B 1/00 Thermonuclear fusion reactors**
- U G21B 1/05 · with magnetic or electric plasma confinement
- G21B 1/052 · · {reversed field configuration}
- G21B 1/055 · · {Stellarators}
- G21B 1/057 · · {Tokamaks}
- U G21B 1/11 · Details
- G21B 1/115 · · {Tritium recovery}
- U G21B 3/00 Low temperature nuclear fusion reactors, e.g. alleged cold fusion reactors**
- G21B 3/002 · {Fusion by absorption in a matrix}
- G21B 3/004 · {Catalyzed fusion, e.g. muon-catalyzed fusion}
- G21B 3/006 · {Fusion by impact, e.g. cluster/beam interaction, ion beam collisions, impact on a target}
- G21B 3/008 · {Fusion by pressure waves}

Project: N/A (G21C)

- U G21C 1/00 Reactors**
- U G21C 1/02 · Fast fission reactors, i.e. reactors not using a moderator; { Metal cooled reactors; Fast breeders}
- U G21C 1/022 · · {Characterised by the concept and properties of the core}
- G21C 1/026 · · · {Reactors not needing refueling, i.e. reactors of the type breed-and-burn, e.g. travelling or deflagration wave reactors or seed-blanket reactors}
- U G21C 1/32 · Integral reactors, i.e. reactors wherein parts functionally associated with the reactor but not essential to the reaction, e.g. heat exchangers, are disposed inside the enclosure with the core ([G21C 1/02](#) to [G21C 1/30](#) take precedence)
- G21C 1/322 · · {wherein the heat exchanger is disposed above the core}
- G21C 1/324 · · {wherein the heat exchanger is disposed beneath the core}
- G21C 1/326 · · {wherein the heat exchanger is disposed next to or beside the core}
- G21C 1/328 · · {wherein the prime mover is also disposed in the vessel}

- U G21C 3/00 Reactor fuel elements and their assemblies; Selection of substances for use as reactor fuel elements**
- U G21C 3/30 · Assemblies of a number of fuel elements in the form of a rigid unit
 - U G21C 3/32 · · Bundles of parallel pin-, rod-, or tube-shaped fuel elements
 - U G21C 3/33 · · · Supporting or hanging of elements in the bundle (spacer grids [G21C 3/34](#)); Means forming part of the bundle for inserting it into, or removing it from, the core; Means for coupling adjacent bundles
 - G21C 3/3305 · · · · {-Lower nozzle}
 - G21C 3/331 · · · · {-Comprising hold-down means, e.g. springs}
 - G21C 3/3315 · · · · {-Upper nozzle}
 - G21C 3/40 · Structural combination of fuel element with thermoelectric element for direct production of electric energy from fission heat (for temperature measurement [G21C 17/10](#)) { or with another arrangement for direct production of electric energy, e.g. a thermionic device- (combination with thermoelements for temperature measurements [G21C 17/102](#)) }
- U G21C 15/00 Cooling arrangements within the pressure vessel containing the core; Selection of specific coolants**
- G21C 15/02 · Arrangements or disposition of passages in which heat is transferred to the coolant; {Coolant flow control devices- ([G21C 19/04](#) takes precedence; coolant flow control through fuel assemblies, e.g. flow restrictors [G21C 3/322](#)) }
 - G21C 15/28 · Selection of specific coolants (if serving as the moderator [G21C 5/12](#); compositions per se [C09K 5/00](#); {organic coolants [G21C 5/123](#)}); {Additions to the reactor coolants, e.g. against moderator corrosion- (purification and regeneration of the reactor coolants [G21C 19/30](#)) }
- U G21C 17/00 Monitoring; Testing (measuring in general [G01](#)); { Maintaining}**
- U G21C 17/02 · Devices or arrangements for monitoring coolant or moderator
 - U G21C 17/022 · · for monitoring liquid coolants or moderators
 - G21C 17/0225 · · · {-Chemical surface treatment, e.g. corrosion (corrosion prevention in presence of water from scale removal or by modification of the properties of the liquid [C02F 5/00](#); inhibiting corrosion by adding corrosion inhibitors [C23F 11/00](#)) }
- U G21C 19/00 Arrangements for treating, for handling, or for facilitating the handling of, fuel or other materials which are used within the reactor, e.g. within its pressure vessel**
- U G21C 19/20 · Arrangements for introducing objects into the pressure vessel; Arrangements for handling objects within the pressure vessel; Arrangements for removing objects from the pressure vessel
 - G21C 19/207 · · {-Assembling, maintenance or repair of reactor components ([G21C 3/334](#) takes precedence)}
 - U G21C 19/28 · Arrangements for introducing fluent material into the reactor core; Arrangements for removing fluent material from the reactor core (pumping coolant [G21D](#))
 - G21C 19/30 · · with continuous purification of circulating fluent material, e.g. by extraction of fission products {deterioration or corrosion products, impurities, e.g. by cold traps- (purification of circulating fluid fuels [G21C 19/50](#); separation in general [B01D](#)) }

Project: N/A (G21D)

- U G21D 1/00 Details of nuclear power plant (control [G21D 3/00](#))**

- G21D 1/006 · {-primary side of steam generators (secondary side of steam generators [F22B 1/00](#), [F22B 35/00](#) or [F22B 37/00](#))}
- G21D 1/04 · Pumping arrangements (within the reactor pressure vessel [G21C 15/24](#); electrodynamic pumps [H02K 44/02](#))

U G21D 3/00 Control of nuclear power plant (control of nuclear reaction in general [G21C 7/00](#))

- G21D 3/001 · {-Computer implemented control}

Project: N/A (G21F)

U G21F 5/00 Transportable or portable shielded containers

- U G21F 5/06 · Details of, or accessories to, the containers
- G21F 5/14 · · Devices for handling containers or shipping-casks, e.g. transporting devices {loading and unloading, filling of containers-(Cranes, load-engaging elements or devices for cranes, capstans, winches or tackles [B66C](#))}

Project: N/A (G21G)

U G21G 1/00 Arrangements for converting chemical elements by electromagnetic radiation, corpuscular radiation or particle bombardment, e.g. producing radioactive isotopes (separation of different isotopes of the same element [B01D 59/00](#))

- G21G 1/0005 · {-Isotope delivery systems (use of radioisotopes as tracers [G21H 5/02](#))}
- G21G 1/001 · {-Recovery of specific isotopes from irradiated targets}

Project: N/A (G21K)

G21K 1/00 Arrangements for handling particles or ionizing radiation, e.g. focusing or moderating (-production or acceleration of neutrons, electrically-charged particles, neutral molecular beams or neutral atomic beams [H05H 3/00](#) - [H05H 15/00](#)-)

- G21K 1/003 · {Manipulation of charged particles by using radiation pressure, e.g. optical levitation (-acceleration of charged particles [H05H 5/00](#) , [H05H 7/00](#) , [H05H 9/00](#) , [H05H 11/00](#) , [H05H 13/00](#)-)}
- G21K 1/006 · {Manipulation of neutral particles by using radiation pressure, e.g. optical levitation (-production or acceleration of neutral particles [H05H 3/00](#)-)}
- G21K 1/06 · using diffraction, refraction or reflection, e.g. monochromators (-[G21K 1/10](#) , [G21K 7/00](#) take precedence-)
- G21K 1/067 · · {using surface reflection, e.g. grazing incidence mirrors, gratings (-multilayer mirrors [G21K 1/062](#) ; crystal optics [G21K 1/06](#)-)}
- G21K 1/08 · Deviation, concentration or focusing of the beam by electric or magnetic means (-electron-optical arrangements in electric discharge tubes [H01J 29/46](#) ; { details, e.g. electric or magnetic deviating means for direct voltage accelerators or in accelerators using single pulses [H05H 5/02](#) ; arrangements for injecting particles into orbits [H05H 7/08](#) ; arrangements for ejecting particles from orbits [H05H 7/10](#) })
- U G21K 1/10 · Scattering devices; Absorbing devices; Ionising radiation filters
- G21K 1/12 · · Resonant absorbers or driving arrangements therefor, e.g. for Moessbauer-effect devices{-motors with reciprocating, oscillating or vibrating magnet, armature or coil system in general [H02K 33/00](#)-)}
- G21K 1/14 · using charge exchange devices, e.g. for neutralising or changing the sign of the electrical charges of beams (-producing or accelerating neutral particle beams [H05H 3/00](#)-)

G21K 1/16 · using polarising devices, e.g. for obtaining a polarised beam (ion sources, ion guns [H01J 27/02](#) ; polarised targets for producing nuclear reactions [H05H 6/005](#))}

G21K 4/00 **Conversion screens for the conversion of the spatial distribution of X-rays or particle radiation into visible images, e.g. fluoroscopic screens** (photographic processes using X-ray intensifiers [G03C 5/17](#) ; discharge tubes comprising luminescent screens [H01J 1/62](#) ; cathode ray tubes for X-ray conversion with optical output [H01J 31/50](#))}

G21K 5/00 **Irradiation devices** (discharge tubes for irradiating [H01J 37/00](#))}

Project: N/A (G21Y)

U G21Y 2002/00

PROBLEM

G21Y 2002/204

· Imprecision (*measuring, positioning, guiding*) (~~measuring, positioning, guiding~~)

Project: N/A (H01F)

H01F

MAGNETS; INDUCTANCES; TRANSFORMERS; SELECTION OF MATERIALS FOR THEIR MAGNETIC PROPERTIES (ceramics based on ferrites [C04B 35/26](#) ; alloys [C22C](#) ; {construction of loading coils [H01B](#) } ; thermomagnetic devices [H01L 37/00](#) ; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#))}

NOTE

In this subclass, inductances and transformers are regarded as being "for power supply" if they are intended for this purpose even in systems operating at frequencies above 60 cycles/sec.

U H01F 1/00

Magnets or magnetic bodies characterised by the magnetic materials therefor; Selection of materials for their magnetic properties

H01F 1/0009

· {Antiferromagnetic materials, i.e. materials exhibiting a Néel transition temperature (H01F 1/0036 takes precedence)}

WARNING

This groups is not complete pending the completion of reclassification; see provisionally also [H01F 1/00](#) - [H01F 1/447](#)

H01F 1/0018

· {Diamagnetic or paramagnetic materials, i.e. materials with low susceptibility and no hysteresis (H01F 1/0036 takes precedence)}

H01F 1/0027

· {Thick magnetic films (forming thick magnetic films [H01F 41/16](#) ; magnetic record carriers [G11B 5/70](#))}

NOTE

Group [H01F 1/0036](#) takes precedence over groups [H01F 1/09](#) , [H01F 1/11](#) , [H01F 1/20](#) , [H01F 1/33](#) and [H01F 1/36](#)

H01F 1/0036

· {showing low dimensional magnetism, i.e. spin rearrangements due to a restriction of dimensions, e.g. showing giant magnetoresistivity, (H01F 1/153 , [H01F 1/42](#) and [H01F 10/00](#) take precedence; magnetoresistive sensors [G01D 5/16](#) , [G01R 33/06](#) ; magnetoresistive recording [G11B 5/39](#) ; magnetic-field-controlled resistors [H01L 43/08](#))}

H01F 1/0045

· · {Zero dimensional, e.g. nanoparticles, soft nanoparticles for medical/ biological use (preparation of fullerenes in general [C01B 31/0206](#))}

H01F 1/0063

· · · {in a non-magnetic matrix, e.g. granular solids (granular films [H01F 10/007](#))}

- H01F 1/009
 - • {bidimensional, e.g. nanoscale period nanomagnet arrays ([H01F 10/007](#) takes precedence-)}
 - H01F 1/01
 - of inorganic materials ([H01F 1/44](#) takes precedence-)
 - H01F 1/012
 - • {adapted for magnetic entropy change by magnetocaloric effect, e.g. used as magnetic refrigerating material ([refrigeration systems using magnetic effects F25B 21/00-](#))}
 - H01F 1/03
 - • characterised by their coercivity([H01F 1/40](#) takes precedence-)}
 - U H01F 1/0302
 - • • {characterised by unspecified or heterogeneous hardness or specially adapted for magnetic hardness transitions}
 - H01F 1/0304
 - • • • {adapted for large Barkhausen jumps or domain wall rotations, e.g. WIEGAND or MATTEUCCI effect ([H01F 1/143](#) and [H01F 1/15391](#) take precedence-)}
 - H01F 1/0306
 - • • • {Metals or alloys, e.g. LAVES phase alloys of the $MgCu_2$ -type ([H01F 1/0304](#) takes precedence-)}
 - H01F 1/0311
 - • • • {Compounds ([H01F 1/0304](#) takes precedence-)}
 - U H01F 1/032
 - • • of hard-magnetic materials
 - U H01F 1/04
 - • • • Metals or alloys
 - H01F 1/06
 - • • • • in the form of particles, e.g. powder ([H01F 1/047](#) takes precedence; { record carriers [G11B 5/70605](#) })
 - H01F 1/068
 - • • • • {having a L10 crystallographic structure, e.g. $[Co,Fe]_{10}[Pt,Pd]$ (nano)particles}
- WARNING
This groups is not complete pending the completion of reclassification; see provisionally also [H01F 1/06](#) - [H01F 1/066](#)
- H01F 1/10
 - • • • Non-metallic substances, e.g. ferrites {e.g. $[(Ba,Sr)O(Fe_2O_3)_6]$ ferrites with hexagonal structure}
 - H01F 1/11
 - • • • • in the form of particles({for magnetic record carriers [G11B 5/70626-](#))}
 - H01F 1/112
 - • • • • • {with a skin ([H01F 1/113](#) takes precedence-)}
 - U H01F 1/12
 - • • of soft-magnetic materials
 - U H01F 1/14
 - • • • Metals or alloys
 - H01F 1/143
 - • • • • {in the form of wires ([H01F 1/147](#) takes precedence-)}
 - H01F 1/147
 - • • • • Alloys characterised by their composition({-treatment thereof for enhancing their electromagnetic properties [C21D 8/12-](#))}
- NOTE
In groups [H01F 1/14708](#) to [H01F 1/15391](#) , an alloy is classified in the last appropriate place
- H01F 1/14708
 - • • • • • {Fe-Ni based alloys ({-pure Fe or Ni [H01F 1/14](#) , [H01F 1/16](#) or [H01F 1/20-](#))}
 - H01F 1/153
 - • • • • • Amorphous metallic alloys, e.g. glassy metals({-making ferrous amorphous alloys [C22C 33/003-](#))}
 - H01F 1/15308
 - • • • • • • {based on Fe/Ni ([H01F 1/15325](#) takes precedence-)}
 - H01F 1/15316
 - • • • • • • {based on Co ([H01F 1/15325](#) takes precedence-)}
 - H01F 1/15383
 - • • • • • • {Applying coatings thereon ([H01F 1/15366](#) takes precedence-)}
 - H01F 1/16
 - • • • • in the form of sheets ([H01F 1/147](#) takes precedence-)
 - H01F 1/20
 - • • • • in the form of particles, e.g. powder ([H01F 1/147](#) takes precedence-)
 - U H01F 1/34
 - • • • Non-metallic substances, e.g. ferrites
 - H01F 1/342
 - • • • • {Oxides ([H01F 1/36](#) and [H01F 1/38](#) take precedence-)}

- U H01F 1/344 {Ferrites, e.g. having a cubic spinel structure (X₂O)(Y₂₃+O₃); e.g. magnetite Fe₃O₄}
- H01F 1/346 [(TO₄)₃] with T= Si, Al, Fe, Ga (~~H01F 10/24~~ takes precedence; Faraday rotators [G02F 1/09](#)-)
- H01F 1/36 in the form of particles(~~H01F 1/346~~ , [H01F 1/348](#) and [H01F 1/38](#) take precedence-)
- H01F 1/40 . . of magnetic semiconductor materials, e.g. CdCr₂S₄(-devices using galvanomagnetic or similar effects [H01L 43/00](#)-)
- H01F 1/408 . . . {half-metallic, i.e. having only one electronic spin direction at the Fermi level, e.g. CrO₂, Heusler alloys (~~H01F 10/1936~~ takes precedence-)}
- H01F 1/42 . of organic or organo-metallic materials,{e.g. graphene} (~~H01F 1/44~~ **akes precedence**-[H01F 1/44](#) **akes precedence**)
- H01F 1/44 . of magnetic liquids, e.g. ferrofluids (-particles in a bonding agent [H01F 1/28](#) , [H01F 1/36](#) , { [H01F 1/37](#) })
- H01F 1/442 . . {the magnetic component being a metal or alloy, e.g. Fe (~~H01F 1/447~~ takes precedence-)}
- H01F 1/445 . . {the magnetic component being a compound, e.g. Fe₃O₄(~~H01F 1/447~~ takes precedence-)}
- H01F 1/447 . . {characterised by magnetoviscosity, e.g. magnetorheological, magnetothixotropic, magnetodilatant liquids (-electrorheological fluids [C10M 171/001](#)-)}
- H01F 3/00 Cores, Yokes, or armatures (-magnetic materials [H01F 1/00](#) ; permanent magnets [H01F 7/02](#))**
- H01F 3/08 . made from powder (-powder coatings on sheets [H01F 3/02](#) ; on strips or ribbons [H01F 3/04](#) ; on wires [H01F 3/06](#)-)
- U H01F 3/10 . Composite arrangements of magnetic circuits
- H01F 3/14 . . Constrictions; Gaps, e.g. air-gaps (-in magnetic shunt paths [H01F 3/12](#)-)
- H01F 5/00 Coils (-superconducting coils [H01F 6/06](#) ; fixed inductances of the signal type [H01F 17/00](#))**
- H01F 6/00 Superconducting magnets; Superconducting coils({-magnetic resonance assemblies using superconducting coil systems [G01R 33/3815](#)})**
- H01F 6/003 . {Methods and means for discharging superconductive storage (-superconducting alloys [C22C](#) ; static memories with superconducting elements [G11C 11/44](#) ; superconducting circuit breakers with contacts [H01H 33/004](#) ; superconducting material [H01L 39/00](#) ; power cryotons [H01L 39/20](#) ; superconducting switches for low power [H03K 17/92](#)-)}
- H01F 6/005 . {Methods and means for increasing the stored energy in superconductive coils by increments (**flux pumps**)}(~~flux pumps~~)
- H01F 6/02 . Quenching; Protection arrangements during quenching({-protection circuits [H02H 7/001](#)-)}
- U H01F 6/06 . Coils, e.g. winding, insulating, terminating or casing arrangements therefor
- H01F 6/065 . . {Feed-through bushings, terminals and joints (-leading of conductors or axles through casings of transformers [H01F 27/04](#)-)}

- H01F 7/00** Magnets (~~superconducting magnets [H01F 6/00](#) ; for separation of solid materials or fluids [B03C 1/00](#) ; for bench or like work-holders [B23B 31/28](#) , [B23Q 3/00](#) ; work-holding devices [B25B 11/00](#) ; lifting magnets [B66C 1/00](#) ; { operating or controlling locks using permanent magnets [E05B 47/0038](#) ; devices for holding a wing, e.g. door or window, by magnetic or electromagnetic attraction [E05C 19/16](#) ; relieving load or bearings using magnetic means [F16C 39/06](#) } ; for electric meters [G01R](#) ; for relays [H01H](#) ; { for electric discharge tubes [H01J](#) , e.g. [H01J 3/24](#) , [H01J 23/10](#) , [H01J 29/68](#) } ; for dynamo-electric machines [H02K](#)-)~~
- U H01F 7/02 • Permanent magnets{(PM)}
 - U H01F 7/0205 • • {Magnetic circuits with PM in general}
 - H01F 7/021 • • • {Construction of PM (~~[H01F 7/0278](#) takes precedence; PM compositions [H01F 1/032](#)-)}~~
 - H01F 7/0226 • • • {PM with variable field strength (~~[H01F 7/0284](#) takes precedence-~~)}
 - U H01F 7/0231 • • {Magnetic circuits with PM for power or force generation}
 - H01F 7/0236 • • • {Magnetic suspension or levitation (~~for vehicles [B60L 13/04](#) ; magnetic bearings [F16C 39/063](#)-)}~~
 - H01F 7/0252 • • • {PM holding devices (~~[H01F 7/021](#) , [H01F 7/0215](#) , [H01F 7/0226](#) take precedence-~~)}
 - U H01F 7/0273 • • {Magnetic circuits with PM for magnetic field generation}
 - H01F 7/0278 • • • {for generating uniform fields, focusing, deflecting electrically charged particles (~~for magnetic separation by Lorentz force [B03C 1/023](#) ; specially adapted for NMR applications [G01R 33/383](#)-)}~~
 - H01F 7/06 • Electromagnets; Actuators including electromagnets(~~electric coils [H01F 5/00](#) ; devices for holding workpieces using electric force [B23Q 3/15](#) ; load-engaging elements for lifting articles electromagnetically [B66C 1/06](#) ; electromagnetic couplings [F16D 27/00](#) ; magnetic brakes [F16D 63/002](#) ; electromagnetically operated valves [F16K 11/24](#) , [F16K 31/00](#) ; magnetically locked mine lamps [F21L 11/00](#) ; analysing materials by magnetic means [G01N 27/72](#) , [G01N 27/80](#) ; electromagnets for winding mechanical clocks [G04C 1/02](#) ; electromagnetic relays [H01H 51/00](#) ; windings for salient poles of dynamo-electric machines [H02K 3/18](#) ; electromagnets for telegraphic communication [H04L](#) ; for arc lamps [H05B 31/28](#)-)~~
 - H01F 7/064 • • {Circuit arrangements for actuating electromagnets (~~circuit arrangements for obtaining special operating characteristics [H01F 7/18](#) ; driving circuits for electromagnets making use of a switching regulator [H01H 47/325](#)-)}~~
 - U H01F 7/08 • • with armatures
 - U H01F 7/10 • • • specially adapted for alternating current
 - U H01F 7/12 • • • • having anti-chattering arrangements
 - H01F 7/1205 • • • • • {having short-circuited conductors (~~electromagnetic relays provided with short-circuited conducting sleeves [H01H 47/00](#)-)}~~
 - U H01F 7/121 • • • Guiding or setting position of armatures, e.g. retaining armatures in their end position
 - H01F 7/122 • • • • by permanent magnets(~~[H01F 7/1615](#) , [H01F 7/1646](#) take precedence-~~)}
 - H01F 7/14 • • • Pivoting armatures (~~[H01F 7/17](#) takes precedence-~~)
 - H01F 7/145 • • • • {Rotary electromagnets with variable gap (~~with fixed gap or torque motors [H02K 26/00](#)-)}~~
 - H01F 7/16 • • • Rectilinearly-movable armatures (~~[H01F 7/17](#) takes precedence-~~)
 - U H01F 7/18 • • • Circuit arrangements for obtaining desired operating characteristics, e.g. for slow operation, for sequential energisation of windings, for high-speed energisation of windings

- H01F 7/1805
 - • • • {Circuit arrangements for holding the operation of electromagnets or for holding the armature in attracted position with reduced energising current (-for holding relay armature in attracted position with reduced energising current [H01H 47/04](#) ; quick energising of electro-dynamic machines [H02P 9/08](#) ; for quickly de-energising of dynamo-electric generators [H02P 9/123](#)-)}
- H01F 7/1816
 - • • • • {making use of an energy accumulator (-for relays [H01H 47/043](#)-)}
- H01F 7/1827
 - • • • • {by changing number of serially-connected turns or windings (-for relays [H01H 47/06](#)-)}
- H01F 7/1833
 - • • • • {by changing number of parallel-connected turns or windings (-for relays [H01H 47/08](#)-)}
- H01F 7/1838
 - • • • • {by switching-in or -out impedance (-for relays [H01H 47/10](#)-)}
- H01F 7/1844
 - • • • • {Monitoring or fail-safe circuits (-for relays [H01H 47/002](#)-)}
- H01F 7/1872
 - • • • • {Bistable or bidirectional current devices (-relays [H01H 47/226](#)-)}
- H01F 7/20
 - • without armatures (-cores [H01F 3/00](#) ; coils [H01F 5/00](#) ; { shaping metal by applying magnetic forces [B21D 26/14](#) ; analysing methods using magnetic fields [G01N24/06](#) ; electromagnets specially adapted for NMR applications [G01R 33/381](#) })
- H01F 7/202
 - • • {Electromagnets for high magnetic field strength (-for superconducting electromagnets [H01F 6/00](#) ; for transformers or inductances without a magnetic core [H01F 30/08](#)-)}
- H01F 7/206
 - • • {Electromagnets for lifting, handling or transporting of magnetic pieces or material (-electromagnets for guidance of vehicles, workpieces [B65G 21/2009](#) ; for magnetic suspension or levitation [H02N 15/00](#)-)}
- H01F 10/00**
 - Thin magnetic films, e.g. of one-domain structure (-magnetic record carriers [G11B 5/00](#) ; thin-film magnetic stores [G11C](#)-)**
- H01F 10/002
 - {Antiferromagnetic thin films, i.e. films exhibiting a Néel transition temperature (-[H01F 10/3218](#) and [H01F 10/3268](#) take precedence-)}

WARNING
This groups is not complete pending the completion of reclassification; see provisionally also [H01F 10/00](#) - [H01F 10/30](#)
- H01F 10/007
 - {ultrathin or granular films (-[H01F 10/005](#) and [H01F 10/3227](#) take precedence; applying ultrathin or granular layers to substrates [H01F 41/301](#)-)}
- H01F 10/08
 - characterised by magnetic layers ({ [H01F 10/32](#) takes precedence } ; applying thin magnetic films to substrates [H01F 41/14](#)-)}
- U H01F 10/10
 - • characterised by the composition
- H01F 10/12
 - • • being metal or alloys (-intermetallic compounds [H01F 10/18](#)-)
- H01F 10/123
 - • • • {having a L10 crystallographic structure, e.g. [Co,Fe]_n[Pt,Pd] thin films}

WARNING
This groups is not complete pending the completion of reclassification; see provisionally also [H01F 10/16](#)
- H01F 10/126
 - • • • {containing rare earth metals (-[H01F 10/133](#) takes precedence-)}
- H01F 10/13
 - • • • Amorphous metallic alloys, e.g. glassy metals(-[H01F 10/3204](#) takes precedence-)}

NOTE
In this group, amorphous metallic alloys are classified in the last appropriate place

- H01F 10/14
- • • containing iron or nickel ({ [H01F 10/126](#) } , [H01F 10/13](#) , [H01F 10/16](#) take precedence-)
- NOTE
In this group, alloys containing iron or nickel are classified in the last appropriate place
- H01F 10/147
- • • • {with lattice under strain, e.g. expanded by interstitial nitrogen ([H01F 10/26](#) to [H01F 10/30](#) take precedence-)}
- H01F 10/16
- • • containing cobalt ({ [H01F 10/126](#) } , [H01F 10/13](#) take precedence-)
- U H01F 10/18
- • • being compounds
- H01F 10/187
- • • Amorphous compounds ({ [H01F 10/3204](#) takes precedence- })
- H01F 10/193
- • • Magnetic semiconductor compounds ({ -in general [H01F 1/40](#) ; multilayers, e.g. superlattices [H01F 10/3213](#)- })
- U H01F 10/20
- • • Ferrites
- H01F 10/22
- • • • Orthoferrites {e.g. $RFeO_3$ (R= rare earth element) with orthorhombic structure}
- H01F 10/24
- • • • Garnets ({ -in general [H01F 1/346](#) ; multilayers, e.g. superlattices [H01F 10/3209](#) ; applying magnetic garnet films to substrates by sputtering [H01F 41/186](#)- })
- H01F 10/26
- characterised by the substrate or intermediate layers ({ -[H01F 10/06](#) and [H01F 10/32](#) take precedence- })
- H01F 10/265
- {Magnetic multilayers non exchange-coupled ({ -[H01F 10/32](#) takes precedence- })}
- WARNING
This groups is not complete pending the completion of reclassification; see provisionally also [H01F 10/00](#) - [H01F 10/30](#)
- H01F 10/30
- characterised by the composition of the intermediate layers {e.g. seed, buffer, template, diffusion preventing, cap layers ({ -[H01F 10/06](#) and [H01F 10/32](#) take precedence- })}
- H01F 10/32
- Spin-exchange-coupled multilayers, e.g. nanostructured superlattices ({ -applying spin-exchange-coupled multilayers to substrates [H01F 41/302](#)- })
- H01F 10/3213
- {Exchange coupling of magnetic semiconductor multilayers, e.g. MnSe/ZnSe superlattices ({ -semiconductor materials for use in semiconductor devices [H01L 29/12](#)- })}
- H01F 10/3218
- {Exchange coupling of magnetic films via an antiferromagnetic interface ({ -[H01F 10/3268](#) takes precedence- })}
- H01F 10/3222
- {Exchange coupled hard/soft multilayers, e.g. CoPt/Co or NiFe/CoSm ({ -nanocomposite spring magnets [H01F 1/0579](#)- })}
- U H01F 10/3227
- {Exchange coupling via one or more magnetisable ultrathin or granular films}
- U H01F 10/3231
- • • {via a non-magnetic spacer}
- H01F 10/3236
- • • • {made of a noble metal, e.g. (Co/Pt) n multilayers having perpendicular anisotropy ({ -[H01F 10/3286](#) takes precedence- })}
- H01F 13/00**
- Apparatus or processes for magnetising or demagnetising ({ devices for holding workpieces using magnetic or electric force acting directly on the workpieces [B23Q 3/15](#) } ; for degaussing ships [B63G 9/06](#) ; for clocks or watches [G04D 9/00](#) ; { recording or erasing of information on magnetic record carriers [G11B 5/00](#) } ; demagnetising arrangements for colour television [H04N 9/29](#)-)**

- H01F 13/003 · {Methods and devices for magnetising permanent magnets (-permanent magnets [H01F 7/02-](#))}
- H01F 13/006 · {Methods and devices for demagnetising of magnetic bodies, e.g. workpieces, sheet material (-for erasing of information on magnetic record carriers [G11B 5/00-](#))}
- H01F 17/00 Fixed inductances of the signal type (-coils in general [H01F 5/00](#) { inductors without a potential-jump or surface barrier specially adapted for integrated circuits, details thereof and multistep manufacturing processes therefor [H01L 28/10](#) })**
- H01F 17/0006 · {Printed inductances (-printed coils for dynamo-electric machines [H02K 3/26](#) ; printed circuits [H05K-](#))}
- H01F 17/0013 · · {with stacked layers (-[H01F 27/2804](#) takes precedence-)}
- H01F 2017/0086 · · {on semiconductor substrate (-inductors for integrated circuits [H01L 28/10-](#))}
- U H01F 17/04 · with magnetic core
- H01F 17/043 · · {with two, usually identical or nearly identical parts enclosing completely the coil (*pot cores*)}(*pot cores*)}
- H01F 19/00 Fixed transformers or mutual inductances of the signal type (- [H01F 36/00](#) takes precedence-)**
- H01F 19/04 · Transformers or mutual inductances suitable for handling frequencies considerably beyond the audio range (-resonant circuits [H03H-](#))
- H01F 21/00 Variable inductances or transformers of the signal type (- [H01F 36/00](#) takes precedence-)**
- U H01F 27/00 Details of transformers or inductances, in general**
- H01F 27/06 · Mounting, supporting or suspending transformers, reactors or choke coils {not being of the signal type}
- H01F 27/08 · Cooling (-heat-transfer elements [F28F-](#)); Ventilating (-structural details of casings [H01F 27/02-](#))
- U H01F 27/24 · Magnetic cores
- H01F 27/245 · · made from sheets, e.g. grain-oriented (-[H01F 27/26](#) takes precedence-)
- H01F 27/25 · · made from strips or ribbons (-[H01F 27/26](#) takes precedence-)
- H01F 27/255 · · made from particles (-[H01F 27/26](#) takes precedence-)
- H01F 27/26 · · Fastening parts of the core together; Fastening or mounting the core on casing or support (-on coil [H01F 27/30-](#))
- H01F 27/266 · · · {Fastening or mounting the core on casing or support (-on coil [H01F 27/30-](#))}
- U H01F 27/28 · Coils; Windings; Conductive connections
- H01F 27/2823 · · {Wires (-[H01F 27/2866](#) takes precedence-)}
- H01F 27/2847 · · {Sheets; Strips (-[H01F 27/2866](#) takes precedence-)}
- H01F 27/2876 · · {Cooling (-cooling transformers and inductances in general [H01F 27/08-](#))}
- U H01F 27/288 · · {Shielding}
- H01F 27/2885 · · · {with shields or electrodes (-shields or electrodes for pancake coils [H01F 27/2871](#) ; construction of electric or magnetic shields or screens [H01F 27/36-](#))}
- H01F 27/289 · · · {with auxiliary windings (-for pancake coils [H01F 27/2871-](#))}
- H01F 27/29 · · Terminals; Tapping arrangements {for signal inductances}
- U H01F 27/32 · · Insulating of coils, windings, or parts thereof

- U H01F 27/324
 - · · {Insulation between coil and core, between different winding sections, around the coil; Other insulation structures}
- H01F 27/325
 - · · · {Coil bobbins (-formers for coils in general [H01F 5/02-](#))}
- H01F 27/327
 - · · {Encapsulating or impregnating (-encapsulating coil and core [H01F 27/022-](#))}
- U H01F 27/34
 - Special means for preventing or reducing unwanted electric or magnetic effects, e.g. no-load losses, reactive currents, harmonics, oscillations, leakage fields
- H01F 27/346
 - · {Preventing or reducing leakage fields (-using magnetic shields [H01F 27/365](#) ; using auxiliary windings [H01F 27/38-](#))}
- H01F 27/36
 - · Electric or magnetic shields or screens (-movable for varying inductance [H01F 21/10-](#))
- H01F 27/42
 - Circuits specially adapted for the purpose of modifying, or compensating for, electric characteristics of transformers, reactors, or choke coils (-circuits for controlling transformers, reactors or choke coils, for the purpose of obtaining a desired output [H02P 13/00](#) ; impedance networks [H03H-](#))
- H01F 29/00**
 - Variable transformers or inductances not covered by group [H01F 21/00](#) {(-tap change devices [H01H 9/0005-](#))}**
- U H01F 29/08
 - with core, coil, winding, or shield movable to offset variation of voltage or phase shift, e.g. induction regulators
- H01F 29/10
 - · having movable part of magnetic circuit{(-high leakage transformers [H01F 38/08](#) ; dynamo-electric machines with movable part of magnetic circuit [H02K 23/44](#) , [H02K 23/48-](#))}
- H01F 29/14
 - with variable magnetic bias ({ amplitude modulation by means of variable impedance element [H03C 1/08](#) } ; magnetic amplifiers [H03F](#) ; { circuits for automatic telephonic communication [H04M 3/00](#) })
- H01F 30/00**
 - Fixed transformers not covered by group [H01F 19/00](#)**
- U H01F 30/06
 - characterised by the structure
- H01F 30/10
 - · Single-phase transformers (-[H01F 30/16](#) takes precedence-)
- H01F 36/00**
 - Transformers with superconductive windings or with windings operating at cryogenic temperature (-superconducting magnets or superconducting coils [H01F 6/00-](#))**
- H01F 37/00**
 - Fixed inductances not covered by group [H01F 17/00](#)**
- U H01F 38/00**
 - Adaptations of transformers or inductances for specific applications or functions**
- H01F 38/14
 - Inductive couplings{(-for charging batteries from ac mains by converters [H02J 7/025-](#))}
- U H01F 41/00**
 - Apparatus or processes specially adapted for manufacturing or assembling the devices covered by this subclass**
- H01F 41/005
 - {Impregnating or encapsulating (-insulating of windings [H01F 41/12-](#))}
- H01F 41/02
 - for manufacturing cores, coils, or magnets (-[H01F 41/14](#) takes precedence; for dynamo-electric machines [H02K 15/00-](#))
- H01F 41/0206
 - · {Manufacturing of magnetic cores by mechanical means (-magnetic cores per se [H01F 27/24-](#))}
- H01F 41/0213
 - · · {Manufacturing of magnetic circuits made from strip(s) or ribbon(s) (-magnetic cores made by winding a ribbon [H01F 27/25-](#))}
- H01F 41/0233
 - · · {Manufacturing of magnetic circuits made from sheets (-magnetic cores made from sheets [H01F 27/245](#) ; soft magnetic alloys in the form of sheets [H01F 1/16-](#))}

- H01F 41/024
 - . . . {Manufacturing of magnetic circuits made from deformed sheets (-magnetic cores made from deformed sheets [H01F 27/2455-](#))}
 - H01F 41/0246
 - . . . {Manufacturing of magnetic circuits by moulding or by pressing powder (-magnetic cores made by moulding or by pressing powder [H01F 27/255](#) ; soft magnetic particles [H01F 1/20](#) , [H01F 1/36-](#))}
 - U H01F 41/0253
 - . {for manufacturing permanent magnets}
 - H01F 41/026
 - . . . {protecting methods against environmental influences, e.g. oxygen, by surface treatment (-magnetic particles with skin [H01F 1/061](#) , [H01F 1/09](#) , [H01F 1/24](#) , [H01F 1/33](#) and [G11B 5/706-](#))}
 - H01F 41/0266
 - . . . {Moulding; Pressing (-[H01F 41/0273](#) takes precedence; hard magnetic particles [H01F 1/06](#) , [H01F 1/11-](#))}
 - H01F 41/0273
 - . . . {Imparting anisotropy (-methods and devices for magnetising permanent magnets [H01F 13/003-](#))}
 - H01F 41/028
 - {Radial anisotropy (-for rotor or stator bodies [H02K 15/02-](#))}
 - H01F 41/04
 - . . for manufacturing coils(-coils for transformer or inductances [H01F 27/28-](#))}
 - H01F 41/041
 - . . . {Printed circuit coils (-apparatus or processes for manufacturing printed circuits in general [H05K 3/00-](#))}
 - U H01F 41/06
 - . . . Winding
 - U H01F 41/0633
 - {Devices for guiding or positioning the winding material on the winding form}
 - H01F 41/0641
 - {positioning the winding material in a special configuration on the winding form (*orthocyclic coils, open mesh coils*)}(~~orthocyclic coils, open-mesh coils~~)}
 - H01F 41/08
 - Winding conductors onto or threading conductors through cores or formers which are closed in themselves, e.g. toroids (-for interconnecting digital storage elements [G11C 5/12-](#))}
 - H01F 41/10
 - . . . Connecting leads to windings (-making electric connections in general [H01R 43/00-](#))}
 - H01F 41/12
 - . . . Insulating of windings ({ impregnating or encapsulating of transformers [H01F 41/005](#) } ; of conductors in general [H01B 13/06-](#))}
 - H01F 41/127
 - {Encapsulating or impregnating (-encapsulating coil and core [H01F 41/005-](#))}
 - H01F 41/14
 - . for applying magnetic films to substrates (-covering metals, or materials with metals, in general [C23C](#) ; manufacturing record carriers [G11B 5/84-](#))}
- NOTE**
Group [H01F 41/30](#) takes precedence over groups [H01F 41/16](#) to [H01F 41/24](#) , and over group [H01F 41/32](#)
- H01F 41/16
 - . . the magnetic material being applied in the form of particles, e.g. by serigraphy {i.e. forming thick magnetic films and precursors therefor, e.g. magnetisable pastes, inks, glass frits (-[H01F 41/18](#) to [H01F 41/24](#) take precedence; thick magnetic films [H01F 1/0027-](#))}
 - U H01F 41/18
 - . . by cathode sputtering
 - H01F 41/186
 - . . . {for applying a magnetic garnet film (-magnetic garnet materials [H01F 1/346](#) ; magnetic garnet films [H01F 10/24-](#))}
 - U H01F 41/24
 - . . from liquids
 - H01F 41/26
 - . . . using electric currents {e.g. electroplating}
 - U H01F 41/30
 - . . for applying nanostructures, e.g. by molecular beam epitaxy (MBE)
 - H01F 41/301
 - . . . {for applying ultrathin or granular layers (-ultrathin or granular layers [H01F 10/007-](#))}

- H01F 41/302 · · · {for applying spin-exchange-coupled multilayers, e.g. nanostructured superlattices (-spin-exchange-coupled multilayers [H01F 10/32-](#))}

Project: N/A (H01G)**U H01G 2/00**

Details of capacitors not covered by a single one of groups [H01G 4/00-H01G 11/00](#)

- U H01G 2/02 · Mountings
- U H01G 2/06 · · specially adapted for mounting on a printed-circuit support
- H01G 2/065 · · · {-for surface mounting, e.g. chip capacitors}
- U H01G 2/10 · Housing; Encapsulation

WARNING

Not complete, see also [H01G 4/224](#)

- H01G 2/103 · {-Sealings, e.g. for lead-in wires; Covers}

- H01G 2/106 · {-Fixing the capacitor in a housing}

U H01G 4/00

Fixed capacitors; Processes of their manufacture (electrolytic capacitors [H01G 9/00](#))

- U H01G 4/002 · Details
- U H01G 4/005 · · Electrodes
- U H01G 4/008 · · · Selection of materials
- H01G 4/0085 · · · · {-Fried electrodes}
- U H01G 4/018 · · Dielectrics
- U H01G 4/06 · · · Solid dielectrics
- U H01G 4/08 · · · · Inorganic dielectrics
- H01G 4/085 · · · · · {-Vapour deposited}
- U H01G 4/12 · · · · · Ceramic dielectrics {([H01G 4/085](#) takes precedence; ceramic materials per se [C04B 35/00](#))}
- U H01G 4/1209 · · · · · · {characterised by the ceramic dielectric material ([H01G 4/1272](#), [H01G 4/1281](#) take precedence)}
- U H01G 4/1218 · · · · · · · {based on titanium oxides or titanates ([H01G 4/1245](#) takes precedence)}
- H01G 4/1227 · · · · · · · · {-based on alkaline earth titanates}
- U H01G 4/20 · · · using combinations of dielectrics from more than one of groups [H01G 4/02](#) to [H01G 4/06](#) ([H01G 4/12](#) takes precedence)
- H01G 4/203 · · · · {-Fibrous material or synthetic material}
- U H01G 4/22 · · · · impregnated
- H01G 4/221 · · · · · {-characterised by the composition of the impregnant}
- H01G 4/222 · · · · · · {-halogenated}
- U H01G 4/228 · · Terminals
- U H01G 4/232 · · · electrically connecting two or more layers of a stacked or rolled capacitor
- H01G 4/2325 · · · · {-characterised by the material of the terminals}

U H01G 5/00

Capacitors in which the capacitance is varied by mechanical means, e.g. by turning a shaft; Processes of their manufacture

- U H01G 5/01 · Details
- U H01G 5/013 · · Dielectrics
- H01G 5/0132 · · · {-Liquid dielectrics}

- H01G 5/0134
 - • • {-Solid dielectrics}
- H01G 5/0136
 - • • • {-with movable electrodes}
- H01G 5/0138
 - • • • {-with movable dielectrics}
- U H01G 5/04
 - using variation of effective area of electrode
- U H01G 5/14
 - • due to longitudinal movement of electrodes
- H01G 5/145
 - • • {-with profiled electrodes}
- U H01G 9/00**
 - Electrolytic capacitors, rectifiers, detectors, switching devices, light-sensitive or temperature-sensitive devices; Processes of their manufacture**
- H01G 9/0029
 - {-Processes of manufacture}
- H01G 9/0032
 - • {-formation of the dielectric layer (anodisation in general [C25D](#))}
- H01G 9/0036
 - • {-Formation of the solid electrolyte layer}
- U H01G 9/004
 - Details
- U H01G 9/022
 - • Electrolytes, absorbents (electrolytic or electrophoretic processes, apparatus therefor [C25](#); for primary, secondary or fuel cells [H01M](#))
- H01G 9/025
 - • • Solid electrolytes ([H01G 11/54](#) takes precedence-)
- U H01G 9/04
 - • Electrodes { or formation of dielectric layers thereon}
- U H01G 9/042
 - • • characterised by the material ([H01G 11/22](#) takes precedence)
- H01G 9/0425
 - • • • {-specially adapted for cathode}
- U H01G 9/048
 - • • characterised by their structure ([H01G 11/22](#) takes precedence)
- U H01G 9/052
 - • • • Sintered electrodes
- H01G 9/0525
 - • • • • {-Powder therefor (metallic powder in general [B22F](#))}
- U H01G 9/15
 - Solid electrolytic capacitors ([H01G 11/00](#) takes precedence)
- H01G 9/151
 - • {-with wound foil electrodes}
- H01G 9/153
 - • {-Skin fibre}
- U H01G 9/20
 - Light-sensitive devices
- U H01G 9/2004
 - • {-characterised by the electrolyte, e.g. comprising an organic electrolyte}
- H01G 9/2013
 - • • {-the electrolyte comprising ionic liquids, e.g. alkyl imidazolium iodide}
- H01G 9/2018
 - • • {-characterised by the ionic charge transport species, e.g. redox shuttles}
- U H01G 9/2027
 - • {-comprising an oxide semiconductor electrode}
- H01G 9/2031
 - • • {-comprising titanium oxide, e.g. TiO_2 ([H01G 9/2036](#) takes precedence)}
- H01G 9/204
 - • • {-comprising zinc oxides, e.g. ZnO ([H01G 9/2036](#) takes precedence)}
- H01G 9/2045
 - • {-comprising a semiconductor electrode comprising elements of the fourth group of the Periodic System (*C, Si, Ge, Sn, Pb*) with or without impurities, e.g. doping materials}(~~C, Si, Ge, Sn, Pb~~-with or without impurities, e.g. doping materials)
- H01G 9/2054
 - • {-comprising a semiconductor electrode comprising All-BVI compounds, e.g. CdTe, CdSe, ZnTe, ZnSe, with or without impurities, e.g. doping materials ([H01G 9/2027](#) takes precedence)}
- U H01G 9/2068
 - • {-Panels or arrays of photoelectrochemical cells, e.g. photovoltaic modules based on photoelectrochemical cells}
- H01G 9/2077
 - • • {-Sealing arrangements, e.g. to prevent the leakage of the electrolyte}
- H01G 9/2081
 - • • {-Serial interconnection of cells}
- H01G 9/2086
 - • • {-Photoelectrochemical cells in the form of a fiber}
- H01G 9/209
 - • {-Light trapping arrangements}

H01G 13/00

Apparatus specially adapted for manufacturing capacitors; Processes specially adapted for manufacturing capacitors not provided for in groups [H01G 4/00](#) to [H01G 11/00](#)

Project: N/A (H01H)**U H01H 1/00**

Contacts (liquid contacts [H01H 29/04](#))

H01H 1/0015

- {-Means for testing or for inspecting contacts, e.g. wear indicator (measuring circuits [G01R 31/3274](#)-)}

H01H 1/0036

- {-Switches making use of microelectromechanical systems [MEMS] ; (for electrostatic relays [H01H 59/0009](#), for electromagnetic relays [H01H 50/005](#); MEMS manufacturing processes [B81C](#))}

H01H 1/0094

- {-Switches making use of nanoelectromechanical systems (NEMS)}

U H01H 1/12

- characterised by the manner in which co-operating contacts engage

U H01H 1/14

- · by abutting

U H01H 1/20

- · · Bridging contacts {(for circuit breakers [H01H 73/045](#))}

H01H 1/2008

- · · · {-Facilitate mounting or replacing contact bridge and pressure spring on carrier ([H01H 11/0012](#) takes precedence)}

H01H 1/2041

- · · · {-Rotating bridge}

H01H 1/205

- · · · · {-Details concerning the elastic mounting of the rotating bridge in the rotor}

H01H 1/2058

- · · · · {-Rotating bridge being assembled in a cassette, which can be placed as a complete unit into a circuit breaker (non-rotating bridges [H01H 71/0235](#))}

H01H 1/2066

- · · · · {-Fork-shaped bridge; Two transversally connected contact arms bridging two fixed contacts}

H01H 1/2075

- · · · · {-T-shaped bridge; bridging contact has lateral arm for mounting resiliently or on a pivot}

H01H 1/2083

- · · · · {-Bridging contact surfaces directed at an oblique angle with respect to the movement of the bridge}

U H01H 3/00

Mechanisms for operating contacts (snap-action arrangements [H01H 5/00](#); devices for introducing a predetermined time delay [H01H 7/00](#); {for tap changers [H01H 9/0027](#)}; thermal actuating or release means [H01H 37/02](#))

U H01H 3/02

- Operating parts, i.e. for operating driving mechanism by a mechanical force external to the switch

H01H 3/0253

- · {-two co-operating contacts actuated independently (for combined circuit-breaker-contactors [H01H 89/10](#))}

Project: RP0118 (H01H)

U H01H 3/16

- · adapted for actuation at a limit or other predetermined position in the path of a body, the relative movement of switch and body being primarily for a purpose other than the actuation of the switch, e.g. for a door switch, a limit switch, a floor-levelling switch of a lift

H01H 3/161

- · · {for actuation by moving a closing member, e.g. door, cover, lid ([H01H 27/002](#) takes precedence; the switch controlling enclosed equipment [H01H 9/226](#); safety arrangements on doors of dishwashers [A47L 15/4236](#), of laundry washing machines [D06F 37/42](#), of ovens [F24C 14/00](#), [F24C 15/022](#); locks with means for operating switches [E05B 17/22](#); alarm locks [E05B 45/06](#); safety edges for power-operated wings [E05F 15/0004](#) [E05F 15/40](#); safety devices in connection with the locking of doors, covers, guards, or like members giving access to movable machine parts [F16P 3/08](#); of microwave ovens [H05B 6/76](#))}

Project: N/A (H01H)

- U H01H 13/00** **Switches having rectilinearly-movable operating part or parts adapted for pushing or pulling in one direction only, e.g. push-button switch (wherein the operating part is flexible [H01H 17/00](#))**
- U H01H 13/02
- Details (specially adapted for rectilinearly movable switches having operating members associated with different sets of contacts, e.g. keyboards, [H01H 13/70](#))
- H01H 13/023
- · {-Light-emitting indicators (for multi-layer switches [H01H 13/83](#))}
- U H01H 33/00** **High-tension or heavy-current switches with arc-extinguishing or arc-preventing means**
- U H01H 33/02
- Details
- H01H 33/021
- · {Use of solid insulating compounds resistant to the contacting fluid dielectrics and their decomposition products, e.g. to SF₆ (insulators or insulating bodies characterised by the insulating materials, selection of materials for their insulating or dielectric properties per se [H01B 3/00](#))}
- U H01H 33/53
- · Cases (for switchgear [H02B 1/26](#)); Reservoirs, tanks, piping or valves, for arc-extinguishing fluid; Accessories therefor, e.g. safety arrangements, pressure relief devices
- U H01H 33/55
- · · Oil reservoirs or tanks; Lowering means therefor (associated with withdrawal mechanism for isolation of switch [H02B 11/08](#))
- H01H 33/555
- · · · {-Protective arrangements responsive to abnormal fluid pressure, liquid level or liquid displacement, e.g. Buchholz relays (circuits [H02H 5/08](#); specially adapted for transformers [H01F 27/402](#))}
- U H01H 33/56
- · · Gas reservoirs
- H01H 2033/566
- · · · {Avoiding the use of SF₆}
- U H01H 33/60
- Switches wherein the means for extinguishing or preventing the arc do not include separate means for obtaining or increasing flow of arc-extinguishing fluid
- U H01H 33/66
- · Vacuum switches
- H01H 33/6606
- · · {-Terminal arrangements}
- U H01H 33/662
- · · Housings or protective screens
- H01H 33/66207
- · · · {-Specific housing details, e.g. sealing, soldering or brazing}
- H01H 33/66238
- · · · {-Specific bellows details}
- H01H 33/66261
- · · · {-Specific screen details, e.g. mounting, materials, multiple screens or specific electrical field considerations}
- U H01H 33/664
- · · Contacts; Arc-extinguishing means, e.g. arcing rings
- H01H 33/6641
- · · · {-making use of a separate coil}
- H01H 33/6642
- · · · {-having cup-shaped contacts, the cylindrical wall of which being provided with inclined slits to form a coil}
- H01H 33/6643
- · · · {-having disc-shaped contacts subdivided in petal-like segments, e.g. by helical grooves}
- H01H 33/6644
- · · · {-having coil-like electrical connections between contact rod and the proper contact}
- H01H 33/6645
- · · · {-in which the coil like electrical connections encircle at least once the contact rod}
- H01H 33/6646
- · · · {-having non flat disc-like contact surface}
- H01H 33/6647
- · · · {-having fixed middle contact and two movable contacts}
- U H01H 33/666
- · · Operating arrangements

- H01H 33/6661
 - · · · {-Combination with other type of switch, e.g. for load break switches ([H01H 33/143](#) , [H01H 33/6662](#) take precedence)}
- H01H 33/6662
 - · · · {-using bistable electromagnetic actuators, e.g. linear polarised electromagnetic actuators}
- H01H 33/6664
 - · · · {-with pivoting movable contact structure}
- U H01H 33/668
 - · · Means for obtaining or monitoring the vacuum
- H01H 33/6683
 - · · · {-by gettering}
- U H01H 33/70
 - Switches with separate means for directing, obtaining, or increasing flow of arc-extinguishing fluid
- U H01H 33/88
 - · the flow of arc-extinguishing fluid being produced or increased by movement of pistons or other pressure-producing parts
- U H01H 33/90
 - · · this movement being effected by or in conjunction with the contact-operating mechanism
- U H01H 33/91
 - · · · the arc-extinguishing fluid being air or gas
- H01H 2033/912
 - · · · · {-Liquified gases, e.g. liquified SF₆-}
- U H01H 36/00**
 - Switches actuated by change of magnetic field or of electric field, e.g. by change of relative position of magnet and switch, by shielding {(specially adapted for electromechanical clocks or watches [G04C 3/004](#))}**
- U H01H 36/0006
 - {-Permanent magnet actuating reed switches ([H01H 35/147](#) takes precedence)}
- H01H 36/0013
 - · {-characterised by the co-operation between reed switch and permanent magnet; Magnetic circuits}
- U H01H 50/00**
 - Details of electromagnetic relays ({ [H01H 51/28](#) takes precedence;} electric circuit arrangements [H01H 47/00](#); details of electrically-operated select or switches [H01H 63/00](#); { testing of relays [G01R 31/00](#); electromagnets in general [H01F 7/06](#); relays for emergency protective circuit arrangements [H02H](#))}**
- U H01H 50/02
 - Bases; Casings; Covers (frames for mounting two or more relays or for mounting a relay and another electric component [H02B 1/01](#), [H04Q 1/08](#), [H05K](#))
- U H01H 50/023
 - · {-Details concerning sealing, e.g. sealing casing with resin (in general [H01H 9/04](#))}
- H01H 2050/025
 - · · {-containing inert or dielectric gasses, e.g. SF₆, for arc prevention or arc extinction-}
- U H01H 71/00**
 - Details of the protective switches or relays covered by groups [H01H 73/00](#) to [H01H 83/00](#)**
- U H01H 71/02
 - Housings; Casings; Bases; Mountings
- U H01H 71/0207
 - · {-Mounting or assembling the different parts of the circuit breaker}
- H01H 71/0235
 - · · {-Contacts and the arc extinguishing space inside individual separate cases, which are positioned inside the housing of the circuit breaker (Cassettes for rotating bridges see [H01H 1/2058](#))}
- U H01H 71/74
 - Means for adjusting the conditions under which the device will function to provide protection
- U H01H 71/7427
 - · {-Adjusting only the electrothermal mechanism}
- H01H 71/7436
 - · · {-Adjusting the position (*or prestrain*) of the bimetal (or prestrain) of the bimetal- ([H01H 71/7445](#) takes precedence)}
- U H01H 73/00**
 - Protective overload circuit-breaking switches in which excess current opens the contacts by automatic release of mechanical energy stored by previous operation of a hand reset mechanism**
- U H01H 73/02
 - Details

- U H01H 73/04
 - • Contacts
- H01H 73/045
 - • • {-Bridging contacts (specific details for the contacting bridge per se [H01H 1/20](#) and subgroups, e.g. rotating bridge [H01H 1/2041](#))}
- U H01H 77/00

Protective overload circuit-breaking switches operated by excess current and requiring separate action for resetting ([H01H 73/00](#), [H01H 75/00](#) take precedence)
- U H01H 77/02
 - in which the excess current itself provides the energy for opening the contacts, and having a separate reset mechanism
- U H01H 77/10
 - • with electrodynamic opening {(combined with electromagnetic release mechanism [H01H 71/2418](#))}
- H01H 77/107
 - • • {-characterised by the blow-off force generating means, e.g. current loops}
- U H01H 85/00

Protective devices in which the current flows through a part of fusible material and this current is interrupted by displacement of the fusible material when this current becomes excessive (switches actuated by melting of fusible material [H01H 37/76](#); automatic release of protective switches due to fusion of a mass [H01H 73/00](#) to [H01H 83/00](#); disposition or arrangement of fuses on boards [H02B 1/18](#))
- U H01H 85/02
 - Details (electrical connections in general [H01R](#))
- H01H 85/0241
 - • {-Structural association of a fuse and another component or apparatus (switches with built-in fuses [H01H 9/10](#), spark-gap arresters [H01H 85/44](#), transformers and inductances [H01F 27/402](#), capacitors [H01G 2/14](#), lamps [H01K 1/66](#), semiconductors [H01L 23/5256](#) or [H01L 23/62](#))}

Project: N/A (H01J)**H01J**

ELECTRIC DISCHARGE TUBES OR DISCHARGE LAMPS (spark-gaps [H01T](#); arc lamps with consumable electrodes [H05B](#); particle accelerators [H05H](#))

NOTES

This subclass covers only devices for producing, influencing, or using a flow of electrons or ions, e.g. for controlling, indicating, or switching of electric current, counting electric pulses, producing light or other electromagnetic oscillations, such as X-rays, or for separating or analysing radiation or particles, and having a closed or substantially closed casing containing a chosen gas, vapour, or vacuum, upon the pressure and nature of which the characteristics of the device depend. Light sources using a combination (other than covered by group [H01J 61/96](#) of this subclass) of discharge and other kinds of light generation are dealt with in [H05B 35/00](#) .

In this subclass, groups [H01J 1/00](#) to [H01J 7/00](#) relate only to:

details of an unspecified kind of discharge tube or lamp, or details mentioned in a specification as applicable to two or more kinds of tubes or lamps as defined by groups [H01J 11/00](#) , [H01J 13/00](#) , [H01J 15/00](#) , [H01J 17/00](#) , [H01J 21/00](#) , [H01J 25/00](#) , [H01J 27/00](#) , [H01J 31/00](#) , [H01J 33/00](#) , [H01J 35/00](#) , [H01J 37/00](#) , [H01J 40/00](#) , [H01J 41/00](#) , [H01J 47/00](#) , [H01J 49/00](#) , [H01J 61/00](#) , [H01J 63/00](#) or [H01J 65/00](#) , hereinafter called basic kinds. A detail only described with reference to, or clearly only applicable to, tubes or lamps of a single basic kind is classified in the detail group appropriate to tubes or lamps of that basic kind, e.g. [H01J 17/04](#) .

In this subclass, the following term is used with the meaning indicated:

- "lamp" includes tubes emitting ultra-violet or infra-red

light.

Attention is drawn to the definition of the expression "spark gaps" given in the Note following the title of subclass [H01T](#).

Apparatus or processes specially adapted for the manufacture of electric discharge tubes, discharge lamps, or parts thereof are classified in group [H01J 9/00](#).

- H01J 1/00** **Details of electrodes, of magnetic control means, of screens, or of the mounting or spacing thereof, common to two or more basic types of discharge tubes or lamps (-details of electron-optical arrangements or of ion traps [H01J 3/00](#)-)**
- U H01J 1/02 • Main electrodes
 - U H01J 1/13 • • Solid thermionic cathodes
 - U H01J 1/20 • • • Cathodes heated indirectly by an electric current; Cathodes heated by electron or ion bombardment
 - H01J 1/22 • • • • Heaters (-filaments for incandescent lamps [H01K 1/02](#)-)
 - U H01J 1/30 • • Cold cathodes, e.g. field-emissive cathode
 - H01J 1/312 • • • having an electric field perpendicular to the surface, e.g. tunnel-effect cathodes of Metal-Insulator-Metal [MIM] type{(- [H01J 1/304](#) to [H01J 1/308](#) take precedence [H01J 1/304](#) to [H01J 1/308](#) take precedence)}
 - H01J 1/32 • • Secondary-electron-emitting electrodes (-[H01J 1/35](#) takes precedence; luminescent screens [H01J 1/62](#); charge storage screens in general [H01J 1/78](#); charge storage screens using secondary emission for image tubes [H01J 29/41](#); dynodes for secondary emission tubes [H01J 43/10](#); secondary-emission detectors for measurement of nuclear or X-radiation [G01T 1/28](#)-)
 - H01J 1/34 • • Photo-emissive cathodes (-[H01J 1/35](#) takes precedence; photoelectric screens [H01J 1/78](#)-)
 - U H01J 1/36 • • Solid anodes; Solid auxiliary anodes for maintaining a discharge
 - H01J 1/42 • • • Cooling of anodes (-cooling rotary anodes [H01J 1/44](#)-); Heating of anodes
 - H01J 1/46 • Control electrodes, e.g. grid (-for igniting arrangements [H01J 7/30](#)-); Auxiliary electrodes (-auxiliary anodes for maintaining a discharge [H01J 1/36](#)-)
 - H01J 1/52 • Screens for shielding (-screens acting as control electrodes [H01J 1/46](#)-); Guides for influencing the discharge; Masks interposed in the electron stream
 - H01J 1/53 • Electrodes intimately associated with a screen on or from which an image or pattern is formed, picked up, converted, or stored{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
 - H01J 1/54 • Screens on or from which an image or pattern is formed, picked up, converted, or stored; Luminescent coatings on vessels{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
 - H01J 1/56 • • acting as light valves by shutter operation, e.g. for eidophor{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
 - H01J 1/58 • • acting by discolouration, e.g. halide screen{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
 - H01J 1/60 • • Incandescent screens{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
 - H01J 1/62 • • Luminescent screens; Selection of materials for luminescent coatings on vessels{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
 - H01J 1/63 • • • characterised by the luminescent material (-luminescent materials or compositions [C09K 11/00](#)-){ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}

- H01J 1/64
 - • • characterised by the binder or adhesive for securing the luminescent material to its supports{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- H01J 1/66
 - • • Supports for luminescent material (-vessels [H01J 5/02](#)-){ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- H01J 1/68
 - • • with superimposed luminescent layers{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- H01J 1/70
 - • • with protective, conductive, or reflective layers{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- H01J 1/72
 - • • with luminescent material discontinuously arranged, e.g. in dots or lines{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- H01J 1/74
 - • • • with adjacent dots or lines of different luminescent material{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- H01J 1/76
 - • • provided with permanent marks or references{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- H01J 1/78
 - • Photoelectric screens; Charge-storage screens{ see provisionally also [H01J 29/08](#) to [H01J 29/36](#)-}
- U H01J 1/88
 - Mounting, supporting, spacing, or insulating of electrodes or of electrode assemblies
- H01J 1/90
 - • Insulation between electrodes or supports within the vacuum space (-leading-in conductors [H01J 5/46](#)-)
- H01J 1/94
 - • Mountings for individual electrodes (-for directly-heated cathodes [H01J 1/15](#)-)
- U H01J 3/00**

Details of electron-optical or ion-optical arrangements or of ion traps common to two or more basic types of discharge tubes or lamps
- H01J 3/02
 - Electron guns{(-electron guns for discharge tubes with provision for introducing objects or material to be exposed to the discharge [H01J 37/06](#) ; for cathode ray tubes [H01J 29/48](#)-)}
- H01J 3/025
 - • {Electron guns using a discharge in a gas or a vapour as electron source (-gas-filled discharge tubes with gaseous cathodes [H01J 15/00](#)-)}
- H01J 3/026
 - • {Eliminating deleterious effects due to thermal effects, electric or magnetic field (-[H01J 3/021](#) to [H01J 3/025](#) take precedence-)}
- H01J 3/027
 - • {Construction of the gun or parts thereof (-[H01J 3/021](#) to [H01J 3/025](#) , [H01J 3/026](#) and [H01J 3/028](#) take precedence-)}
- H01J 3/028
 - • {Replacing parts of the gun; Relative adjustment (-[H01J 3/021](#) to [H01J 3/025](#) take precedence-)}
- H01J 3/04
 - Ion guns{ see provisionally also [H01J 27/00](#)-}
- H01J 3/06
 - two or more guns being arranged in a single vacuum space, e.g. for plural-ray tubes (-[H01J 3/07](#) takes precedence-){ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
- H01J 3/07
 - Arrangements for controlling convergence of a plurality of beams{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
- H01J 3/08
 - Arrangements for controlling intensity of ray or beam (-[H01J 3/02](#) , [H01J 3/04](#) take precedence-){ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
- H01J 3/10
 - Arrangements for centering ray or beam (-[H01J 3/02](#) , [H01J 3/04](#) take precedence-){ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
- H01J 3/12
 - Arrangements for controlling cross-section of ray or beam; Arrangements for correcting aberration of beam, e.g. due to lenses (-[H01J 3/02](#) , [H01J 3/04](#) take precedence-){ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
- H01J 3/14
 - Arrangements for focusing or reflecting ray or beam (-[H01J 3/02](#) , [H01J 3/04](#) take precedence-){ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
- H01J 3/16
 - • Mirrors{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}

- H01J 3/18
 - H01J 3/20
 - H01J 3/22
 - H01J 3/24
 - H01J 3/26
 - H01J 3/28
 - H01J 3/30
 - H01J 3/32
 - H01J 3/34
 - H01J 3/36
 - H01J 3/38
 - U H01J 3/381
 - U H01J 3/383
 - H01J 3/385
 - H01J 3/386
 - H01J 3/388
 - H01J 3/40
 - U H01J 5/00**
 - U H01J 5/02
 - H01J 5/04
 - H01J 5/08
 - H01J 5/16
 - U H01J 5/32
 - H01J 5/34
 - H01J 5/48
 - H01J 5/50
 - U H01J 7/00**
 - H01J 7/02
- • Electrostatic lenses{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - • Magnetic lenses{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - • • using electromagnetic means only{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - • • using permanent magnets only{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - Arrangements for deflecting ray or beam (-circuit arrangements for producing saw-tooth pulses or other deflecting voltages or currents [H03K](#) ; { [H01J 29/46](#) to [H01J 29/84](#) and [H01J 37/147](#) take precedence)}
 - • along one straight line or along two perpendicular straight lines{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - • • by electric fields only{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - • • by magnetic fields only{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - • along a circle, spiral, or rotating radial line{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - Arrangements for controlling the ray or beam after passing the main deflection system, e.g. for post-acceleration or post-concentration{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - Mounting, supporting, spacing, or insulating electron-optical or ion-optical arrangements{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
 - • {Dispersed generators}
 - • • {the generators exploiting regenerative energy}
 - • • • {Solar energy (generation of electric power by conversion of light [H02S](#))}
 - • • • {Wind energy (wind motors [F03D](#))}
 - • • {using fuel cells (-fuel cells per se [H01M 8/00](#)-)}
 - Traps for removing or diverting unwanted particles, e.g. negative ions, fringing electrons; Arrangements for velocity or mass selection{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#)-}
- Details relating to vessels or to leading-in conductors common to two or more basic types of discharge tubes or lamps**
- Vessels; Containers; Shields associated therewith; Vacuum locks
 - • Vessels or containers characterised by the material thereof (-selection of the material of the coating [H01J 5/08](#)-)
 - • provided with coatings on the walls thereof; Selection of materials for the coatings (-luminescent coatings [H01J 1/62](#)-)
 - • Optical or photographic arrangements structurally combined with the vessel (-luminescent coatings [H01J 1/62](#)-){ see provisionally [H01J 29/84](#)-}
 - Seals for leading-in conductors
 - • for an individual conductor (-pinched-stem seals [H01J 5/38](#) ; end-disc seals [H01J 5/40](#) ; annular seals [H01J 5/44](#)-)
 - Means forming part of the tube or lamp for the purpose of supporting it (-associated with electrical connecting means [H01J 5/50](#)-)
 - Means forming part of the tube or lamps for the purpose of providing electrical connection to it (-construction of connectors [H01R](#)-)
- Details not provided for in the preceding groups and common to two or more basic types of discharge tubes or lamps**
- Selection of substances for gas fillings; Specified operating pressure or temperature (-radioactive fillings [H01J 7/40](#)-)

- H01J 7/24
- Cooling arrangements (-for main electrodes [H01J 1/02-](#)); Heating arrangements (-for main electrodes [H01J 1/02-](#)); Means for circulating gas or vapour within the discharge space
- H01J 7/30
- Igniting arrangements (-circuit arrangements [H02M 1/02](#) , [H05B-](#))
- H01J 9/00**
- Apparatus or processes specially adapted to the manufacture, {installation, removal, maintenance} of electric discharge tubes, discharge lamps, or parts thereof (-manufacture of vessels or containers from metal [B21](#), e.g. [B21D 51/00](#) , from glass [C03B-](#)); Recovery of material from discharge tubes or lamps**
- U H01J 9/02
- Manufacture of electrodes or electrode systems
- U H01J 9/04
- • of thermionic cathodes
- U H01J 9/042
- • • {Manufacture, activation of the emissive part}
- H01J 9/045
- • • • {Activation of assembled cathode (-regeneration [H01J 9/505-](#))}
- H01J 9/047
- • • • {Cathodes having impregnated bodies (-[H01J 9/045](#) takes precedence-)}
- U H01J 9/14
- • of non-emitting electrodes
- U H01J 9/142
- • • {of shadow-masks for colour television tubes}
- H01J 9/146
- • • • {Surface treatment, e.g. blackening, coating (-[H01J 9/144](#) takes precedence-)}
- U H01J 9/20
- Manufacture of screens on or from which an image or pattern is formed, picked up, converted or stored; Applying coatings to the vessel
- U H01J 9/22
- • Applying luminescent coatings
- U H01J 9/227
- • • with luminescent material discontinuously arranged, e.g. in dots or lines
- H01J 9/2271
- • • • {by photographic processes (-final treatment of shadow-mask prior to or after dot deposition [H01J 9/144-](#))}
- H01J 9/2276
- • • • {Development of latent electrostatic images (-per se [G03G 15/06-](#))}
- H01J 9/233
- • Manufacture of photo-electric screens or charge-storage screens{ no documents, see [H01J 29/36-](#)}
- H01J 9/236
- Manufacture of magnetic deflecting devices for cathode-ray tubes (-manufacturing coils for transformers, inductances, reactors or choke coils [H01F 41/04-](#))
- U H01J 9/24
- Manufacture or joining of vessels, leading-in conductors or bases
- H01J 9/241
- • {the vessel being for a flat panel display (-[H01J 9/261](#) takes precedence; flat discharge lamps [H01J 9/248-](#))}
- H01J 9/244
- • {specially adapted for cathode ray tubes (-[H01J 9/241](#) , [H01J 9/26](#) take precedence-)}
- H01J 9/245
- • {specially adapted for gas discharge tubes or lamps (-[H01J 9/241](#) , [H01J 9/26](#) take precedence-)}
- U H01J 9/26
- • Sealing together parts of vessels
- H01J 9/261
- • • {the vessel being for a flat panel display (-for flat discharge lamps [H01J 9/268-](#))}
- H01J 9/263
- • • • {specially adapted for cathode-ray tubes (-[H01J 9/261](#) takes precedence-)}
- H01J 9/265
- • • • {specially adapted for gas-discharge tubes or lamps (-[H01J 9/261](#) takes precedence-)}
- U H01J 9/32
- • Sealing leading-in conductors
- H01J 9/323
- • • {Sealing leading-in conductors into a discharge lamp or a gas-filled discharge device (-for incandescent lamps [H01K 3/20](#) , joining glass to metal [C03C 27/00-](#))}
- U H01J 9/44
- Factory adjustment of completed discharge tubes or lamps to comply with desired tolerances

- H01J 9/445
- {Aging of tubes or lamps, e.g. by "spot knocking"(-cathode activation [H01J 9/045](#)-)}
- U H01J 9/50
- Repairing or regenerating used or defective discharge tubes or lamps
- H01J 9/505
- {Regeneration of cathodes(-activation [H01J 9/045](#)-)}
- H01J 9/52
- Recovery of material from discharge tubes or lamps ([H01J 9/50](#) takes precedence-)
- H01J 11/00**
- Gas-filled discharge tubes with alternating current induction of the discharge, e.g. AC-PDPs [Alternating Current Plasma Display Panels] (-circuits or methods for driving PDPs [G09G 3/28](#)-); Gas-filled discharge tubes without any main electrode inside the vessel; Gas-filled discharge tubes with at least one main electrode outside the vessel (-discharge lamps [H01J 65/00](#) { [H01J 61/00](#) , [H01J 63/00](#) })**
- NOTE
- (1) When classifying in this group, classification is made in all appropriate places.
 (2) In this group, the following term is used with the meaning indicated:
 - "main electrode" means any of a sustain electrode, scan electrode or address electrode.
- H01J 13/00**
- Discharge tubes with liquid-pool cathodes, e.g. metal-vapour rectifying tubes (-lamps [H01J 61/00](#)-)**
- U H01J 13/02
- Details
- U H01J 13/04
- • Main electrodes; Auxiliary anodes
- H01J 13/16
- • • Anodes; Auxiliary anodes for maintaining the discharge(-screens [H01J 13/22](#)-)
- H01J 13/20
- • Control electrodes, e.g. grid (-for igniting arrangements [H01J 13/34](#)-)
- H01J 13/32
- • Cooling arrangements; Heating arrangements (-for cathodes [H01J 13/14](#) ; for anodes [H01J 13/18](#)-)
- H01J 13/34
- • Igniting arrangements(-circuits arrangements [H02M 1/02](#)-)
- H01J 13/44
- • Devices for preventing or eliminating arcing-back (-screens therefor [H01J 13/22](#)-)
- H01J 15/00**
- Gas-filled discharge tubes with gaseous cathodes, e.g. plasma cathode(-lamps [H01J 61/62](#)-)**
- H01J 17/00**
- Gas-filled discharge tubes with solid cathode (-[H01J 25/00](#) , [H01J 27/00](#) , [H01J 31/00](#) to [H01J 41/00](#) { [H01J 11/00](#) } take precedence; gas or vapour discharge lamps [H01J 61/00](#) ; gas filled spark gaps [H01T](#); Marx converters [H02M 7/26](#) ; tubes for generating potential differences by charges carried in a gas stream [H02N](#)-)**
- H01J 17/005
- {specially adapted as noise generators(-electronic circuits for generation of noise currents or voltages [H03B 29/00](#)-)}
- U H01J 17/02
- Details
- H01J 17/20
- • Selection of substances for gas fillings; Specified operating pressure or temperature (-radioactive fillings [H01J 17/32](#)-)
- H01J 17/38
- Cold-cathode tubes (-TR boxes [H01J 17/64](#)-)
- H01J 17/40
- • with one cathode and one anode, e.g. glow tube, tuning-indicator glow tube, voltage-stabiliser tube, voltage-indicator tube,(-cathode-glow lamps [H01J 61/04](#)-)
- U H01J 17/48
- • with more than one cathode or anode, e.g. sequence-discharge tube, counting tube, dekatron
- H01J 17/485
- • • {Plasma addressed liquid crystal displays [PALC]}

- H01J 17/49
- • • Display panels, e.g. with crossed electrodes {e.g. making use of direct current}{-gas discharge type indicating arrangements effected by the combination of a number of individual lamps [G09F 9/313](#) {display panels making use of alternating current [H01J 11/00](#)}
- U H01J 17/492
- • • • {with crossed electrodes}
- H01J 17/494
- • • • • {using sequential transfer of the discharges, e.g. of the self-scan type}{-addressing circuits therefor [G09G 3/29](#)}
- H01J 17/50
- Thermionic-cathode tubes (-TR boxes [H01J 17/64](#)-)
- H01J 19/00**
- Details of vacuum tubes of the types covered by group [H01J 21/00](#)**
- U H01J 19/02
- Electron-emitting electrodes; Cathodes
- U H01J 19/04
- • Thermionic cathodes
- U H01J 19/14
- • • Cathodes heated indirectly by an electric current; Cathodes heated by electron or ion bombardment
- H01J 19/16
- • • • Heaters (-filaments for incandescent lamps [H01K 1/02](#)-)
- U H01J 19/28
- Non-electron-emitting electrodes; Screens
- H01J 19/40
- • Screens for shielding (-screens acting as control electrodes [H01J 19/38](#)-)
- U H01J 19/42
- Mounting, supporting, spacing, or insulating of electrodes or of electrode assemblies
- H01J 19/44
- • Insulation between electrodes or supports within the vacuum space (-leading-in conductors [H01J 19/62](#)-)
- H01J 19/48
- • Mountings for individual electrodes (-for directly-heated cathodes [H01J 19/12](#)-)
- H01J 19/64
- Means forming part of the tube for the purpose supporting it (-associated with electrical connecting means [H01J 19/66](#)-)
- H01J 19/66
- Means forming part of the tube for the purpose of providing electrical connection to it (-construction of connectors [H01R](#)-){ no documents, see [H01J 5/46](#) to [H01J 5/62](#)-}
- H01J 19/74
- Cooling arrangements (-cooling of anodes [H01J 19/36](#)-)
- H01J 21/00**
- Vacuum tubes (-[H01J 25/00](#) , [H01J 31/00](#) to [H01J 37/00](#) , [H01J 43/00](#) take precedence; details of vacuum tubes [H01J 19/00](#) ; cathode ray or electron stream lamps [H01J 63/00](#)-)**
- H01J 21/20
- Tubes with more than one discharge path; Multiple tubes, e.g. double diode, triode-hexode (-secondary-emission tubes, electron-multiplier tubes [H01J 43/00](#)-)
- H01J 21/34
- Tubes with electrode system arranged or dimensioned so as to eliminate transit-time effect (-with flat electrodes [H01J 21/36](#)-)
- H01J 23/00**
- Details of transit-time tubes of the types covered by group [H01J 25/00](#)**
- H01J 23/005
- {Cooling methods or arrangements (-[H01J 23/033](#) takes precedence-)}
- H01J 23/02
- Electrodes; Magnetic control means; Screens (-associated with resonator or delay system [H01J 23/16](#)-)
- U H01J 23/06
- • Electron or ion guns
- H01J 23/065
- • • producing a solid cylindrical beam (-[H01J 23/075](#) takes precedence-)
- H01J 23/07
- • • producing a hollow cylindrical beam (-[H01J 23/075](#) takes precedence-)
- H01J 23/09
- • Electric system for directing or deflecting the discharge along a desired path, e.g. E-type (-focusing arrangements [H01J 23/08](#)-)
- H01J 23/10
- • Magnet systems for directing or deflecting the discharge along a desired path, e.g. a spiral path (-magnetic focusing arrangements [H01J 23/08](#)-)
- H01J 23/11
- • Means for reducing noise (-in electron or ion gun [H01J 23/06](#)-)

- H01J 23/16
- Circuit elements, having distributed capacitance and inductance, structurally associated with the tube and interacting with the discharge (-circuit elements, having distributed capacitance and inductance, in general [H01P-](#))
- U H01J 23/36
- Coupling devices having distributed capacitance and inductance, structurally associated with the tube, for introducing or removing wave energy
- U H01J 23/40
- • to or from the interaction circuit
- H01J 23/42
- • • the interaction circuit being a helix or a helix-derived slow-wave structure (-[H01J 23/44](#) to [H01J 23/48](#) take precedence-)
- H01J 23/44
- • • Rod-type coupling devices (-[H01J 23/46](#) , [H01J 23/48](#) , [H01J 23/54](#) take precedence-)
- H01J 23/48
- • • for linking interaction circuit with coaxial lines; Devices of the coupled helices type (-[H01J 23/46](#) takes precedence-)
- H01J 23/50
- • • • the interaction circuit being a helix or derived from a helix (-[H01J 23/52](#) takes precedence-)
- H01J 25/00**
- Transit-time tubes, e.g. Klystrons, travelling-wave tubes, magnetrons (-details of transit-time tubes [H01J 23/00](#) ; particle accelerators [H05H-](#))**
- H01J 25/02
- Tubes with electron stream modulated in velocity or density in a modulator zone and thereafter giving up energy in an inducing zone, the zones being associated with one or more resonators (-tubes in which a travelling-wave is simulated at spaced gaps [H01J 25/34](#)-)
- U H01J 25/34
- Travelling-wave tubes; Tubes in which a travelling wave is simulated at spaced gaps
- H01J 25/42
- • Tubes in which an electron stream interacts with a wave travelling along a delay line or equivalent sequence of impedance elements, and with a magnet system producing an H-field crossing the E-field (-with travelling wave moving completely around the electron space [H01J 25/50](#)-)
- H01J 25/50
- Magnetrons, i.e. tubes with a magnet system producing an H-field crossing the E-field (-with travelling wave not moving completely around the electron space [H01J 25/42](#) ; functioning with plural reflection or with reversed cyclotron action [H01J 25/62](#) , [H01J 25/64](#)-)
- U H01J 25/52
- • with an electron space having a shape that does not prevent any electron from moving completely around the cathode or guide electrode
- H01J 25/54
- • • having only one cavity or other resonator, e.g. neutrode tube (-having a composite resonator [H01J 25/58](#)-)
- H01J 25/68
- Tubes specially designed to act as oscillator with positive grid and retarding field, e.g. for Barkhausen-Kurz oscillators (-with secondary emission [H01J 25/76](#)-)
- H01J 25/72
- • in which a standing wave or a considerable part thereof is produced along an electrode, e.g. Clavier tube (-with resonator having distributed inductance and capacitance [H01J 25/70](#)-)
- H01J 25/74
- Tubes specially designed to act as transit-time diode oscillators, e.g. monotron (-with secondary emission [H01J 25/76](#)-)
- H01J 27/00**
- Ion beam tubes (-[H01J 25/00](#) , [H01J 33/00](#) , [H01J 37/00](#) take precedence; particle accelerators [H05H-](#))**
- H01J 27/02
- Ion sources; Ion guns (for examination or processing discharge tubes [H01J 37/08](#) ; ion sources, ion guns for particle spectrometer or separator tubes [H01J 49/10](#) ; ion propulsion [F03H 1/00](#)); arrangements for handling particles, e.g. focusing, {charge exchanging, polarising} , [G21K 1/00](#) ; generating ions to be introduced into non-enclosed gases [H01T 23/00](#) ; generating plasma [H05H 1/24](#)-)

- H01J 27/04
 - • using reflex discharge, e.g. Penning ion sources{ Electron bombardment ion sources [H01J 27/08](#)-}
- U H01J 27/08
 - • using arc discharge
- H01J 27/10
 - • • Duoplasmatrons (-for use in particle accelerators [H05H 7/00](#)-){ [H05H 7/00](#) not used therefor; Duopigatrons-}
- H01J 27/20
 - • using particle {beam}bombardment, e.g. ionisers
- H01J 27/26
 - • using surface ionisation, e.g. field effect ion sources, thermionic ion sources (-[H01J 27/20](#) , [H01J 27/24](#) take precedence-)
- H01J 29/00**

Details of cathode-ray tubes or of electron-beam tubes of the types covered by group [H01J 31/00](#)
- H01J 29/003
 - {Arrangements for eliminating unwanted electromagnetic effects, e.g. demagnetisation arrangements, shielding coils (-[H01J 29/06](#) , [H01J 29/867](#) take precedence; demagnetisation in general [H01F 13/00](#) ; circuit arrangements therefor [H04N 9/29](#) ; screening of apparatus against electric or magnetic fields [H05K 9/00](#)-)}
- U H01J 29/02
 - Electrodes; Screens; Mounting, supporting, spacing or insulating thereof
- H01J 29/021
 - • {arrangements for eliminating interferences in the tube (-[H01J 29/484](#) takes precedence-)}
- H01J 29/023
 - • {secondary-electron emitting electrode arrangements (-secondary-emission tubes [H01J 43/00](#)-)}
- H01J 29/025
 - • {Mounting or supporting arrangements for grids (-[H01J 29/028](#) takes precedence-)}
- H01J 29/04
 - • Cathodes (-electron guns [H01J 29/48](#)-)
- H01J 29/08
 - • Electrodes intimately associated with a screen on or from which an image or pattern is formed, picked up, converted, or stored, e.g. backing-plate for storage tube, for collecting secondary electrons (-arrangements for colour switching [H01J 29/80](#)-)
- U H01J 29/10
 - • Screens on or from which an image or pattern is formed, picked up, converted or stored
- U H01J 29/18
 - • • Luminescent screens
- H01J 29/187
 - • • • {screens with more than one luminescent material (*as mixtures for the treatment of the screens*)(*as mixtures for the treatment of the screens*)(-for several superimposed luminescent layers [H01J 29/26](#) ; for adjacent dots or lines of different luminescent material [H01J 29/32](#)-)}
- H01J 29/20
 - • • • characterised by the luminescent material{ for luminescent screens for X-ray purposes [G21K 4/00](#)-}
- U H01J 29/36
 - • • Photoelectric screens; Charge-storage screens
- H01J 29/38
 - • • • not using charge storage, e.g. photo-emissive screen, extended cathode(-electrodes using photo-emission in general [H01J 1/34](#)-)}
- H01J 29/385
 - • • • • {Photocathodes comprising a layer which modified the wave length of impinging radiation (-luminescent layers sensitive to UV and X-rays [C09K 11/00](#) , [G21K 4/00](#)-)}
- H01J 29/39
 - • • • • Charge-storage screens(-[H01J 29/395](#) takes precedence-)}
- H01J 29/41
 - • • • • using secondary emission, e.g. for supericonoscope(-electrodes using secondary emission in general [H01J 1/32](#) ; secondary emission tubes [H01J 43/00](#)-)}
- H01J 29/44
 - • • • • exhibiting internal electric effects caused by particle radiation, e.g. bombardment-induced conductivity(-particle detectors exhibiting internal electric effects [G01T 1/26](#)-)}

- H01J 29/45
- • • • exhibiting internal electric effects caused by electromagnetic radiation, e.g. photo-conductive screen, photo-dielectric screen, photovoltaic screen{ photoconductive layers for electrography [G03G 5/00](#)}
- H01J 29/46
- Arrangements of electrodes and associated parts for generating or controlling the ray or beam, e.g. electron-optical arrangement{(transit time tubes [H01J 23/00](#) , [H01J 25/00](#) ; X-ray tubes [H01J 35/00](#) ; beam tubes for examining ions, e.g. electron or ion microscopes, or processing of objects or materials e.g. electron or ion beam tubes [H01J 37/04](#) ; electron multipliers [H01J 43/04](#) ; handling of radiation or particles, e.g. focusing, deviating, not otherwise provided for [G21K 1/00](#)-)}
- H01J 29/467
- {-Control electrodes for flat display tubes, e.g. of the type covered by group [H01J 31/123](#)-}
- NOTE
[H01J 29/48](#) to [H01J 29/51](#) take precedence over groups [H01J 29/52](#) to [H01J 29/68](#) .
- U H01J 29/48
- • Electron guns
- H01J 29/484
- • {Eliminating deleterious effects due to thermal effects, electrical or magnetic fields; Preventing unwanted emission (~~-[H01J 29/481](#) and [H01J 29/482](#) take precedence-~~)}
- H01J 29/485
- • {Construction of the gun or of parts thereof (~~-[H01J 29/481](#) , [H01J 29/482](#) , [H01J 29/484](#) and [H01J 29/487](#) take precedence-~~)}
- H01J 29/487
- • {Replacing parts of the gun; Relative adjustment of the electrodes (~~-[H01J 29/481](#) and [H01J 29/482](#) take precedence;~~ vacuum locks [H01J 29/865](#)-)}
- H01J 29/50
- • Two or more guns in a single vacuum space, e.g. for plural-ray tube (~~-[H01J 29/51](#) takes precedence-~~)
- H01J 29/51
- • Arrangements for controlling convergence of a plurality of beams {by means of electric field only}
- H01J 29/52
- • Arrangements for controlling intensity of ray or beam, e.g. for modulation{(del-[H01J 29/467](#) takes precedence-)}
- H01J 29/54
- • Arrangements for centring ray or beam{(del-[H01J 29/467](#) takes precedence-)}
- H01J 29/56
- • Arrangements for controlling cross-section of ray or beam; Arrangements for correcting aberration of beam, e.g. due to lenses{(del-[H01J 29/467](#) takes precedence-)}
- H01J 29/58
- • Arrangements for focusing or reflecting ray or beam{(del-[H01J 29/467](#) , [H01J 29/585](#) take precedence-)}
- H01J 29/70
- • Arrangements for deflecting ray or beam ({ [H01J 29/467](#) , [H01J 29/525](#) , [H01J 29/701](#) , [H01J 29/708](#) take precedence } ; circuit arrangements for producing saw-tooth pulses or other deflecting voltages or currents [H03K](#)-)
- U H01J 29/72
- • • along one straight line or along two perpendicular straight lines
- U H01J 29/76
- • • • Deflecting by magnetic fields only
- H01J 29/762
- • • • {using saddle coils or printed windings (del-coils per se [H01F](#)-)}
- H01J 29/768
- • • • {using printed windings (del-printed windings in general [H01F 27/2804](#) ; manufacturing printed coils per se [H01F 41/04](#) ; printed circuits and apparatus or processes for manufacturing printed circuits in general [H05K 1/00](#) , e.g. [H05K 1/16](#) , and [H05K 3/00](#)-)}
- H01J 29/80
- • Arrangements for controlling the ray or beam after passing the main deflection system, e.g. for post-acceleration or post-concentration, for colour switching{(del-[H01J 29/701](#) takes precedence-)}
- H01J 29/81
- • • using shadow masks (del-shadow masks per se [H01J 29/07](#)-)

- H01J 29/84
 - Traps for removing or diverting unwanted particles, e.g. negative ions, fringing electrons; Arrangements for velocity or mass selection (~~-particle spectrometer or separator tubes [H01J 49/00](#)-~~)
- U H01J 29/86
 - Vessels; Containers; Vacuum locks
- H01J 29/865
 - • {Vacuum locks (~~-for tubes for examining or processing of objects or materials e.g. electron microscopes [H01J 37/18](#)-~~)}
- H01J 29/867
 - • {Means associated with the outside of the vessel for shielding, e.g. magnetic shields (~~-screens for shielding inside the vessel [H01J 29/06](#) ; magnetic shielding in general [H05K 9/00](#)-~~)}
- H01J 29/88
 - • provided with coatings on the walls thereof; Selection of materials for the coatings ({ [H01J 29/868](#) and [H01J 29/89](#) take precedence } ; luminescent screens [H01J 29/18](#)-)
- H01J 29/89
 - • Optical or photographic arrangements structurally combined (or co-operating)with the vessel(~~-[H01J 29/866](#) and [H01J 29/868](#) take precedence-~~)
- H01J 29/894
 - • • {Arrangements combined with the vessel for the purpose of image projection on a screen (~~-projection arrangements for image reproduction, e.g. using eidophor [H04N 5/74](#)-~~)}
- H01J 29/92
 - Means forming part of the tube for the purpose of providing electrical connection to it (~~-construction of connectors [H01R](#)-~~)
- H01J 29/94
 - Selection of substances for gas fillings; Means for obtaining or maintaining the desired pressure within the tube e.g. by gettering(~~-exhausting, degassing, gettering of electric discharge tubes in general [H01J 9/38](#)-~~)
- H01J 31/00**
 - Cathode ray tubes; Electron beam tubes (~~-[H01J 25/00](#) , [H01J 35/00](#) , [H01J 37/00](#) take precedence; cathode ray or electron stream lamps [H01J 63/00](#) ; details of cathode ray tubes or of electron beam tubes [H01J 29/00](#)-~~)**
- H01J 31/02
 - having one or more output electrodes which may be impacted selectively by the ray or beam, and onto, from, or over which the ray or beam may be deflected or de-focused{ pulse counting circuits therewith [H03K 29/06](#)-}
- H01J 31/04
 - • with only one or two output electrodes {with only two electrically independant groups or electrodes}
- U H01J 31/06
 - • with more than two output electrodes, e.g. for multiple switching or counting
- H01J 31/065
 - • • {for electrography or electrophotography, for transferring a charge pattern through the faceplate (~~-leading-in arrangements [H01J 29/90](#) ; Lenard tubes [H01J 33/00](#) ; electrography or electrophotography per se [G03C](#)-~~)}
- U H01J 31/08
 - having a screen on or from which an image or pattern is formed, picked up, converted, or stored
- U H01J 31/10
 - • Image or pattern display tubes, i.e. having electrical input and optical output; Flying-spot tubes for scanning purposes
- U H01J 31/12
 - • • with luminescent screen
- H01J 31/121
 - • • • {tubes for oscillography (~~-colour display tubes [H01J 31/20](#) ; cathode ray oscillography [G01R 13/20](#)-~~)}
- H01J 31/122
 - • • • {Direct viewing storage tubes without storage grid (~~-with storage grid [H01J 31/18](#)-~~)}
- H01J 31/128
 - • • • {provided with control means permitting the electron beam to reach selected parts of the screen, e.g. digitally controlled display tubes (~~-[H01J 31/123](#) takes precedence-~~)}
- H01J 31/14
 - • • • Magic-eye or analogous tuning indicators(~~-mounting of visual indicators in a radio set [H03J 1/04](#) ; circuits for timing indicators [H03J 3/14](#)-~~)}
- H01J 31/15
 - • • • with ray or beam selectively directed to luminescent anode segments(~~-printing by application of radiation [B41J 2/447](#)-~~)}

- H01J 31/16
- • • with mask carrying a number of selectively displayable signs, e.g. charactron, numeroscope{(tubes with a mask carrying a matrix of openings, a selection of which permits a sign to be displayed [H01J 31/128](#)-)}
- H01J 31/18
- • • with image written by a ray or beam on a grid-like charge-accumulating screen, and with a ray or beam passing through and influenced by this screen before striking the luminescent screen, e.g. direct-view storage tube{(charge storage grids exhibiting triode effect [H01J 29/395](#)-)}
- H01J 31/20
- • for displaying images or patterns in two or more colours{(circuits for colour television [H04N 9/16](#) to [H04N 9/28](#)-)}
- H01J 31/24
- • with screen acting as light valve by shutter operation, e.g. eidophor{(projection arrangements for image reproduction, e.g. using eidophor [H04N 5/74](#)-)}
- H01J 31/26
- Image pick-up tubes having an input of visible light and electric output{(tubes without defined electron beams and having a light ray scanning photo-emissive screen [H01J 40/20](#)-)}
- H01J 31/28
- • with electron ray scanning the image screen{ [H01J 31/283](#) , [H01J 31/286](#) take precedence-}
- H01J 31/46
- • Tubes in which electrical output represents both intensity and colour of image{ colour television cameras with only one tube [H04N 9/07](#)-}
- U H01J 31/50
- Image-conversion or image-amplification tubes, i.e. having optical, X-ray, or analogous input, and optical output
- H01J 31/501
- • {with an electrostatic electron optic system ([H01J 31/52](#) to [H01J 31/56](#) take precedence-)}
- H01J 31/502
- • • {with means to interrupt the beam e.g. shutter for high speed photography (circuits using electron-beam shutters [G03B 27/725](#)-)}
- H01J 31/503
- • {with an electromagnetic electron-optic system ([H01J 31/52](#) to [H01J 31/56](#) take precedence-)}
- H01J 31/58
- Tubes for storage of image or information pattern or for conversion of definition of television or like image, i.e. having electrical input and electrical output{(electrostatic memories using electron beam tubes [G11C 11/23](#)-)}
- H01J 31/585
- • {Monoscopes ([H01J 31/60](#) takes precedence-)}
- H01J 31/60
- • having means for deflecting, either selectively or sequentially, an electron ray on to separate surface elements of the screen{(by circuitry alone [H01J 29/08](#)-)}
- H01J 33/00**
- Discharge tubes with provision for emergence of electrons or ions from the vessel ({ irradiation devices [G21K](#) } ; particle accelerators [H05H](#)-); Lenard tubes**
- H01J 33/02
- Details{(vessels for operation at high tension [H01J 5/06](#)-)}
- H01J 35/00**
- X-ray tubes (X-ray lasers [H01S 4/00](#) ; X-ray technique in general [H05G](#) , { e.g. apparatus or processes specially adapted for producing X-rays, not involving X-ray tubes, e.g. involving generation of a plasma [H05G 2/00](#))**
- U H01J 35/02
- Details
- H01J 35/04
- Electrodes {mutual position thereof and constructional adaptations of the electrodes therefor}
- H01J 35/06
- • Cathodes{(electron guns in general [H01J 3/02](#)-)}
- H01J 35/08
- • Anodes; Anti cathodes{(anti-cathodes serving as windows [H01J 35/18](#)-)}
- H01J 35/12
- • • Cooling non-rotary anodes{(mounting the tube within a closed housing, e.g. for cooling purposes [H05G 1/04](#)-)}
- H01J 35/14
- Arrangements for concentrating, focusing, or directing the cathode ray{(for cathode ray tubes in general [H01J 29/46](#)-)}

- H01J 35/16
 - • Vessels; Containers; Shields associated therewith{(-vessels for high tension operation in general [H01J 5/06](#) ; mounting the tube within a closed housing [H05G 1/04-](#))}
- H01J 35/20
 - • Selection of substances for gas fillings; Means for obtaining or maintaining the desired pressure within the tube, e.g. by gettering{(-for gas-discharge tubes in general [H01J 7/02](#) to [H01J 61/76](#) ; evacuating, filling, gettering in general [H01J 9/38-](#))}
- H01J 37/00**

Discharge tubes with provision for introducing objects or material to be exposed to the discharge, e.g. for the purpose of examination or processing thereof ([-H01J 33/00](#) , [H01J 40/00](#) , [H01J 41/00](#) , [H01J 47/00](#) , [H01J 49/00](#) take precedence; {scanning-probe techniques or apparatus [G01Q](#)} ; contactless testing of electronic circuits using electron beams [G01R 31/305](#) ; {particle accelerators [H05H](#)})
- U H01J 37/02
 - Details
- H01J 37/023
 - • {Means for mechanically adjusting components not otherwise provided for (mechanically adjusting from the outside of electron or ion-optical components [H01J 37/067](#) ; positioning the object or material [H01J 37/20](#) ; vacuum locks, means for obtaining or maintaining the desired pressure within the tube [H01J 37/18](#) ; other manipulating devices [H01L 21/48](#) , [G21F-](#))}
- H01J 37/04
 - • Arrangements of electrodes and associated parts for generating or controlling the discharge, e.g. electron-optical arrangement, ion-optical arrangement{ electron or ion-optical systems for localised treatment of materials [H01J 37/3007](#) ; discharge control means in gas filled discharge tubes [H01J 37/32009-](#)}
- H01J 37/05
 - • • Electron or ion-optical arrangements for separating electrons or ions according to their energy {or mass}{-particle separator tubes [H01J 49/00-](#)}
- H01J 37/06
 - • • Electron sources; Electron guns{ electron sources in general [H01J 1/02](#) , [H01J 19/02](#) ; electron guns in general [H01J 3/02-](#)}
- H01J 37/065
 - • • • Construction of guns or parts thereof ([-H01J 37/067](#) to [H01J 37/077](#) take precedence-)
- H01J 37/067
 - • • • Replacing parts of guns; Mutual adjustment of electrodes ([-H01J 37/073](#) to [H01J 37/077](#) take precedence; vacuum locks [H01J 37/18-](#))
- H01J 37/07
 - • • • Eliminating deleterious effects due to thermal effects or electric or magnetic fields ([-H01J 37/073](#) to [H01J 37/077](#) take precedence-)
- U H01J 37/10
 - • • Lenses
- U H01J 37/14
 - • • • magnetic
- U H01J 37/141
 - • • • • Electromagnetic lenses
- H01J 37/1413
 - • • • • • {Means for interchanging parts of the lens, e.g. pole pieces, within the tube (mechanically adjusting electron (ion) optical components [H01J 37/15-](#))}
- H01J 37/147
 - • • Arrangements for directing or deflecting the discharge along a desired path, ({ [H01J 37/045](#) takes precedence } ; lenses [H01J 37/10-](#))
- H01J 37/15
 - • • • External mechanical adjustment of electron or ion optical components ([-H01J 37/067](#) , [H01J 37/20](#) take precedence-)
- H01J 37/18
 - • Vacuum locks; {Means for obtaining or maintaining the desired pressure within the vessel(-vacuum locks for electron-beam tubes in general [H01J 29/865-](#))}
- H01J 37/20
 - • Means for supporting or positioning the objects or the material; Means for adjusting diaphragms or lenses associated with the support{(-introducing the objects [H01J 37/18](#) ; preparing specimens for investigation [G01N 1/06](#) , [G01N 1/28-](#))}

- H01J 37/21
 - • Means for adjusting the focus{(-adjusting the focus while observing the image by photographic or optical means [H01J 37/22](#) ; means for observing the object or the point of impact on the object in tubes for the localised treatment of materials [H01J 37/3005](#)-)}
- H01J 37/22
 - • Optical or photographic arrangements associated with the tube{(-using a CRT for the display of the image in a scanning electron microscope [H01J 37/28](#) ; observing the object or the point of impact on the object in tubes for the localised treatment of materials [H01J 37/3007](#)-)}
- H01J 37/222
 - • • {Image processing arrangements associated with the tube}{(-image data processing or generation, in general [G06T](#)-)}
- H01J 37/224
 - • • {Luminescent screens or photographic plates for imaging (photosensitive materials for photographic purposes [G03C](#)); Apparatus specially adapted therefor, e.g. cameras, TV-cameras, photographic equipment, exposure control; Optical subsystems specially adapted therefor, e.g. microscopes for observing image on luminescent screen}
- U H01J 37/24
 - • Circuit arrangements not adapted to a particular application of the tube and not otherwise provided for
- H01J 37/241
 - • • {High voltage power supply or regulation circuits}{(-components [H01J 37/248](#)-)}
- H01J 37/242
 - • • {Filament heating power supply or regulation circuits}{(-[H01J 37/241](#) takes precedence-)}
- H01J 37/243
 - • • {Beam current control or regulation circuits}{(-[H01J 37/241](#) takes precedence-)}
- H01J 37/244
 - • Detectors; Associated components or circuits therefor}{(-detectors per se [G01T](#)-)}
- H01J 37/248
 - • Components associated with high voltage supply}{({ Means for measuring the high voltage per se [G01R 15/00](#) } ; high voltage supply per se [H02J](#) , [H02M](#)-)}
- H01J 37/252
 - Tubes for spot-analysing by electron or ion beams; Microanalysers}{(-investigating or analysing thereby [G01N 23/22](#)-)}
- U H01J 37/26
 - Electron or ion microscopes; Electron or ion diffraction tubes
- H01J 37/266
 - • {Measurement of magnetic- or electric fields in the object; Lorentzmicroscopy}{(-emission microscopes [H01J 37/285](#) ; reflecting microscopes [H01J 37/29](#) ; spot analysing [H01J 37/252](#)-)}
- H01J 37/28
 - • with scanning beams}{({ [H01J 37/268](#) , [H01J 37/292](#) , [H01J 37/2955](#) take precedence } ; microanalysers using scanning beams [H01J 37/256](#)-)}
- U H01J 37/30
 - Electron-beam or ion-beam tubes for localised treatment of objects
- U H01J 37/3002
 - • {Details}
- H01J 37/3007
 - • • {Electron or ion-optical systems}{(-electron or ion-optical details [H01J 37/06](#) to [H01J 37/153](#)-)}
- H01J 37/302
 - • Controlling tubes by external information, e.g. programme control}{(-[H01J 37/304](#) takes precedence-)}
- H01J 37/304
 - • Controlling tubes by information coming from the objects {or from the beam}, e.g. correction signals
- H01J 37/305
 - • for casting, melting, evaporating or etching{(-methods for casting or melting of metals with electron beam or gas discharges [C22B 9/22](#)-)}
- H01J 37/3053
 - • • {for evaporating or etching}{(-methods for evaporating or etching metals with electron or ion beams [C23C 14/30](#)-)}
- H01J 37/3056
 - • • • {for microworking, e.g. etching of gratings, trimming of electrical components}{(-trimming of resistors [H01C 17/22](#)-)}
- H01J 37/31
 - • for cutting or drilling{(-methods for cutting or drilling metals with electron beams [B23K 15/00](#)-)}

- H01J 37/315
 - • for welding{(-methods for welding metals with electron beams [B23K 15/00](#)-)}
- H01J 37/317
 - • for changing properties of the objects or for applying thin layers thereon, e.g. for ion implantation (~~H01J 37/36~~ takes precedence-)
- H01J 37/3171
 - • • {for ion implantation (~~plasma immersion ion implantation [H01J 37/32412](#)~~-)}
- U H01J 37/32
 - Gas-filled discharge tubes,{e.g. for surface treatment of objects such as coating, plating, etching, sterilising or bringing about chemical reactions}
 - { general methods or devices for heat treatments of ferrous or non-ferrous metals or alloys by cathodic discharges [C21D 1/38](#) ; methods of carburising or nitriding of metals in general [C23C 8/00](#) ; methods for coating, plating or surface treating of or with metallic material [C23C 8/36](#) , [C23C 14/32](#) , [C23C 16/50](#) ; methods for coating, plating or surface treating of or with semiconductors [H01L 21/00](#) ; }heating by discharge [H05B](#))
- H01J 37/32009
 - • {Arrangements for generation of plasma specially adapted for examination or treatment of objects, e.g. plasma sources (~~plasma generation in general [H05H 1/24](#)~~-)}
- U H01J 37/32055
 - • • {Arc discharge}
- H01J 37/32064
 - • • • {Circuits specially adapted for controlling the arc discharge (~~for plasma torches [H01H 1/36](#)~~-)}
- H01J 37/32082
 - • • {Radio frequency generated discharge (~~H01J [H01J 37/32357](#) , [H01J \[H01J 37/32366\]\(#\)](#) , [H01J \[H01J 37/32394\]\(#\)](#) and [H01J \[H01J 37/32403\]\(#\)](#) take precedence-)}~~
- U H01J 37/32174
 - • • • {Circuits specially adapted for controlling the RF discharge}
- H01J 37/32183
 - • • • • {Matching circuits, impedance matching circuits per se [H03H 7/38](#) and [H03H 7/40](#)}
- H01J 37/32192
 - • • {Microwave generated discharge (~~H01J [H01J 37/32357](#) , [H01J \[H01J 37/32366\]\(#\)](#) , [H01J \[H01J 37/32394\]\(#\)](#) , [H01J \[H01J 37/32403\]\(#\)](#) take precedence-)}~~
- H01J 37/32321
 - • • {Discharge generated by other radiation (~~H01J [H01J 37/32055](#) , [H01J \[H01J 37/32055\]\(#\)](#) , [H01J \[H01J 37/32073\]\(#\)](#) , [H01J \[H01J 37/32082\]\(#\)](#) , [H01J \[H01J 37/32192\]\(#\)](#) , [H01J \[H01J 37/32348\]\(#\)](#) take precedence-)}~~
- U H01J 37/32431
 - • {Constructional details of the reactor}
- H01J 37/32798
 - • • {Further details of plasma apparatus not provided for in groups [H01J 37/3244](#) - [H01J 37/32788](#) ; special provisions for cleaning or maintenance of the apparatus-}
- H01J 37/32807
 - • • • {Construction (*includes replacing parts of the apparatus*)}(~~includes replacing parts of the apparatus~~)}
- H01J 37/34
 - • operating with cathodic sputtering (~~H01J 37/36~~ takes precedence; { methods of cathodic sputtering [C23C 14/34](#) })
- U H01J 37/3411
 - • • {Constructional aspects of the reactor}
- H01J 37/3435
 - • • • {Target holders (*includes backing plates and endblocks*)}(~~includes backing plates and endblocks~~)}
- H01J 37/345
 - • • • {Magnet arrangements in particular for cathodic sputtering apparatus (~~material of magnets or magnets in general [H01F 1/00](#) , [H01F 7/00](#)~~-)}
- H01J 37/3458
 - • • • • {Electromagnets in particular for cathodic sputtering apparatus (~~electromagnets in general [H01F 7/06](#)~~-)}
- H01J 37/36
 - • for cleaning surfaces while plating with ions of materials introduced into the discharge, e.g. introduced by evaporation{(-condensing of electrically charged vapour onto a surface for covering materials with metals [C23C 14/32](#)-)}

- H01J 40/00** **Photoelectric discharge tubes not involving the ionisation of a gas** (~~H01J 49/00~~ takes precedence; cathode-ray or image-pick-up tubes ~~H01J 31/26~~-)
- H01J 40/16 · having photo- emissive cathode, e.g. alkaline photoelectric cell (~~operating with secondary emission H01J 43/00~~-)
- H01J 40/18 · · with luminescent coatings for influencing the sensitivity of the tube, e.g. by converting the input wavelength (~~image-conversion or image-amplification tubes H01J 31/50~~-)
- H01J 41/00** **Discharge tubes for measuring pressure of introduced gas {or for detecting presence of gas}; Discharge tubes for evacuation by diffusion of ions**
- H01J 41/02 · Discharge tubes for measuring pressure of introduced gas {or for detecting presence of gas}
- H01J 41/10 · · of particle spectrometer type (~~particle spectrometers per se H01J 49/00~~){ not used, see [G01L 21/30](#)}
- H01J 43/00** **Secondary-emission tubes; Electron-multiplier tubes** (~~dynamic electron-multiplier tubes H01J 25/76~~ ; secondary-emission detectors for measurement of nuclear or X-radiation [G01T 1/28](#)-)
- H01J 43/04 · Electron multipliers(~~if forming part of electron gun H01J 3/023~~-)}
- U H01J 43/06 · · Electrode arrangements
- H01J 43/08 · · · Cathode arrangements ({ photo-emissive electrodes [H01J 1/34](#) , [H01J 1/35](#) } ; construction of photo cathodes [H01J 40/06](#) , [H01J 40/16](#) , [H01J 47/00](#) , [H01J 49/08](#)-)
- H01J 43/10 · · · Dynodes (~~H01J 43/24~~ , [H01J 43/26](#) take precedence; secondary-electron-emitting electrodes in general [H01J 1/32](#)-)
- U H01J 43/18 · · · Electrode arrangements using essentially more than one dynode
- U H01J 43/24 · · · · Dynodes having potential gradient along their surfaces
- H01J 43/246 · · · · · {Micro-channel plates [MCP]}(~~image amplification tubes using MCP H01J 31/507~~-)}
- H01J 43/28 · · Vessels {wall of the tube}; Windows; Screens; Suppressing undesired discharges or currents
- H01J 45/00** **Discharge tubes functioning as thermionic generators**{(~~structural combination of fuel element with thermoelectric element [G21C 3/40](#) ; nuclear power plants using thermionic converters [G21D 7/04](#) ; structural combination of a radioactive source with a thermionic converter, e.g. radioisotope batteries [G21H 1/10](#) ; generators in which thermal or kinetic energy is converted into electrical energy by ionisation of a fluid and removal of the charge therefrom [H02N 3/00](#)-)}~~
- H01J 47/00** **Tubes for determining the presence, intensity, density or energy of radiation or particles** ({ discharge tubes using igniting by associated radioactive materials or fillings, e.g. current stabilising tubes [H01J 17/32](#) } ; photoelectric discharge tubes not involving the ionisation of a gas [H01J 40/00](#) ; { discharge tubes for measuring the pressure, partial pressure of introduced gas or for detecting presence of gas [H01J 41/02](#) ; ionisation chambers using a solid dielectric [G01T 3/008](#) })
- U H01J 47/001 · {Details}
- U H01J 47/002 · · {Vessels or containers}
- H01J 47/004 · · · {Windows permeable to X-rays, gamma-rays, or particles (~~windows for discharge tubes with provision for emergence of electrons or ions from the vessel [H01J 33/04](#) ; windows for X-ray tubes [H01J 35/18](#)-)}~~

- H01J 47/005
 - • {Gas fillings (~~H01J 47/12~~ takes precedence-); Maintaining the desired pressure within the tube}
- H01J 47/08
 - Geiger-Müller counter tubes{(-gas filling with very short deionisation times [H01J 17/64](#) , [H01T-](#))}
- H01J 47/10
 - Spark counters (~~H01J 47/14~~ takes precedence; spark gaps [H01T-](#))
- U H01J 47/12
 - Neutron detector tubes, e.g. BF₃ tubes
- H01J 47/1205
 - • {~~using nuclear reactions of the type(n, alpha)~~{*using nuclear reactions of the type (n, alpha)* in solid materials, e.g. Boron-10 (n,alpha) Lithium-7, Lithium-6 (*(n, alpha)Hydrogen-3*)~~(n, alpha)Hydrogen-3~~}
- H01J 47/14
 - Parallel electrode spark or streamer chambers; Wire spark or streamer chambers{(-circuit arrangements with multi-wire or parallel-plate chambers for recording of movements or tracks of particles [G01T 5/12-](#))}
- U H01J 47/16
 - • characterised by readout of each individual wire
- H01J 47/18
 - • • the readout being electrical (~~H01J 47/20~~ takes precedence-)
- U H01J 49/00 Particle spectrometer or separator tubes**
- NOTE**
- In classifying particle separators, no distinction is made between spectrometry and spectrography, the difference being only in the manner of detection which in the first case is electrical and in the second case is by means of a photographic film.
- H01J 49/0022
 - {Portable spectrometers, e. g. devices comprising independent power supply, constructional details relating to portability (~~small scale devices per se [H01J 49/0013](#) and [H01J 49/0018-](#)~~)}
- U H01J 49/0027
 - {Methods for using particle spectrometers}
- H01J 49/0031
 - • {Step by step routines describing the use of the apparatus (~~H01J 49/0081~~ takes precedence-)}
- H01J 49/0036
 - • {Step by step routines describing the handling of the data generated during a measurement (~~recognising patterns in signals [G06K 9/00496](#) ; bioinformatics [G06F 19/10-](#)~~)}
- H01J 49/0095
 - {Particular arrangements for generating, introducing or analyzing both positive and negative analyte ions (~~ion/ion reactions [H01J 49/0072-](#)~~)}
- U H01J 49/02
 - Details
- H01J 49/022
 - • {Circuit arrangements, e.g. for generating deviation currents or voltages (regulating electric or magnetic variables in general e.g. current, magnetic field [G05F](#)); Components associated with high voltage supply(high voltage supply per se [H02M](#))}
- H01J 49/025
 - • {Detectors specially adapted to particle spectrometers (~~data acquisition [H01J 49/0036](#) ; detectors per se [G01T](#), e.g. [G01T 1/28](#) , [G01T 1/29-](#)~~)}
- H01J 49/027
 - • • {detecting image current induced by the movement of charged particles (~~H01J 49/38~~ takes precedence-)}
- U H01J 49/04
 - • Arrangements for introducing or extracting samples to be analysed, e.g. vacuum locks; Arrangements for external adjustment of electron- or ion-optical components
- H01J 49/0404
 - • • {Capillaries used for transferring samples or ions (~~electrospray nozzles [H01J 49/167-](#)~~)}
- H01J 49/0409
 - • • {Sample holders or containers (~~containers for retaining a material to be analyzed, [B01L 3/50](#) , for DNA, [C12Q 1/6834](#) , for biological materials, [G01N 33/543-](#)~~)}
- H01J 49/0418
 - • • {for laser desorption, e.g. matrix-assisted laser desorption/ionisation [[MALDI](#)]], surface enhanced laser desorption/ionisation [[SELDI](#)] plates}}

- H01J 49/0422 . . . {for gaseous samples (-interfaces to gas chromatographs [G01N 30/7206-](#))}
- H01J 49/0431 . . . {for liquid samples (-interfaces to liquid chromatographs [G01N 30/7233-](#))}
- H01J 49/0445 {with means for introducing as a spray, a jet or an aerosol (-electrospray ion sources [H01J 49/165-](#))}
- U H01J 49/0459 . . . {for solid samples}
- H01J 49/0463 {Desorption by laser or particle beam, followed by ionisation as a separate step (-sample holder per se [H01J 49/0418-](#))}
- H01J 49/0495 . . . {Vacuum locks; Valves (valves per se [F16K](#))}
- U H01J 49/06 . . . Electron- or ion-optical arrangements
- H01J 49/062 . . . {Ion guides (-linear ion traps performing mass selection [H01J 49/4225](#) , mass filters [H01J 49/421-](#))}
- U H01J 49/10 . . . Ion sources; Ion guns
- H01J 49/105 . . . {using high-frequency excitation, e.g. micro wave excitation, Inductively Coupled Plasma [[ICP](#)]}
- U H01J 49/14 . . . using particle bombardment, e.g. ionisation chambers
- H01J 49/147 {with electrons, e.g. electron impact ionisation, electron attachment ([H01J 49/145](#) takes precedence)}
- U H01J 49/16 . . . using surface ionisation, e.g. field-, thermionic- or photo-emission
- U H01J 49/161 {using photoionisation, e.g. by laser}
- H01J 49/164 {Laser desorption/ionisation, e.g. matrix-assisted laser desorption/ionisation [[MALDI](#)] (-sample holders [H01J 49/0418-](#))}
- H01J 49/168 {field ionisation, e.g. corona discharge (atmospheric pressure corona discharge per se [H01T 19/00](#))}
- H01J 49/26 . . . Mass spectrometers or separator tubes (-isotope separation using these tubes [B01D 59/44-](#))
- U H01J 49/28 . . . Static spectrometers
- U H01J 49/284 . . . {using electrostatic and magnetic sectors with simple focusing, e.g. with parallel fields such as Aston spectrometer}
- H01J 49/286 {with energy analysis, e.g. Castaing filter (-in cathode-ray or electron-beam tubes [H01J 29/84](#) ; electron-or ion-optical arrangements for separating electrons or ions from an analysing or processing beam [H01J 37/05](#) ; micro- or spot-analysing tubes [H01J 37/252-](#))}
- U H01J 49/34 . . . Dynamic spectrometers
- U H01J 49/36 Radio frequency spectrometers, e.g. Bennett-type spectrometers, Redhead-type spectrometers
- H01J 49/38 Omegatrons {Using ion cyclotron resonance}
- H01J 49/40 Time-of-flight spectrometers ([H01J 49/36](#) takes precedence)
- H01J 49/406 {with multiple reflections (-electrostatic traps [H01J 49/4245-](#))}
- U H01J 49/42 Stability-of-path spectrometers, e.g. monopole, quadrupole, multipole, farvitrons
- U H01J 49/4205 {Device types}
- U H01J 49/421 {Mass filters, i.e. deviating unwanted ions without trapping}
- H01J 49/4215 {Quadrupole mass filters ([H01J 49/4225](#) takes precedence)}
- H01J 49/422 {Two-dimensional RF ion traps (-ion guides without mass selection [H01J 49/062-](#))}
- H01J 49/4245 {Electrostatic ion traps ([H01J 49/422](#) takes precedence; multi-reflection time of flight spectrometers [H01J 49/406-](#))}
- U H01J 49/426 {Methods for controlling ions}

- U H01J 49/427 · {Ejection and selection methods}
- H01J 49/4285 · {Applying a resonant signal, e.g. selective resonant ejection matching the secular frequency of ions (~~H01J 49/429~~ , ~~H01J 49/428~~ take precedence)}
- U H01J 49/44 · Energy spectrometers, e.g. alpha-, beta-spectrometers
- U H01J 49/46 · · Static spectrometers
- H01J 49/466 · · · {using crossed electric and magnetic fields perpendicular to the beam, e.g. Wien filter (~~see also H01J 49/288~~)}

- H01J 61/00 Gas- or vapour-discharge lamps (-use for sterilising milk products [A23C](#) ; use for medical purposes [A61N 5/00](#) ; use for disinfecting water [C02F](#) ; use for lighting [F21](#) ; { use for advertising [G09F](#) } ; circuits therefor [H05B](#) ; arc lamps with consumable electrodes [H05B](#) ; electro-luminescent lamps [H05B](#)-)**
- U H01J 61/02 · Details
- H01J 61/04 · · Electrodes (~~for igniting [H01J 61/54](#)~~); Screens; Shields
- H01J 61/045 · · · {Thermic screens or reflectors (~~heat-reflecting coatings on the wall of the vessel [H01J 61/35](#)~~)}
- U H01J 61/10 · · · Shields, screens, or guides for influencing the discharge
- H01J 61/103 · · · · {Shields, screens or guides arranged to extend the discharge path (~~[H01J 61/106](#) takes precedence~~)}
- U H01J 61/30 · · Vessels; Containers
- H01J 61/32 · · · Special longitudinal shape, e.g. for advertising purposes(~~[H01J 61/305](#) takes precedence~~)}
- H01J 61/35 · · · provided with coatings on the walls thereof; Selection of materials for the coatings (~~using coloured coatings [H01J 61/40](#) ; using luminescent coatings [H01J 61/42](#)~~)
- U H01J 61/36 · · Seals between parts of vessels; Seals for leading-in conductors; Leading-in conductors
- U H01J 61/361 · · · {Seals between parts of vessel}
- H01J 61/365 · · · · {Annular seals disposed between the ends of the vessel (~~[H01J 61/363](#) takes precedence~~)}
- U H01J 61/38 · · Devices for influencing the colour or wavelength of the light
- U H01J 61/42 · · · by transforming the wavelength of the light by luminescence
- H01J 61/44 · · · · Devices characterised by the luminescent material (~~luminescent materials [C09K 11/00](#)~~)
- H01J 61/52 · · Cooling arrangements; Heating arrangements; Means for circulating gas or vapour within the discharge space(~~heating or cooling arrangements to promote ionisation for starting [H01J 61/54](#)~~)}
- H01J 61/54 · · Igniting arrangements, e.g. promoting ionisation for starting (~~circuit arrangements [H05B](#)~~)
- H01J 61/545 · · · {using an auxiliary electrode inside the vessel (~~[H01J 61/542](#) takes precedence~~)}
- H01J 61/547 · · · {using an auxiliary electrode outside the vessel (~~[H01J 61/544](#) takes precedence~~)}
- H01J 61/64 · Cathode glow lamps (~~designed as tuning or voltage indicators [H01J 17/40](#)~~)
- H01J 61/66 · · having one or more specially shaped cathodes, e.g. for advertising purposes {alphanumeric}
- H01J 61/70 · Lamps with low-pressure unconfined discharge {having a cold pressure < 400 Torr}

- H01J 61/82 · Lamps with high-pressure unconfined discharge {having a cold pressure > 400 Torr}
- H01J 61/96 · Lamps with light-emitting discharge path and separately-heated incandescent body within a common envelope, e.g. for simulating daylight (-lamps with filament heated only by non-luminous discharge [H01K-](#))
- H01J 63/00 Cathode-ray or electron-stream lamps (-flying-spot tubes [H01J 31/10](#) ; magic-eye tuning indicators [H01J 31/14](#) ; lamps with incandescent body heated by the ray or stream [H01K-](#)){ see also [H01J 29/00](#)}**
- U H01J 65/00 Lamps without any electrode inside the vessel; Lamps with at least one main electrode outside the vessel**
- H01J 65/04 · Lamps in which a gas filling is excited to luminesce by an external electromagnetic field or by external corpuscular radiation, e.g. for indicating {plasma display panels}
- H01J 65/08 · Lamps in which a screen or coating is excited to luminesce by radioactive material located inside the vessel{(-direct conversion of radiation energy from radioactive sources into light [G21H 3/02-](#))}
- H01J 2211/00 Plasma display panels with alternate current induction of the discharge, e.g. AC-PDPs (plasma display panels making use of direct current [H01J 2217/00](#))**
- U H01J 2211/20 · Constructional details
- U H01J 2211/22 · · Electrodes
- U H01J 2211/32 · · · Disposition of the electrodes
- H01J 2211/326 · · · · Disposition of electrodes with respect to cell parameters (-[H01J 2211/323](#) takes precedence-), e.g. electrodes within the ribs
- H01J 2211/62 · · Circuit arrangements (-circuits or methods for driving PDP's [G09G 3/28-](#))
- H01J 2211/66 · · Cooling arrangements {cooling or supporting means not being part of the tube [H05K](#)}
- H01J 2217/00 Gas-filled discharge tubes (-[H01J 2211/00](#) takes precedence-)**
- H01J 2217/04 · Electrodes (-for display panels not making use of alternating current [H01J 2217/492](#) ; for discharge tubes in general [H01J 2201/00-](#))
- U H01J 2217/38 · Cold-cathode tubes
- H01J 2217/49 · · Display panels, e.g. not making use of alternating current (-[H01J 2211/10](#) takes precedence-)
- U H01J 2217/492 · · · Details
- U H01J 2217/49264 · · · · Vessels
- H01J 2217/49278 · · · · · Coatings (-[H01J 2217/49292](#) takes precedence-)]
- H01J 2217/49285 · · · · · Associated optical means (-combined with electromagnetic screens [H01J 2217/49292-](#))
- H01J 2217/498 · · · Hybrid panels (*AC and DC*)(~~AC and DC~~)
- H01J 2223/00 Details of transit-time tubes of the types covered by group [H01J 2225/00](#)**
- H01J 2229/00 Details of cathode ray tubes or electron beam tubes (-[H01J 2329/00](#) takes precedence-)**
- U H01J 2229/89 · Optical components associated with the vessel
- H01J 2229/899 · · Photographic devices (*permanent recording of images*)(~~permanent recording of images~~)
- H01J 2231/00 Cathode ray tubes or electron beam tubes (-[H01J 2329/00](#) takes precedence-)**

U	H01J 2235/00	X-ray tubes
U	H01J 2235/12	· Cooling
U	H01J 2235/1225	· · characterised by method
U	H01J 2235/1262	· · · Circulating fluids
	H01J 2235/1283	· · · · in conjunction with extended surfaces (e.g. fins or ridges)(e.g. fins or ridges)
U	H01J 2235/20	· Arrangements for controlling gases within the X-ray tube
	H01J 2235/205	· · Gettering
U	H01J 2237/00	Discharge tubes exposing object to beam, e.g. for analysis treatment, etching, imaging
		<u>NOTES</u>
		For features of general interest which may be found in other types of discharge tubes, an indexing code corresponding to general schemes H01J 2201/00 to T01J207/00 is given, e.g. for cathodes, vessels, cooling means or the like
		Same rules apply for manufacturing procedures (H01J 2209/00), unless really specific to the tube concerned.
		The codes in this main group are grouped according to the following principle: details common to gas or plasma discharge of the above mentioned tubes: H01J 2237/00 to T011J237/248D2
		Imaging or analysing: H01J 2237/25 to H01J 2237/2857
		particle beam processing: H01J 2237/30 to H01J 2237/31798
		plasma processing: H01J 2237/32 to H01J 2237/339
	H01J 2237/002	· Cooling arrangements (-of objects being observed or treated H01J 2237/2001-)
	H01J 2237/006	· Details of gas supplies - e.g. in an ion source, to a beam line, to a specimen or to a workpiece,(- H01J 37/3244 takes precedence; environmental cells for electron microscopes H01J 2237/2003 ; microscopes with environmental specimen chamber H01J 2237/2608 -)
U	H01J 2237/02	· Details
	H01J 2237/024	· · Moving components not otherwise provided for (-diaphragms H01J 2237/0458 ; objects H01J 2237/202-)
U	H01J 2237/04	· Means for controlling the discharge
U	H01J 2237/049	· · Focusing means
	H01J 2237/0492	· · · Lens systems (-individual lenses H01J 2237/10-)
U	H01J 2237/10	· Lenses
U	H01J 2237/14	· · magnetic
U	H01J 2237/1405	· · · Constructional details
	H01J 2237/141	· · · · Coils (-superconducting H01J 2237/142-)
U	H01J 2237/153	· Correcting image defects, e.g. stigmators
	H01J 2237/1538	· · Space charge (Boersch) effect compensation (-neutralising means H01J 2237/0041-)
	H01J 2237/16	· Vessels (-liner tubes H01J 2237/0268-)
U	H01J 2237/20	· Positioning, supporting, modifying or maintaining the physical state of objects being observed or treated
	H01J 2237/204	· · Means for introducing and/or outputting objects (-locks H01J 2237/184-)
U	H01J 2237/206	· · Modifying objects while observing
	H01J 2237/2065	· · · Temperature variations (-maintaining constant desired temperature H01J 2237/2001-)
	H01J 2237/21	· Focus adjustment (-lenses H01J 2237/10-)

- H01J 2237/22 · Treatment of data (-mixing signals [H01J 2237/24495](#)-)
 - U H01J 2237/245 · Detection characterised by the variable being measured
 - U H01J 2237/24507 · · Intensity, dose or other characteristics of particle beams or electromagnetic radiation
 - H01J 2237/24514 · · · Beam diagnostics including control of the parameter or property diagnosed (~~H01J 2237/30472~~ takes precedence-)
 - H01J 2237/24528 · · · · Direction of beam or parts thereof in view of the optical axis, e.g. beam angle, angular distribution, beam divergence, beam convergence or beam landing angle on sample or workpiece (-means for deflecting or directing discharge [H01J 2237/15](#)-)
 - H01J 2237/2455 · · · Polarisation (*electromagnetic beams*)(~~electromagnetic beams~~)
 - U H01J 2237/248 · Components associated with the control of the tube
 - U H01J 2237/2485 · · Electric or electronic means
 - H01J 2237/2487 · · · using digital signal processors
 - U H01J 2237/25 · Tubes for localised analysis using electron or ion beams
 - U H01J 2237/2505 · · characterised by their application
 - U H01J 2237/2516 · · · Secondary particles mass or energy spectrometry
 - H01J 2237/2522 · · · · of electrons (*ESCA, XPS*)(~~ESCA, XPS~~)
 - H01J 2237/2588 · · · Lorenz microscopy (*magnetic field measurement*)(~~magnetic field measurement~~)
 - U H01J 2237/26 · Electron or ion microscopes
 - U H01J 2237/2602 · · Details
 - U H01J 2237/2605 · · · operating at elevated pressures, e.g. atmosphere
 - H01J 2237/2608 · · · · with environmental specimen chamber (-environmental cells [H01J 2237/2003](#)-)
 - U H01J 2237/282 · · Determination of microscope properties
 - H01J 2237/2826 · · · Calibration (-for object processing apparatus [H01J 2237/30433](#)-)
 - U H01J 2237/285 · · Emission microscopes
 - H01J 2237/2857 · · · Particle bombardment induced emission
 - U H01J 2237/30 · Electron or ion beam tubes for processing objects
 - U H01J 2237/304 · · Controlling tubes
 - U H01J 2237/30405 · · · Details
 - H01J 2237/30416 · · · · Handling of data (-for lithography [H01J 37/3174](#)-)
 - H01J 2237/30433 · · · System calibration (-for microscopes [H01J 2237/2826](#)-)
 - H01J 2237/3045 · · · · Deflection calibration (-deflecting in general [H01J 2237/15](#) ; specific to material treating [H01J 2237/30483](#)-)
 - H01J 2237/30466 · · · Detecting endpoint of process (-for plasma apparatus [H01J 37/32963](#) , for sputtering apparatus [H01J 37/3479](#)-)
 - U H01J 2237/317 · · Processing objects on a micro-scale
 - H01J 2237/31732 · · · Depositing thin layers on selected microareas (-ion plating [H01J 2237/3142](#)-)
 - U H01J 2237/3175 · · · Lithography
- WARNING**
As from January 1st, 2009 this group and its subgroups are no longer used for classification of new documents. The backlock is continuously reclassified to [H01J 2237/31715](#) and subgroups.
- U H01J 2237/31793 · · · · Problems associated with lithography

- H01J 2237/31798 detecting pattern defects (-with SEM [H01J 2237/2817](#) ; correcting [H01J 2237/31735](#) , [H01J 2237/3174-](#))
- U H01J 2237/32 . Processing objects by plasma generation
- U H01J 2237/33 . . characterised by the type of processing
- U H01J 2237/332 . . . Coating
- H01J 2237/3321 CVD [*Chemical Vapor Deposition*](~~Chemical Vapor Deposition~~)
- U H01J 2329/00 Electron emission display panels, e.g. field emission display panels**
- U H01J 2329/02 . Electrodes other than control electrodes
- U H01J 2329/04 . . Cathode electrodes
- H01J 2329/0405 . . . Cold cathodes other than those covered by [H01J 2329/0407](#) - [H01J 2329/0492](#)
- H01J 2329/0481 . . . Cold cathodes having an electric field perpendicular to the surface thereof (-[H01J 2329/0407](#) - [H01J 2329/0478](#) take precedence-)
- U H01J 2329/86 . Vessels
- H01J 2329/88 . . Coatings on walls of the vessels (-[H01J 2329/18](#) , [H01J 2329/868](#) , [H01J 2329/89](#) take precedence-)
- H01J 2329/96 . Circuit elements structurally associated with the display panels (-[H01J 2329/0494](#) takes precedence-)
- U H01J 2893/00 Discharge tubes and lamps**
- H01J 2893/006 . Tubes with electron bombarded gas (*e.g. with plasma filter*)(~~e.g. with plasma filter~~)
- H01J 2893/0064 . Tubes with cold main electrodes (*including cold cathodes*)(~~including cold cathodes~~)

Project: N/A (H01L)

H01L

SEMICONDUCTOR DEVICES; ELECTRIC SOLID STATE DEVICES NOT OTHERWISE PROVIDED FOR (use of semiconductor devices for measuring [G01](#); resistors in general [H01C](#); magnets, inductors{in general} , transformers [H01F](#); capacitors in general [H01G](#); electrolytic devices [H01G 9/00](#) ; batteries, accumulators [H01M](#); waveguides, resonators or lines of the waveguide type [H01P](#); line connectors, current collectors [H01R](#); stimulated emission devices [H01S](#); electromechanical resonators [H03H](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#); electric light sources in general [H05B](#); printed circuits, hybrid circuits, casings or constructional details of electric apparatus, manufacture of assemblages of electrical components [H05K](#); use of semiconductor devices in circuits having a particular application, see the subclass for the application-)

NOTES

This subclass covers electric solid state devices which are not provided for in any other subclass and details thereof. This includes:

- semiconductor devices adapted for rectifying, amplifying, oscillating or switching;
- semiconductor devices sensitive to radiation;
- electric solid state devices using thermoelectric, superconductive, piezo-electric, electrostrictive, magnetostrictive, galvano-magnetic or bulk negative resistance effects and integrated circuit devices.

Also covered by this subclass are photo-resistors, magnetic field dependent resistors, field effect resistors, capacitors with potential-jump barrier, resistors with potential-jump barrier or surface barrier, incoherent light emitting diodes, electromechanical solid state transducers and thin-film or thick-film circuits.

Furthermore, it provides for processes and apparatus adapted for the manufacture or treatment of such devices, except where such processes relate to single step processes for which provision exists elsewhere.

In this subclass:

The expression "solid state body" refers to the body of material within which, or at the surface of which, the physical effects characteristic of the device occur. In thermoelectric devices it includes all materials in the current path.

Regions in or on the body of the device (other than the solid state body itself), which exert an influence on the solid state body electrically, are considered to be "electrodes" whether or not an external electrical connection is made thereto. {Electrodes are often referred to as "contacts" in the literature.} An electrode may include several portions and the term includes metallic regions which exert influence on the solid state body through an insulating region, (e.g. capacitive coupling) and inductive coupling arrangements to the body. The dielectric region in a capacitive arrangement is regarded as part of the electrode. In arrangements including several portions only those portions which exert an influence on the solid state body by virtue of their shape, size or disposition or the material of which they are formed are considered to be part of the electrode. The other portions are considered to be "arrangements for conducting electric current to or from the solid state body" or "interconnections between solid state components formed in or on a common substrate", i.e. leads.

The word "device" refers to an electric circuit element; where an electric circuit element is one of a plurality or elements formed in or on a common substrate it is referred to as a "component".

A "complete device" is a device in its fully assembled state which may or may not require further treatment, e.g. electro-forming, before it is ready for use but which does not require the addition of further structural units.

The word "parts" includes all structural units which are included in a complete device.

A "container" is an enclosure forming part of the complete device and is essentially a solid construction in which the body of the device is placed, or which is formed around the body without forming an intimate layer thereon. An enclosure which consists of one or more layers formed on the body and in intimate contact therewith is referred to as an "encapsulation".

"Integrated circuit" is a device where all components, e.g. diodes, resistors, are built up on a common substrate and form the device including interconnections between the components.

"Integration processes" are processes for the manufacture of at least two different components where the process is especially adapted to their integration, e.g. to take advantage of it or to reduce their manufacturing cost. Example: in a CMOS process, the same ion implant dopes the p-MOS gate and the n-MNOS source and drain.

Consequently, a process for the manufacture of a component per se is not considered as an integration process, even though that component will be part of an integrated circuit.

"Assembly" of a device is the building up of the device from its component constructional units and includes the provision of fillings in containers. When referring to the periodic table of the elements, either the new IUPAC notation, i.e. numbering system from 1 to 18, or the previous IUPAC form may be used to indicate an element group, e.g. group IV elements according to the previous IUPAC form correspond to group 14 elements according to the new notation

WARNINGS

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups

[H01L 21/301](#) covered by [H01L 21/30](#)

[H01L 21/328](#) covered by [H01L 29/66075](#) [H01L 21/329](#) covered by

[H01L 29/66083](#) [H01L 21/33](#) covered by [H01L 29/66227](#) [H01L 21/331](#) covered

by [H01L 29/66234](#) [H01L 21/332](#) covered by [H01L 29/66363](#) [H01L 21/334](#)
covered by [H01L 29/66075](#) [H01L 21/335](#) covered by [H01L 29/66409](#)
[H01L 21/336](#) covered by [H01L 29/66477](#) [H01L 21/337](#) covered by
[H01L 29/66893](#) [H01L 21/338](#) covered by [H01L 29/66848](#) [H01L 21/339](#) covered
by [H01L 29/66946](#) [H01L 21/58](#) covered by [H01L 24/80](#)
[H01L 21/8239](#) covered by [H01L 27/1052](#) [H01L 21/60](#) covered by [H01L 24/80](#)
[H01L 21/66](#) covered by [H01L 22/34](#) [H01L 21/603](#) covered by [H01L 24/80](#)
[H01L 21/607](#) covered by [H01L 24/80](#)
[H01L 21/8242](#) covered by [H01L 27/10844](#)
[H01L 21/8244](#) covered by [H01L 27/11](#) [H01L 21/8246](#) covered by [H01L 27/112](#)
[H01L 21/8247](#) covered by [H01L 27/11517](#) [H01L 21/98](#) covered by [H01L 25/50](#)
[H01L 29/38](#) covered by [H01L 29/04](#) to [H01L 29/365](#)
[H01L 29/96](#) covered by [H01L 29/68](#) to [H01L 29/945](#) [H01L 51/30](#) covered by
[H01L 51/0032](#)
[H01L 51/40](#) covered by [H01L 51/0001](#)
[H01L 51/46](#) covered by [H01L 51/0032](#)
[H01L 51/48](#) covered by [H01L 51/0001](#)
[H01L 51/54](#) covered by [H01L 51/0032](#)

Groups [H01L 23/562](#) to [H01L 23/576](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 23/562](#) - [H01L 23/564](#) : [H01L 23/00](#) - [H01L 23/57](#) : [H01L 23/58](#)

Groups [H01L 22/00](#) to [H01L 22/34](#) do not correspond to a former or current IPC group. Concordance CPC : IPC for these groups is as follows: - [H01L 22/00](#) - [H01L 22/34](#) : [H01L 21/66](#)

Groups [H01L 24/00](#) to [H01L 24/98](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 24/00](#) - [H01L 24/98](#) : [H01L 23/00](#)

Group [H01L 25/50](#) does not correspond to a former or current IPC group. Concordance CPC : IPC for this group is as follows: - [H01L 25/50](#) : [H01L 21/98](#)

Groups [H01L 28/00](#) - [H01L 28/92](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 28/00](#) - [H01L 28/92](#) : [H01L 49/02](#)

H01L 21/00

Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof (testing or measuring during manufacture or treatment, or reliability measurements [H01L 22/00](#) ; multistep manufacturing processes for passive two-terminal components without a potential-jump or surface barrier for integrated circuits [H01L 28/00](#) ; ~~processes or apparatus peculiar to the manufacture or treatment of devices provided for in groups [H01L 31/00](#) to [H01L 51/00](#) or of parts thereof, see these groups~~ ; *(processes or apparatus peculiar to the manufacture or treatment of devices provided for in groups [H01L 31/00](#) to [H01L 51/00](#) or of parts thereof, see these groups* ; single-step processes covered by other subclasses, see the relevant subclasses, e.g. [C23C](#), [C30B](#) ; photomechanical production of textured or patterned surfaces, materials or originals therefor, apparatus specially adapted therefor, in general [G03F](#)))

- U H01L 21/02
 - Manufacture or treatment of semiconductor devices or of parts thereof
- U H01L 21/02041
 - • {Cleaning}
- U H01L 21/02043
 - • • {Cleaning before device manufacture, i.e. Begin-Of-Line process}
- H01L 21/02046
 - • • • {Dry cleaning only (~~[H01L 21/02085](#) takes precedence~~)}
- H01L 21/02052
 - • • • {Wet cleaning only (~~[H01L 21/02085](#) takes precedence~~)}
- H01L 21/02054
 - • • • {combining dry and wet cleaning steps (~~[H01L 21/02085](#) takes precedence~~)}

- H01L 21/02104 . . {Forming layers (deposition in general [C23C](#); crystal growth in general [C30B](#))}
- WARNING
Group [H01L 21/02104](#) and subgroups are not complete pending reorganisation. See also groups [H01L 21/20](#) , [H01L 21/36](#) , [H01L 21/06](#) , [H01L 21/16](#) and subgroups
- U H01L 21/02107 . . . {Forming insulating materials on a substrate}
- WARNING
This group and subgroups are not complete pending the completion of a reclassification; see also [H01L 21/312](#) , [H01L 21/314](#) , [H01L 21/316](#) , and [H01L 21/318](#) and subgroups thereof
- U H01L 21/02109 {characterised by the type of layer, e.g. type of material, porous/non-porous, pre-cursors, mixtures or laminates}
- U H01L 21/02112 {characterised by the material of the layer}
- NOTE
Layers comprising sublayers, i.e. multi-layers, are additionally classified in [H01L 21/022](#) ; porous layers are additionally classified in [H01L 21/02203](#)
- H01L 21/02118 {carbon based polymeric organic or inorganic material, e.g. polyimides, poly cyclobutene or PVC (polymers per se [C08G](#), photoresist per se [G03F](#))}
- H01L 21/0212 {the material being fluoro carbon compounds, e.g. (CF_x)_n, (CH_xF_y)_n or polytetrafluoroethylene}
- U H01L 21/02123 {the material containing silicon}
- H01L 21/02167 {the material being a silicon carbide not containing oxygen, e.g. SiC, SiC:H or silicon carbonitrides (-[H01L 21/02126](#) and [H01L 21/0214](#) take precedence)}
- H01L 21/0217 {the material being a silicon nitride not containing oxygen, e.g. SixNy or SixByNz (-[H01L 21/02126](#) and [H01L 21/0214](#) take precedence)}
- H01L 21/02172 {the material containing at least one metal element, e.g. metal oxides, metal nitrides, metal oxynitrides or metal carbides (-materials containing silicon [H01L 21/02123](#) ; metal silicates [H01L 21/02142](#)-)}
- H01L 21/02175 {characterised by the metal (-[H01L 21/02197](#) takes precedence)}
- H01L 21/022 {the layer being a laminate, i.e. composed of sublayers, e.g. stacks of alternating high-k metal oxides (-adhesion layers or buffer layers [H01L 21/02304](#) , [H01L 21/02362](#)-)}
- U H01L 21/02225 {characterised by the process for the formation of the insulating layer}
- U H01L 21/02227 {formation by a process other than a deposition process}
- NOTE
Subject matter classified in the range of [H01L 21/0223](#) to [H01L 21/02249](#) is additionally classified in [H01L 21/02249](#) , [H01L 21/02255](#) and [H01L 21/02252](#) , depending on the type of reaction
- H01L 21/02252 {formation by plasma treatment, e.g. plasma oxidation of the substrate (-after treatment of an insulating film by plasma [H01L 21/3105](#) and subgroups-)}
- H01L 21/02255 {formation by thermal treatment (-[H01L 21/02252](#) takes precedence; after treatment of an insulating film [H01L 21/3105](#) and subgroups-)}
- H01L 21/0226 {formation by a deposition process (per se [C23C](#))}

- U H01L 21/02263 {deposition from the gas or vapour phase}
NOTE
This group and subgroups also cover deposition methods in which the gas or vapour is produced by physical means, e.g. ablation from targets or heating of source material
- H01L 21/02269 {deposition by thermal evaporation, [H01L 21/02293](#) takes precedence-}
NOTE
Subject matter relating to molecular beam epitaxy is classified in this group
- H01L 21/02271 {deposition by decomposition or reaction of gaseous or vapour phase compounds, i.e. chemical vapour deposition (~~[H01L 21/02266](#) takes precedence-~~)}
- U H01L 21/02282 {liquid deposition, e.g. spin-coating, sol-gel techniques, spray coating}
H01L 21/02288 {printing, e.g. ink-jet printing (per se [B41J](#))}
H01L 21/02293 {formation of epitaxial layers by a deposition process (epitaxial growth per se [C30B](#))}
NOTE
Formation of non-epitaxial layers by MBE, ALE, etc. is not covered by this group; for MBE see [H01L 21/02269](#) ; for ALE see [H01L 21/0228](#)
- H01L 21/02296 {characterised by the treatment performed before or after the formation of the layer (~~[H01L 21/02227](#) and subgroups take precedence-~~)}
NOTE
This group and subgroups only cover processes which are directly linked to the layer formation; routine anneals, i.e. thermal treatment without further features like a special atmosphere, presence of a plasma, thermally induced chemical reactions, change of phase (crystal structure) etc. are not classified here; for cleaning see [H01L 21/02041](#) and subgroups; for etching processes see [H01L 21/311](#) and subgroups; for planarization processes see [H01L 21/31051](#) and subgroups; for processes to repair etch damage see [H01L 21/3105](#) and subgroups
- U H01L 21/02318 {post-treatment}
NOTE
This group only covers processes that are part of the layer formation; treatments which are performed after completion of the insulating layer are covered by [H01L 21/3105](#) and subgroups
- H01L 21/02321 {-introduction of substances into an already existing insulating layer; [H01L 21/02227](#) and subgroups take precedence-}
NOTE
processes like the introduction of phosphorus into silicon oxide by diffusion, or doping of an already existing insulating layer are covered by this group and subgroups; for the method of introduction, see [H01L 21/02337](#) , [H01L 21/02343](#) , [H01L 21/02345](#) and subgroups

- H01L 21/02334 {in-situ cleaning after layer formation, e.g. removing process residues (cleaning compositions per se [C30D](#); cleaning in general [B08B](#))}
- NOTE**
Subject matter relating to the cleaning processes for semiconductor devices in general is covered by [H01L 21/02041](#) and subgroups
- H01L 21/02365 . . . {Forming inorganic semiconducting materials on a substrate (-for light-sensitive devices [H01L 31/00-](#))}
- U H01L 21/02518 {Deposited layers}
- U H01L 21/02587 {Structure}
- U H01L 21/0259 {Microstructure}
- H01L 21/02601 {Nanoparticles (-fullerenes [H01L 51/0046-](#))}
- H01L 21/02606 {Nanotubes (-carbon nanotubes [H01L 51/0048-](#))}
- U H01L 21/02656 {Special treatments}
- H01L 21/02658 {Pretreatments (-cleaning in general [H01L 21/02041-](#))}
- H01L 21/02664 {Aftertreatments (-planarisation in general [H01L 21/304-](#))}
- H01L 21/027 . . . Making masks on semiconductor bodies for further photolithographic processing not provided for in group [H01L 21/18](#) or [H01L 21/34](#) (-photographic masks or originals per se [G03F 1/00](#) ; registration or positioning of photographic masks or originals [G03F 9/00](#) ; photographic cameras [G03B](#); control of position [G05D 3/00-](#))}
- U H01L 21/0271 . . . {comprising organic layers}
- U H01L 21/0273 {characterised by the treatment of photoresist layers}
- U H01L 21/0274 {Photolithographic processes}
- H01L 21/0276 {using an anti-reflective coating (-anti-reflective coating for lithography in general [G03F 7/09-](#))}
- H01L 21/04 . . . the devices having at least one potential-jump barrier or surface barrier, e.g. PN junction, depletion layer, carrier concentration layer(-multistep processes specially adapted for the manufacture of said devices [H01L 29/66007](#) , [H01L 29/401](#) ; details of semiconductor bodies [H01L 29/02-](#))}
- H01L 21/0405 . . . {the devices having semiconductor bodies comprising semiconducting carbon, e.g. diamond, diamond-like carbon (-multistep processes for the manufacture of said devices [H01L 29/66015-](#))}
- NOTE**
This group covers passivation
- H01L 21/0445 . . . {the devices having semiconductor bodies comprising crystalline silicon carbide (-multistep processes for the manufacture of said devices [H01L 29/66053-](#))}
- H01L 21/0475 {Changing the shape of the semiconductor body, e.g. forming recesses, (-etching of the semiconductor body [H01L 21/302-](#))}
- U H01L 21/16 . . . the devices having semiconductor bodies comprising cuprous oxide or cuprous iodide
- WARNING**
This group is no longer used for the classification of new documents as from December 1, 2009. The backlog of this group is being continuously reclassified to [H01L 21/02365](#) and subgroups]
- U H01L 21/161 {Preparation of the foundation plate, preliminary treatment oxidation of the foundation plate, reduction treatment}

- H01L 21/164 {Oxidation and subsequent heat treatment of the foundation plate (~~H01L 21/165~~ takes precedence)}
- H01L 21/18 . . . the devices having semiconductor bodies comprising elements of the fourth group of the Periodic System or AllIBV compounds with or without impurities, e.g. doping materials(~~H01L 21/041~~ to [H01L 21/0425](#) , [H01L 21/045](#) to [H01L 21/048](#) take precedence)}
- NOTE
This group covers also processes and apparatus which, by using the appropriate technology, are clearly suitable for manufacture or treatment of devices whose bodies comprise elements of the fourth group of the Periodic System or AllIBV compounds, even if the material used is not explicitly specified.
- H01L 21/20 Deposition of semiconductor materials on a substrate, e.g. epitaxial growth {solid phase epitaxy}
- WARNING
This group is no longer used for the classification of new documents as from December 1, 2009. The backlog of this group is being continuously reclassified to [H01L 21/02365](#) and subgroups
- H01L 21/2003 {Characterised by the substrate (~~H01L 21/203~~ , [H01L 21/205](#) , [H01L 21/208](#) take precedence)}
- H01L 21/2007 {Bonding of semiconductor wafers to insulating substrates or to semiconducting substrates using an intermediate insulating layer (~~H01L 21/2011~~ takes precedence; bonding of semiconductor wafers to semiconductor wafers for junction formation [H01L 21/187](#))}
- U H01L 21/22 Diffusion of impurity materials, e.g. doping materials, electrode materials, into or out of a semiconductor body, or between semiconductor regions; {Interactions between two or more impurities; Redistribution of impurities}
- H01L 21/223 using diffusion into or out of a solid from or into a gaseous phase(~~H01L 21/221~~ to [H01L 21/222](#) take precedence; diffusion through an applied layer [H01L 21/225](#))}
- H01L 21/225 using diffusion into or out of a solid from or into a solid phase, e.g. a doped oxide layer(~~H01L 21/221~~ to [H01L 21/222](#) take precedence)}
- H01L 21/228 using diffusion into or out of a solid from or into a liquid phase, e.g. alloy diffusion processes(~~H01L 21/221~~ to [H01L 21/222](#) take precedence)}
- H01L 21/24 Alloying of impurity materials, e.g. doping materials, electrode materials, with a semiconductor body(~~H01L 21/182~~ takes precedence)}
- H01L 21/26 Bombardment with radiation(~~H01L 21/3105~~ takes precedence)}
- H01L 21/263 with high-energy radiation (~~H01L 21/261~~ takes precedence)}
- H01L 21/265 producing ion implantation (~~ion beam tubes for localised treatment [H01J 37/30](#)~~)
- WARNING
The groups [H01L 21/26566](#), [H01L 21/2658](#) and [H01L 21/26593](#) are not complete, see provisionally also [H01L 21/26506](#) and [H01L 21/2654](#) and their subgroups
- H01L 21/266 using masks(~~H01L 21/26586~~ takes precedence)}
- H01L 21/28 Manufacture of electrodes on semiconductor bodies using processes or apparatus not provided for in [H01L 21/20](#) to [H01L 21/268](#) ; { etching for patterning the electrodes [H01L 21/311](#) and [H01L 21/3213](#)}
- U H01L 21/28008 {Making conductor-insulator-semiconductor electrodes}

- U H01L 21/28017 {the insulator being formed after the semiconductor body, the semiconductor being silicon}
- NOTE
This group covers deposition of the insulators, including epitaxial insulators, and the conductors within the same process or chamber
- H01L 21/28026 {characterised by the conductor ([H01L 21/28176](#) takes precedence)}
- NOTE
When the final conductor comprises a superconductor, subject matter is not classified according to the subgroups [H01L 21/28035](#) to [H01L 21/28097](#) . Instead, it is classified in [H01L 21/28026](#)
- H01L 21/28035 {the final conductor layer next to the insulator being silicon, e.g. polysilicon, with or without impurities ([H01L 21/28105](#) takes precedence)}
- NOTE
A very thin, e.g. silicon, adhesion or seed layer is not considered as the one next to the insulator
- U H01L 21/28044 {the conductor comprising at least another non-silicon conductive layer}
- H01L 21/28052 {the conductor comprising a silicide layer formed by the silicidation reaction of silicon with a metal layer (~~formed by metal ion implantation [H01L 21/28044](#)~~)}
- H01L 21/28061 {the conductor comprising a metal or metallic silicide formed by deposition, e.g. sputter deposition, i.e. without a silicidation reaction (~~[H01L 21/28052](#) takes precedence~~)}
- NOTE
To assess the coverage of groups [H01L 21/28052](#) and [H01L 21/28061](#) , barrier layers, e.g. TaSiN, are not considered
- U H01L 21/28158 {Making the insulator}
- U H01L 21/28167 {on single crystalline silicon, e.g. using a liquid, i.e. chemical oxidation}
- H01L 21/28194 {by deposition, e.g. evaporation, ALD, CVD, sputtering, laser deposition (~~[H01L 21/28202](#) takes precedence~~)}
- H01L 21/28211 {in a gaseous ambient using an oxygen or a water vapour, e.g. RTO, possibly through a layer (~~[H01L 21/28194](#) and [H01L 21/28202](#) take precedence~~)}
- NOTE
thin oxidation layers used as a barrier layer or as a buffer layer, e.g. before the formation of a high-k insulator, are classified here only if important per se
- H01L 21/28273 {Making conductor-insulator-conductor-insulator-semiconductor electrodes (~~[H01L 21/28291](#) takes precedence~~)}
- H01L 21/283 Deposition of conductive or insulating materials for electrodes {conducting electric current}
- U H01L 21/285 from a gas or vapour, e.g. condensation
- U H01L 21/28506 {of conductive layers}
- U H01L 21/28512 {on semiconductor bodies comprising elements of the fourth group of the Periodic System}

- H01L 21/28518 {the conductive layers comprising silicides (~~H01L 21/28537~~ takes precedence)}
- H01L 21/28525 {the conductive layers comprising semiconducting material (~~H01L 21/28518~~ , ~~H01L 21/28537~~ take precedence)}
- H01L 21/2855 {by physical means, e.g. sputtering, evaporation (~~H01L 21/28518~~ to ~~H01L 21/28537~~ and ~~H01L 21/28568~~ take precedence)}
- H01L 21/28556 {by chemical means, e.g. CVD, LPCVD, PECVD, laser CVD (~~H01L 21/28518~~ to ~~H01L 21/28537~~ and ~~H01L 21/28568~~ take precedence)}
- H01L 21/28568 {the conductive layers comprising transition metals (~~H01L 21/28518~~ takes precedence)}
- H01L 21/30 Treatment of semiconductor bodies using processes or apparatus not provided for in groups [H01L 21/20](#) to [H01L 21/26](#) (~~manufacture of electrodes thereon [H01L 21/28](#)~~)
- U H01L 21/302 to change their surface-physical characteristics or shape, e.g. etching, polishing, cutting
- H01L 21/304 Mechanical treatment, e.g. grinding, polishing, cutting(~~H01L 21/30625~~ takes precedence)}
- H01L 21/3046 {using blasting, e.g. sand-blasting (~~H01L 21/2633~~ takes precedence)}
- H01L 21/306 Chemical or electrical treatment, e.g. electrolytic etching (~~to form insulating layers [H01L 21/31](#)~~)
- U H01L 21/30604 {Chemical etching}
- H01L 21/30608 {Anisotropic liquid etching (~~H01L 21/3063~~ takes precedence)}
- H01L 21/308 using masks (~~H01L 21/3063~~ , ~~H01L 21/3065~~ take precedence)
- H01L 21/31 to form insulating layers thereon, e.g. for masking or by using photolithographic techniques (~~layers forming electrodes [H01L 21/28](#) ; encapsulating layers [H01L 21/56](#)~~); After treatment of these layers
- U H01L 21/3105 After-treatment
- H01L 21/31051 {Planarisation of the insulating layers (~~H01L 21/31058~~ takes precedence)}
- U H01L 21/31053 {involving a dielectric removal step}
- H01L 21/31055 {the removal being a chemical etching step, e.g. dry etching (~~etching per se [H01L 21/311](#)~~)}
- H01L 21/311 Etching the insulating layers {by chemical or physical means (~~H01L 21/31058~~ takes precedence)}
- H01L 21/312 Organic layers, e.g. photoresist (~~H01L 21/3105~~ , ~~H01L 21/32~~ take precedence; {photoresists per se [G03C](#)})
- WARNING
This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof
- H01L 21/314 Inorganic layers (~~H01L 21/3105~~ , ~~H01L 21/32~~ take precedence)
- WARNING
This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof

- U H01L 21/316 composed of oxides or glassy oxides or oxide based glass
- WARNING
This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof
- H01L 21/31604 {Deposition from a gas or vapour ([H01L 21/31691](#) , [H01L 21/31695](#) take precedence-)}
- H01L 21/31608 {Deposition of SiO₂ ([H01L 21/31625](#) , [H01L 21/31629](#) and [H01L 21/31633](#) take precedence-)}
- H01L 21/3165 {formed by oxidation ([H01L 21/31691](#) , [H01L 21/31695](#) take precedence-)}
- H01L 21/3205 Deposition of non-insulating-, e.g. conductive- or resistive-, layers on insulating layers; After-treatment of these layers (-manufacture of electrodes [H01L 21/28-](#))
- H01L 21/32056 {Deposition of conductive or semi-conductive organic layers ([H01L 21/32058](#) takes precedence-)}
- U H01L 21/322 to modify their internal properties, e.g. to produce internal imperfections
- U H01L 21/3221 {of silicon bodies, e.g. for gettering}
- H01L 21/3225 {Thermally inducing defects using oxygen present in the silicon body for intrinsic gettering ([H01L 21/3226](#) takes precedence-)}
- NOTE
Gettering using both extrinsic and intrinsic gettering techniques is classified in both [H01L 21/3221](#) and [H01L 21/3225](#)
- H01L 21/324 Thermal treatment for modifying the properties of semiconductor bodies, e.g. annealing, sintering ([H01L 21/20](#) to [H01L 21/288](#) and [H01L 21/302](#) to [H01L 21/322](#) take precedence-)
- H01L 21/3242 {for the formation of PN junctions without addition of impurities ([H01L 21/22](#) takes precedence-)}
- H01L 21/326 Application of electric currents or fields, e.g. for electroforming ([H01L 21/20](#) to [H01L 21/288](#) and [H01L 21/302](#) to [H01L 21/324](#) take precedence-)
- U H01L 21/34 the devices having semiconductor bodies not provided for in groups{ [H01L 21/0405](#) , [H01L 21/0445](#) } , [H01L 21/06](#) , [H01L 21/16](#) and [H01L 21/18](#) with or without impurities, e.g. doping materials
- U H01L 21/42 Bombardment with radiation
- U H01L 21/423 with high-energy radiation
- H01L 21/425 producing ion implantation (-ion beam tubes for localized treatment [H01J 37/30-](#))
- H01L 21/44 Manufacture of electrodes on semiconductor bodies using processes or apparatus not provided for in groups [H01L 21/36](#) to [H01L 21/428](#)
- H01L 21/46 Treatment of semiconductor bodies using processes or apparatus not provided for in groups [H01L 21/428](#) (-manufacture of electrodes thereon [H01L 21/44-](#))
- U H01L 21/461 to change their surface-physical characteristics or shape, e.g. etching, polishing, cutting
- H01L 21/465 Chemical or electrical treatment, e.g. electrolytic etching (-to form insulating layers [H01L 21/469-](#))

- H01L 21/469 to form insulating layers thereon, e.g. for masking or by using photolithographic techniques (-layers forming electrodes [H01L 21/44](#) ; encapsulating layers [H01L 21/56](#)); After-treatment of these layers
- H01L 21/47 organic layers, e.g. photoresist (-[H01L 21/475](#) , [H01L 21/4757](#) take precedence-)
- H01L 21/471 Inorganic layers (-[H01L 21/475](#) , [H01L 21/4757](#) take precedence-)
- H01L 21/4763 Deposition of non-insulating, e.g. conductive -, resistive -, layers on insulating layers; After-treatment of these layers (-manufacture of electrodes [H01L 21/28](#) , { [H01L 21/44](#) })
- H01L 21/477 Thermal treatment for modifying the properties of semiconductor bodies, e.g. annealing, sintering (-[H01L 21/36](#) to [H01L 21/449](#) and [H01L 21/461](#) to [H01L 21/475](#) take precedence-)
- H01L 21/479 Application of electric currents or fields, e.g. for electroforming (-[H01L 21/36](#) to [H01L 21/449](#) and [H01L 21/461](#) to [H01L 21/477](#) take precedence-)
- H01L 21/48 Manufacture or treatment of parts, e.g. containers, prior to assembly of the devices, using processes not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#) ({ apparatus therefor [H01L 21/67005](#) ; insulative sealing of leads in bases [H01L 21/50](#) } ; containers, encapsulations, fillings, mountings per se [H01L 23/00](#) ; { marking of parts [H01L 23/544](#) })

NOTE

In this group, the expression "treatment" covers also the removal of leads from parts

- H01L 21/4803 {Insulating or insulated parts, e.g. mountings, containers, diamond heatsinks (-[H01L 21/4846](#) takes precedence; printed circuit boards [H05K 1/00](#)-)}
- U H01L 21/4814 {Conductive parts}
- H01L 21/4817 {for containers, e.g. caps (-[H01L 21/4871](#) takes precedence-)}
- U H01L 21/4821 {Flat leads, e.g. lead frames with or without insulating supports}
- H01L 21/4828 {Etching (-etching for cleaning without patterning [H01L 21/4835](#)-)}
- H01L 21/4846 {Leads on or in insulating or insulated substrates, e.g. metallisation (-[H01L 21/4821](#) takes precedence; metallisation of ceramics in general [C04B 41/51](#) ; printed circuits [H05K 3/00](#)-)}
- H01L 21/4857 {Multilayer substrates (-multilayer metallisation on monolayer substrate [H01L 21/4846](#)-)}
- H01L 21/4867 {Applying pastes or inks, e.g. screen printing (-[H01L 21/486](#) takes precedence-)}
- H01L 21/4885 {Wire-like parts or pins (-wire ball formation [B23K 20/00](#) ; methods related to connecting semiconductor or other solid state bodies [H01L 24/00](#)-)}

WARNING

The documents of this group and subgroups dealing with methods for connecting semiconductor or other solid state bodies are being continuously reclassified to [H01L 24/43](#)

- H01L 21/50
- • • Assembly of semiconductor devices using processes or apparatus not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#) , {e.g. sealing of a cap to a base of a container}
- NOTE
Arrangements for connecting or disconnecting semiconductor or other solid state bodies, or methods related thereto, other than those arrangements or methods covered by the following subgroups, are covered by [H01L 24/00](#)
- U H01L 21/56
- • • • Encapsulations, e.g. encapsulation layers, coatings
- H01L 21/568
- • • • {Temporary substrate used as encapsulation process aid (~~H01L 21/4832~~ and [H01L 21/566](#) take precedence)}
- H01L 21/58
- • • • {Insulative}mounting semiconductor devices on supports(~~H01L 21/563~~ , [H01L 23/49513](#) take precedence)}
- WARNING
This group is no longer used for the classification of new documents as from June 1, 2010. The backlog of this group is being continuously reclassified to [H01L 24/80](#) and subgroups
- H01L 21/64
- Manufacture or treatment of solid state devices other than semiconductor devices, or of parts thereof, not peculiar to a single device provided for in groups [H01L 31/00](#) to [H01L 51/00](#)
- H01L 21/67
- Apparatus specially adapted for handling semiconductor or electric solid state devices during manufacture or treatment thereof; Apparatus specially adapted for handling wafers during manufacture or treatment of semiconductor or electric solid state devices or components; {Apparatus not specifically provided for elsewhere (~~processes per se [H01L 21/30](#) , [H01L 21/46](#) , [H01L 23/00](#) ; simple temporary support means, e.g. using adhesives, electric or magnetic means [H01L 21/68](#) , [H01L 21/302](#) ; apparatus for manufacturing arrangements for connecting or disconnecting semiconductor or solid-state bodies and for methods related thereto [H01L 24/74](#) ;)}~~
- NOTE
In this subgroup the term substrate designates a semiconductor or electric solid state device or component, or a wafer
- H01L 21/67005
- • {Apparatus not specifically provided for elsewhere (~~processes per se [H01L 21/30](#) , [H01L 21/46](#) , [H01L 23/00](#) ; simple temporary support means, e.g. using adhesives, electric or magnetic means [H01L 21/68](#) , [H01L 21/302](#))}~~
- H01L 21/67011
- • • {Apparatus for manufacture or treatment (~~processes [H01L 21/30](#) , [H01L 21/46](#) ; for production or after-treatment of single crystals or homogeneous polycrystalline material [C30B 35/00](#))}~~
- H01L 21/67017
- • • • {Apparatus for fluid treatment (~~H01L 21/67126~~ , [H01L 21/6715](#) take precedence)}
- H01L 21/67092
- • • • {Apparatus for mechanical treatment (or grinding or cutting, see the relevant groups in subclasses [B24B](#) or [B28D](#))}
- H01L 21/67126
- • • • {Apparatus for sealing, encapsulating, glassing, decapsulating or the like (~~processes [H01L 23/02](#) , [H01L 23/28](#))}~~
- H01L 21/6715
- • • • {Apparatus for applying a liquid, a resin, an ink or the like (~~H01L 21/67126~~ takes precedence)}
- U H01L 21/67155
- • • • {Apparatus for manufacturing or treating in a plurality of work-stations}
- U H01L 21/67207
- • • • • {comprising a chamber adapted to a particular process}
- H01L 21/67213
- • • • • {comprising at least one ion or electron beam chamber (~~coating by ion implantation [C23C](#); ion or electron beam tubes [H01J 37/00](#))}~~

- H01L 21/67219 {comprising at least one polishing chamber (polishing apparatuses [B24B](#))}
 - H01L 21/67225 {comprising at least one lithography chamber (-lithographic apparatuses [G03F 7/00](#)-)}
 - H01L 21/6723 {comprising at least one plating chamber (electroless plating apparatuses [C23C](#), electroplating apparatuses [C25D](#))}
 - H01L 21/67242 . . . {Apparatus for monitoring, sorting or marking (-testing or measuring during manufacture [H01L 22/00](#), marks per se [H01L 23/544](#); testing individual semiconductor devices [G01R 31/26](#)-)}
 - H01L 21/67276 {Production flow monitoring, e.g. for increasing throughput (-program-control systems per se [G05B 19/00](#), e.g. total factory control [G05B 19/418](#)-)}
 - H01L 21/673 . . . using specially adapted carriers (or holders; Fixing the workpieces on such carriers or holders (-holders for supporting a complete device in operation [H01L 23/32](#)-)}
 - H01L 21/67333 . . . {Trays for chips (-magazine for components [H05K 13/0084](#)-)}
 - H01L 21/6734 . . . {specially adapted for supporting large square shaped substrates (-containers and packaging elements for glass sheets [B65D 85/48](#), transporting of glass products during their manufacture [C03B 35/00](#)-)}
 - U H01L 21/6735 . . . {Closed carriers}
 - H01L 21/67363 {specially adapted for containing substrates other than wafers (-[H01L 21/67356](#), [H01L 21/67359](#) take precedence-)}
 - H01L 21/67366 {characterised by materials, roughness, coatings or the like (-materials relating to an injection moulding process [B29C 45/00](#); chemical composition of materials [C08L 51/00](#)-)}
 - U H01L 21/677 . . . for conveying, e.g. between different workstations
 - U H01L 21/67703 . . . {between different workstations}
- WARNING**
This group and subgroups are not complete pending completion of reorganization; see also [H01L 21/677](#)
- H01L 21/67706 {Mechanical details, e.g. roller, belt (-[H01L 21/67709](#) takes precedence-)}
 - H01L 21/67721 {-the substrates to be conveyed not being semiconductor wafers or large planar substrates, e.g. chips, lead frames, [H01L 21/6773](#) takes precedence-}
 - U H01L 21/67739 . . . {into and out of processing chamber}
 - H01L 21/67742 {Mechanical parts of transfer devices (robots in general in [B25J](#))}
 - H01L 21/67763 . . . {the wafers being stored in a carrier, involving loading and unloading (-[H01L 21/6779](#) takes precedence-)}
 - H01L 21/67766 {Mechanical parts of transfer devices (-robots in general in [B25J](#)-)}
 - H01L 21/67796 . . . {with angular orientation of workpieces (-[H01L 21/67787](#) and [H01L 21/67793](#) take precedence-)}
 - H01L 21/68 . . . for positioning, orientation or alignment (-for conveying [H01L 21/677](#)-)
- WARNING**
This group is in reorganisation. See provisionally also group [H01L 21/6835](#)
- H01L 21/682 . . . {Mask-wafer alignment (-in general [G03F 7/70](#), [G03F 9/70](#)-)}
 - H01L 21/683 . . . for supporting or gripping (-for conveying [H01L 21/677](#), for positioning, orientation or alignment [H01L 21/68](#)-)

- U H01L 21/6835 . . . {using temporarily an auxiliary support}
- NOTE
[H01L 21/6835](#) , details of the apparatus are to be further indexed using the indexing codes chosen from [H01L 2221/68304](#) and subgroups
- H01L 21/6836 {Wafer tapes, e.g. grinding or dicing support tapes (-adhesive tapes in general [C09J 7/02](#)-)}
- H01L 21/687 . . . using mechanical means, e.g. chucks, clamps or pinches{(-using electrostatic chucks [H01L 21/6831](#))}
- H01L 21/70 . Manufacture or treatment of devices consisting of a plurality of solid state components formed in or on a common substrate or of parts thereof; Manufacture of integrated circuit devices or of parts thereof ({ multistep manufacturing processes of assemblies consisting of a plurality of individual semiconductor or other solid state devices [H01L 25/00](#) } , manufacture of assemblies consisting or preformed electrical components [H05K 3/00](#) , [H05K 13/00](#)-)
- H01L 21/71 . . Manufacture of specific parts of devices defined in group [H01L 21/70](#) ({ [H01L 21/0405](#) , [H01L 21/0445](#) } , [H01L 21/28](#) , [H01L 21/44](#) , [H01L 21/48](#) take precedence-)
- H01L 21/74 . . . Making of {localized}buried regions, e.g. buried collector layers, internal connections {substrate contacts}
- U H01L 21/76 . . . Making of isolation regions between components
- U H01L 21/762 Dielectric regions,{e.g. EPIC dielectric isolation, LOCOS; Trench refilling techniques, SOI technology, use of channel stoppers}
- H01L 21/76202 {using a local oxidation of silicon, e.g. LOCOS, SWAMI, SILO (~~[H01L 21/76235](#)~~ takes precedence; together with vertical isolation, e.g. LOCOS in a SOI substrate, [H01L 21/76264](#)-)}
- U H01L 21/76205 {in a region being recessed from the surface, e.g. in a recess, groove, tub or trench region}
- H01L 21/7621 {the recessed region having a shape other than rectangular, e.g. rounded or oblique shape (~~[H01L 21/76208](#)~~ takes precedence-)}
- H01L 21/76224 {using trench refilling with dielectric materials (-trench filling with polycrystalline silicon [H01L 21/763](#) ; together with vertical isolation, e.g. trench refilling in a SOI substrate [H01L 21/76264](#)-)}
- H01L 21/76232 {of trenches having a shape other than rectangular or V-shape, e.g. rounded corners, oblique or rounded trench walls (~~[H01L 21/76229](#)~~ takes precedence-)}
- H01L 21/7624 {using semiconductor on insulator (SOI) technology (~~[H01L 21/76297](#)~~ takes precedence; manufacture of integrated circuits on insulating substrates [H01L 21/84](#) ; silicon on sapphire (SOS) technology [H01L 21/86](#)-)}
- H01L 21/763 Polycrystalline semiconductor regions{(~~[H01L 21/76264](#)~~ takes precedence-)}
- H01L 21/764 Air gaps{(~~[H01L 21/76264](#)~~ takes precedence-)}
- H01L 21/765 by field effect{(~~[H01L 21/76264](#)~~ takes precedence-)}
- H01L 21/768 . . . Applying interconnections to be used for carrying current between separate components within a device {comprising conductors and dielectrics}
- NOTE
Groups [H01L 21/768](#) to [H01L 21/76898](#) cover multi-step processes for manufacturing interconnections.
Information peculiar to single-step processes should also be classified in the corresponding group, e.g.

- cleaning [H01L 21/02041](#)
- etching [H01L 21/311](#) , [H01L 21/3213](#)
- masking [H01L 21/027](#) , [H01L 21/033](#) , [H01L 21/31144](#) , [H01L 21/32139](#)
- planarizing [H01L 21/3105](#) , [H01L 21/321](#)

- U H01L 21/76801 {characterised by the formation and the after-treatment of the dielectrics, e.g. smoothing}
- H01L 21/76819 {Smoothing of the dielectric (-planarisation of insulating materials per se [H01L 21/31051](#)-)}
- U H01L 21/76822 {Modification of the material of dielectric layers, e.g. grading, after-treatment to improve the stability of the layers, to increase their density etc.}

WARNING

Groups [H01L 21/76822](#) - [H01L 21/76837](#) are not complete; see provisionally [H01L 21/76801](#)

- H01L 21/76825 {by exposing the layer to particle radiation, e.g. ion implantation, irradiation with UV light or electrons etc.(-plasma treatment [H01L 21/76826](#)-)}
- U H01L 21/76829 {characterised by the formation of thin functional dielectric layers, e.g. dielectric etch-stop, barrier, capping or liner layers}
- H01L 21/76834 {formation of thin insulating films on the sidewalls or on top of conductors (-[H01L 21/76831](#) takes precedence-)}
- H01L 21/76835 {Combinations of two or more different dielectric layers having a low dielectric constant (-[H01L 21/76832](#) takes precedence-)}
- H01L 21/76838 {characterised by the formation and the after-treatment of the conductors (-etching for patterning the conductors [H01L 21/3213](#)-)}

NOTE

When the interconnect is also used as the conductor part of a conductor insulator semiconductor electrode (gate level interconnections), documents are classified in the relevant electrode manufacture groups, e.g. [H01L 21/28026](#)

- U H01L 21/76841 {Barrier, adhesion or liner layers}
- H01L 21/7685 {the layer covering a conductive structure (-[H01L 21/76849](#) takes precedence-)}
- U H01L 21/76853 {characterized by particular after-treatment steps}
- H01L 21/76865 {Selective removal of parts of the layer (-[H01L 21/76844](#) takes precedence-)}
- H01L 21/76867 {characterized by methods of formation other than PVD, CVD or deposition from a liquids (-PVD [H01L 21/2855](#) ; CVD [H01L 21/28556](#) ; deposition from liquids [H01L 21/288](#)-)}
- U H01L 21/76877 {Filling of holes, grooves or trenches, e.g. vias, with conductive material}
- H01L 21/76879 {by selective deposition of conductive material in the vias, e.g. selective C.V.D. on semiconductor material, plating (-plating on semiconductors in general [H01L 21/288](#)-)}
- H01L 21/7688 {by deposition over sacrificial masking layer, e.g. lift-off (-lift-off per se [H01L 21/0272](#)-)}
- H01L 21/76897 {Formation of self-aligned vias or contact plugs, i.e. involving a lithographically uncritical step (-self-aligned silicidation on field effect transistors [H01L 29/665](#)-)}

- U H01L 21/77
- • Manufacture or treatment of devices consisting of a plurality of solid state components or integrated circuits formed in, or on, a common substrate
- NOTE
Integration processes for the manufacture of devices of the type classified in [H01L 27/14](#) to [H01L 27/32](#) are not classified in this group and its sub-groups. Instead, as they are peculiar to said devices, they are classified together with the devices Multistep processes for manufacturing memory structures in general using field effect technology are covered by [H01L 27/1052](#); Multistep processes for manufacturing dynamic random access memory structures are covered by [H01L 27/10844](#); Multistep processes for manufacturing static random access memory structures are covered by [H01L 27/11](#) ; Multistep processes for manufacturing read-only memory structures are covered by [H01L 27/112](#) ; Multistep processes for manufacturing electrically programmable read-only memory structures are covered by [H01L 27/115](#)
- H01L 21/78
- • • with subsequent division of the substrate into plural individual devices (-cutting to change the surface-physical characteristics or shape of semiconductor bodies [H01L 21/304](#)-)
- H01L 21/782
- • • • to produce devices, each consisting of a single circuit element (-[H01L 21/82](#) takes precedence-)
- U H01L 21/82
- • • • to produce devices, e.g. integrated circuits, each consisting of a plurality of components
- H01L 21/8206
- • • • • {the substrate being a semiconductor, using diamond technology}(-[H01L 21/8258](#) takes precedence-)
- H01L 21/8213
- • • • • {the substrate being a semiconductor, using SiC technology}(-[H01L 21/8258](#) takes precedence-)
- H01L 21/822
- • • • • the substrate being a semiconductor, using silicon technology}(-[H01L 21/8258](#) takes precedence-)
- U H01L 21/8232
- • • • • • Field-effect technology
- U H01L 21/8234
- • • • • • MIS technology{, i.e. integration processes of field effect transistors of the conductor-insulator-semiconductor type}
- H01L 21/823487
- • • • • • • {with a particular manufacturing method of vertical transistor structures, i.e. with channel vertical to the substrate surface (-with a current flow parallel to the substrate surface [H01L 21/823431](#)-)}
- U H01L 21/8238
- • • • • • • • Complementary field-effect transistors, e.g. CMOS
- H01L 21/823885
- • • • • • • • • {with a particular manufacturing method of vertical transistor structures, i.e. with channel vertical to the substrate surface (-with a current flow parallel to the substrate surface [H01L 21/823821](#)-)}
- H01L 21/8252
- • • • • the substrate being a semiconductor, using III-V technology}(-[H01L 21/8258](#) takes precedence-)
- H01L 21/8254
- • • • • the substrate being a semiconductor, using II-VI technology}(-[H01L 21/8258](#) takes precedence-)
- H01L 21/8256
- • • • • the substrate being a semiconductor, using technologies not covered by one of groups{ [H01L 21/8206](#) , [H01L 21/8213](#) } , [H01L 21/822](#) , [H01L 21/8252](#) and [H01L 21/8254](#) (-[H01L 21/8258](#) takes precedence-)

- H01L 22/00** {Testing or measuring during manufacture or treatment; Reliability measurements, i.e. testing of parts without further processing to modify the parts as such; Structural arrangements therefor (-detecting or counting or handling [H01L 21/67005](#) ; marks applied to semiconductor devices [H01L 23/544](#) ; testing methods or structures peculiar to devices provided for in groups [H01L 31/00](#) to [H01L 51/00](#) , see these groups; investigating or analysing materials by the use of optical means [G01N 21/00](#) ; testing electrical properties of individual semiconductor devices [G01R 31/26](#) ; testing of photovoltaic systems [H02S 50/00](#))}
- H01L 22/10 · {Measuring as part of the manufacturing process (-burn-in [G01R 31/2855](#))}
- H01L 22/12 · {for structural parameters, e.g. thickness, line width, refractive index, temperature, warp, bond strength, defects, optical inspection, electrical measurement of structural dimensions, metallurgic measurement of diffusions (-electrical measurement of diffusions [H01L 22/14](#))}
- U H01L 22/20 · {Sequence of activities consisting of a plurality of measurements, corrections, marking or sorting steps}
- H01L 22/22 · {Connection or disconnection of sub-entities or redundant parts of a device in response to a measurement (-testing and repair of stores after manufacture including at wafer scale [G11C 29/00](#) ; fuses per se [H01L 23/525](#))}
- H01L 22/24 · {Optical enhancement of defects or not directly visible states, e.g. selective electrolytic deposition, bubbles in liquids, light emission, colour change (-voltage contrast [G01R 31/311](#))}
- H01L 22/26 · {Acting in response to an ongoing measurement without interruption of processing, e.g. endpoint detection, in-situ thickness measurement (-endpoint detection arrangements in CMP apparatus [B24B 37/013](#) , in discharge apparatus [H01J 37/32](#))}
- U H01L 22/30 · {Structural arrangements specially adapted for testing or measuring during manufacture or treatment, or specially adapted for reliability measurements}
- H01L 22/32 · {Additional lead-in metallisation on a device or substrate, e.g. additional pads or pad portions, lines in the scribe line, sacrificed conductors (-arrangements for conducting electric current to or from the solid state body in operation [H01L 23/48](#))}
- H01L 22/34 · {Circuits for electrically characterising or monitoring manufacturing processes, e. g. whole test die, wafers filled with test structures, on-board-devices incorporated on each die, process control monitors or pad structures thereof, devices in scribe line (-switching, multiplexing, gating devices [G01R 19/25](#) ; process control with lithography, e.g. dose control, [G03F 7/20](#) ; structures for alignment control by optical means [G03F 7/70633](#))}
- H01L 23/00** **Details of semiconductor or other solid state devices (-[H01L 25/00](#) takes precedence; { structural arrangements for testing or measuring during manufacture or treatment, or for reliability measurements [H01L 22/00](#) ; arrangements for connecting or disconnecting semiconductor or solid-state bodies, or methods related thereto [H01L 24/00](#) ; finger print sensors [G06K 9/00006](#) })**

NOTE

This group does not cover:

- details of semiconductor bodies or of electrodes of devices provided for in group [H01L 29/00](#) , which details are covered by that group;
- details peculiar to devices provided for in a single main group of groups [H01L 31/00](#) to [H01L 51/00](#) , which details are covered by those groups.

- H01L 23/02
 - Containers; Seals (~~H01L 23/12~~ , ~~H01L 23/34~~ , ~~H01L 23/48~~ , ~~H01L 23/552~~ , { ~~H01L 23/66~~ }take precedence;{ for memories ~~G11C~~ })
- H01L 23/04
 - • characterised by the shape {of the container or parts, e.g. caps, walls}
- H01L 23/053
 - • • the container being a hollow construction and having an insulating {or insulated}base as a mounting for the semiconductor body
- H01L 23/055
 - • • • the leads having a passage through the base{(~~H01L 23/057~~ takes precedence-)}
- U H01L 23/12
 - Mountings, e.g. non-detachable insulating substrates
- H01L 23/14
 - • characterised by the material or its electrical properties{(~~-~~printed circuit boards ~~H05K 1/00-~~)}
- H01L 23/147
 - • • {Semiconductor insulating substrates (~~-~~semiconductor conductive substrates ~~H01L 23/4926-~~)}
- H01L 23/15
 - • • Ceramic or glass substrates{(~~H01L 23/142~~ , ~~H01L 23/145~~ , ~~H01L 23/147~~ take precedence-)}
- H01L 23/16
 - Fillings or auxiliary members in containers {or encapsulations}, e.g. centering rings (~~H01L 23/42~~ , ~~H01L 23/552~~ take precedence-)
- H01L 23/18
 - • Fillings characterised by the material, its physical or chemical properties, or its arrangement within the complete device
- NOTE
- Group ~~H01L 23/26~~ takes precedence over groups ~~H01L 23/20~~ to ~~H01L 23/24~~
- H01L 23/24
 - • • Solid or gel at the normal operating temperature of the device{(~~H01L 23/3135~~ takes precedence-)}
- H01L 23/28
 - Encapsulations, e.g. encapsulating layers, coatings,{e.g. for protection} (~~H01L 23/552~~ takes precedence; { insulating layers for contacts or interconnections ~~H01L 23/5329~~ })
- H01L 23/29
 - • characterised by the material {e.g. carbon (~~-~~interlayer dielectrics ~~H01L 23/5329-~~)}
- U H01L 23/293
 - • • {Organic, e.g. plastic}
- H01L 23/295
 - • • • {containing a filler (~~H01L 23/296~~ takes precedence-)}
- H01L 23/31
 - • characterised by the arrangement {or shape}
- H01L 23/3157
 - • • {Partial encapsulation or coating (~~-~~mask layer used as insulation layer ~~H01L 21/31-~~)}
- H01L 23/3171
 - • • • {the coating being directly applied to the semiconductor body, e.g. passivation layer (~~H01L 23/3178~~ takes precedence-)}
- H01L 23/32
 - Holders for supporting the complete device in operation, i.e. detachable fixtures (~~H01L 23/40~~ takes precedence; connectors, {e.g. sockets} , in general ~~H01R~~ ; for printed circuits ~~H05K-~~)
- H01L 23/34
 - Arrangements for cooling, heating, ventilating or temperature compensation; {Temperature sensing arrangements (~~-~~thermal treatment apparatus ~~H01L 21/00-~~)}
- H01L 23/345
 - • {Arrangements for heating (~~-~~thermal treatment apparatus ~~H01L 21/00-~~)}
- H01L 23/36
 - • Selection of materials, or shaping, to facilitate cooling or heating, e.g. heatsinks{(~~H01L 23/28~~ , ~~H01L 23/40~~ , ~~H01L 23/42~~ , ~~H01L 23/44~~ , ~~H01L 23/46~~ take precedence; heating ~~H01L 23/345-~~)}
- H01L 23/367
 - • • Cooling facilitated by shape of device{(~~H01L 23/38~~ , ~~H01L 23/40~~ , ~~H01L 23/42~~ , ~~H01L 23/44~~ , ~~H01L 23/46~~ take precedence-)}
- H01L 23/3672
 - • • • {Foil-like cooling fins or heat sinks (~~-~~being part of lead-frames ~~H01L 23/49568-~~)}
- H01L 23/373
 - • • Cooling facilitated by selection of materials for the device {or materials for thermal expansion adaptation, e.g. carbon}

- H01L 23/3731 . . . {Ceramic materials or glass ([H01L 23/3732](#) , [H01L 23/3733](#) , [H01L 23/3735](#) , [H01L 23/3737](#) , [H01L 23/3738](#) take precedence-)}
- H01L 23/3733 . . . {having a heterogeneous or anisotropic structure, e.g. powder or fibres in a matrix, wire mesh, porous structures ([H01L 23/3732](#) , [H01L 23/3737](#) take precedence-)}
- H01L 23/3736 . . . {Metallic materials ([H01L 23/3732](#) , [H01L 23/3733](#) , [H01L 23/3735](#) , [H01L 23/3737](#) , [H01L 23/3738](#) take precedence-)}
- H01L 23/40 . . Mountings or securing means for detachable cooling or heating arrangements({heating [H01L 23/345](#)); fixed by friction, plugs or springs}
- U H01L 23/4006 . . . {with bolts or screws}
- H01L 23/4012 . . . {for stacked arrangements of a plurality of semiconductor devices ([H01L 25/00](#)-)}
- H01L 23/42 . . Fillings or auxiliary members in containers {or encapsulations}selected or arranged to facilitate heating or cooling ({ heating [H01L 23/345](#) } ; characterised by selection of materials for the device [H01L 23/373](#)-)}
- H01L 23/427 . . . Cooling by change of state, e.g. use of heat pipes({by liquefied gas [H01L 23/445](#)-)}
- H01L 23/433 . . . Auxiliary members {in containers}characterised by their shape, e.g. pistons
- H01L 23/4334 . . . {Auxiliary members in encapsulations ([H01L 23/49568](#) takes precedence-)}
- H01L 23/44 . . the complete device being wholly immersed in a fluid other than air({[H01L 23/427](#) takes precedence-)}
- H01L 23/46 . . involving the transfer of heat by flowing fluids ([H01L 23/42](#) , [H01L 23/44](#) take precedence-)
- H01L 23/467 . . . by flowing gases, e.g. air({[H01L 23/473](#) takes precedence-)}
- H01L 23/473 . . . by flowing liquids({[H01L 23/4332](#) , [H01L 23/4338](#) take precedence-)}
- H01L 23/4735 . . . {Jet impingement ([H01L 23/4336](#) takes precedence-)}
- H01L 23/48 . . Arrangements for conducting electric current to or from the solid state body in operation, e.g. leads, terminal arrangements (in general [H01R](#)); {Selection of materials therefor}

NOTE

Arrangements for connecting or disconnecting semiconductor or other solid state bodies, or methods related thereto, other than those arrangements or methods covered by the following subgroups, are covered by [H01L 24/00](#)

- H01L 23/482 . . consisting of lead-in layers inseparably applied to the semiconductor body({electrodes [H01L 29/40](#)-)}

WARNING

The documents of this group dealing with arrangements for connecting semiconductor or other solid state bodies are being continuously reclassified to [H01L 24/01](#) and subgroups

- H01L 23/485 . . . consisting of layered constructions comprising conductive layers and insulating layers, e.g. planar contacts({[H01L 23/4821](#) , [H01L 23/4822](#) , [H01L 23/4824](#) , [H01L 23/4825](#) take precedence; materials [H01L 23/532](#) , bond pads [H01L 24/02](#) , bump connectors [H01L 24/10](#)-)}

WARNING

The documents of this group dealing with arrangements for connecting semiconductor or other solid state bodies are being continuously reclassified to [H01L 24/01](#) and subgroups

- H01L 23/488
 - • consisting of soldered {or bonded} constructions {(-bump connectors [H01L 24/01](#)-)}
- H01L 23/49
 - • • Wire-like {arrangements or pins or rods (-using optical fibres [H01L 23/48](#) ; pins attached to insulating substrates [H01L 23/49811](#)-)}
 - WARNING
 - This group is no longer used for the classification of new documents as from June 1, 2010. The backlog of this group is being continuously reclassified to **H01L23/00C2W** and subgroups
- H01L 23/492
 - • • Bases or plates {or solder therefor}
- H01L 23/495
 - • • Lead-frames {or other flat leads (-[H01L 23/498](#) takes precedence; lead frame interconnections between components [H01L 23/52](#)-)}
- U H01L 23/49503
 - • • • {characterised by the die pad}
- H01L 23/49506
 - • • • • {an insulative substrate being used as a diepad, e.g. ceramic, plastic (-[H01L 23/49531](#) takes precedence-)}
- U H01L 23/49541
 - • • • {Geometry of the lead-frame}
- H01L 23/49544
 - • • • • {Deformation absorbing parts in the lead frame plane, e.g. meanderline shape (-[H01L 23/49562](#) takes precedence-)}
- H01L 23/49548
 - • • • • {Cross section geometry (-[H01L 23/49562](#) takes precedence-)}
- H01L 23/49562
 - • • • • {for devices being provided for in [H01L 29/00](#)-}
- H01L 23/49572
 - • • • • {consisting of thin flexible metallic tape with or without a film carrier (-[H01L 23/49503](#) to [H01L 23/49568](#) and [H01L 23/49575](#) to [H01L 23/49579](#) take precedence-)}
- H01L 23/498
 - • • Leads, {i.e. metallisations or lead-frames} on insulating substrates, {e.g. chip carriers (-shape of the substrate [H01L 23/13](#)-)}
- H01L 23/49811
 - • • • {Additional leads joined to the metallisation on the insulating substrate, e.g. pins, bumps, wires, flat leads (-[H01L 23/49827](#) takes precedence-)}
- H01L 23/49822
 - • • • {Multilayer substrates (-multilayer metallisation on monolayer substrate [H01L 23/498](#)-)}
- H01L 23/49827
 - • • • {Via connections through the substrates, e.g. pins going through the substrate, coaxial cables (-[H01L 23/49822](#) , [H01L 23/49833](#) , [H01L 23/4985](#) , [H01L 23/49861](#) take precedence-)}
- U H01L 23/49838
 - • • • {Geometry or layout}
- H01L 23/49844
 - • • • • {for devices being provided for in [H01L 29/00](#)-}
- H01L 23/4985
 - • • • • {Flexible insulating substrates (-[H01L 23/49572](#) and [H01L 23/49855](#) take precedence-)}
- H01L 23/49855
 - • • • • {for flat-cards, e.g. credit cards (-cards per se [G06K 19/00](#)-)}
- H01L 23/49861
 - • • • • {Lead-frames fixed on or encapsulated in insulating substrates (-[H01L 23/4985](#) , [H01L 23/49805](#) take precedence-)}
- H01L 23/49866
 - • • • • {characterised by the materials (-materials of the substrates [H01L 23/14](#) , of the lead-frames [H01L 23/49579](#)-)}
- H01L 23/49877
 - • • • • {Carbon, e.g. fullerenes (-superconducting fullerenes [H01L 39/123](#)-)}
- H01L 23/49883
 - • • • • {the conductive materials containing organic materials or pastes, e.g. for thick films (-for printed circuits [H05K 1/092](#)-)}
- H01L 23/50
 - • for integrated circuit devices, {e.g. power bus, number of leads} (-[H01L 23/482](#) to [H01L 23/498](#) take precedence-)
- H01L 23/52
 - Arrangements for conducting electric current within the device in operation from one component to another, {i.e. interconnections, e.g. wires, lead frames (-optical interconnections [G02B 6/00](#)-)}

- U H01L 23/522
 - including external interconnections consisting of a multilayer structure of conductive and insulating layers inseparably formed on the semiconductor body
 - H01L 23/5222
 - • {Capacitive arrangements or effects of, or between wiring layers (-other capacitive arrangements [H01L 23/642](#)-)}
 - H01L 23/5227
 - • {Inductive arrangements or effects of, or between, wiring layers (-other inductive arrangements [H01L 23/645](#)-)}
 - H01L 23/5228
 - • {Resistive arrangements or effects of, or between, wiring layers (-other resistive arrangements [H01L 23/647](#)-)}
 - H01L 23/528
 - • {Geometry or}layout of the interconnection structure{(-[H01L 27/0207](#) takes precedence; algorithms [G06F 17/50](#)-)}
 - U H01L 23/532
 - • characterised by the materials
 - U H01L 23/53204
 - • • {Conductive materials}
 - H01L 23/53209
 - • • • {based on metals, e.g. alloys, metal silicides (-[H01L 23/53285](#) takes precedence-)}
 - H01L 23/53276
 - • • • {containing carbon, e.g. fullerenes (-superconducting fullerenes [H01L 39/123](#)-)}
 - H01L 23/535
 - including internal interconnections, e.g. cross-under constructions{(-internal lead connections [H01L 23/481](#)-)}
 - H01L 23/538
 - the interconnection structure between a plurality of semiconductor chips being formed on, or in, insulating substrates ({ [H05K](#) takes precedence; manufacture or treatment [H01L 21/4846](#) } ; mountings per se [H01L 23/12](#) ; { materials [H01L 23/49866](#) })
 - H01L 23/5383
 - • {Multilayer substrates (-[H01L 23/5385](#) takes precedence; multilayer metallisation on monolayer substrates [H01L 23/538](#)-)}
 - H01L 23/5384
 - • {Conductive vias through the substrate with or without pins, e.g. buried coaxial conductors (-[H01L 23/5383](#) , [H01L 23/5385](#) take precedence; pins attached to insulating substrates [H01L 23/49811](#)-)}
 - H01L 23/5387
 - • {Flexible insulating substrates (-[H01L 23/5388](#) takes precedence-)}
 - H01L 23/5388
 - • {for flat cards, e.g. credit cards (-cards per se [G06K 19/00](#)-)}
 - H01L 23/544
 - Marks applied to semiconductor devices {or parts}, e.g. registration marks, {alignment structures, wafer maps (-test patterns for characterising or monitoring manufacturing processes [H01L 22/00](#)-)}
- NOTE**
- When classifying in group [H01L 23/544](#) , details are to be further indexed by using the indexing codes chosen from [H01L 2223/544](#) and subgroups
- H01L 23/552
 - Protection against radiation, e.g. light {or electromagnetic waves}
 - H01L 23/562
 - {Protection against mechanical damage (-[H01L 23/02](#) , [H01L 23/28](#) take precedence-)}
 - H01L 23/564
 - {Details not otherwise provided for, e.g. protection against moisture (-getters [H01L 23/26](#)-)}
 - H01L 23/58
 - Structural electrical arrangements for semiconductor devices not otherwise provided for,{e.g. in combination with batteries (-[H01L 23/49593](#) , [H01L 23/49596](#) take precedence-)}
 - H01L 23/585
 - • {comprising conductive layers or plates or strips or rods or rings (-[H01L 23/60](#) , [H01L 23/62](#) , [H01L 23/64](#) , [H01L 23/66](#) take precedence-)}
 - H01L 23/60
 - • Protection against electrostatic charges or discharges, e.g. Faraday shields (-in general [H05F](#)-)}
 - U H01L 23/64
 - • Impedance arrangements

- H01L 23/642
 - • • {Capacitive arrangements ([-H01L 23/49589](#) , [H01L 23/645](#) , [H01L 23/647](#) , [H01L 23/66](#) take precedence; capacitive effects between wiring layers on the semiconductor body [H01L 23/5222-](#))}
- H01L 23/645
 - • • {Inductive arrangements ([-H01L 23/647](#) , [H01L 23/66](#) take precedence)}
- H01L 23/647
 - • • {Resistive arrangements ([-H01L 23/66](#) , [H01L 23/62](#) take precedence)}

U H01L 24/00 {Arrangements for connecting or disconnecting semiconductor or solid-state bodies; Methods or apparatus related thereto}

NOTE

1. This group does not cover: - details of semiconductor bodies or of electrodes of devices provided for in group [H01L 29/00](#) , which details are covered by that group; - details peculiar to devices provided for in a single main group of groups [H01L 31/00](#) to [H01L 51/00](#) , which details are covered by those groups. - printed circuits, which are covered by groups [H05K 1/00](#) to [H05K 1/189](#); - apparatus or manufacturing processes for printed circuits, which are covered by groups [H05K 3/00](#) to [H05K 3/4685](#); - manufacture or treatment of parts, which are covered by group [H01L 21/48](#) and subgroups except [H01L 21/4885](#) to [H01L 21/4896](#) ; - assemblies of semiconductor devices, which are covered by groups [H01L 21/50](#) to [H01L 21/568](#); - applying interconnections to be used for carrying current between separate components within a device, which is covered by group [H01L 21/768](#) and subgroups; - containers or seals, which are covered by groups [H01L 23/02](#) to [H01L 23/10](#) ; - mountings, which are covered by groups [H01L 23/12](#) to [H01L 23/15](#) and subgroups; - arrangements for cooling, heating, ventilating or temperature compensation, which are covered by groups [H01L 23/34](#) to [H01L 23/4735](#); - arrangements for conducting electric current, which are covered by groups [H01L 23/48](#) to [H01L 23/50](#) , and by groups [H01L 23/52](#) to [H01L 23/5389](#); - structural electrical arrangements, which are covered by groups [H01L 23/58](#) to [H01L 23/66](#) ; - assemblies of semiconductor or other solid state devices, which are covered by groups [H01L 25/00](#) to [H01L 25/18](#) . 2. In this group the following indexing codes are used : [H01L 24/00](#) [H01L 2224/00](#) , [H01L 2924/00](#) , and subgroups thereof

WARNING

[H01L 21/4885](#) , [H01L 21/58](#) , [H01L 23/48](#) , [H01L 23/482](#) , [H01L 23/485](#) , [H01L 23/488](#)

- U H01L 24/01
 - {Means for bonding being attached to, or being formed on, the surface to be connected, e.g. chip-to-package, die-attach, "first-level" interconnects; Manufacturing methods related thereto}
 - WARNING
 - 1. Not complete, see provisionally also [H01L 23/482](#) , [H01L 23/485](#) and subgroups 2. Pending reorganisation subgroups of this group are not complete; see also this group and the other subgroups
- H01L 24/02
 - • {Bonding areas ([-on insulating substrates, e.g. chip carriers, \[H01L 23/49816\]\(#\) , \[H01L 23/49838\]\(#\) , \[H01L 23/5389\]\(#\)](#)); Manufacturing methods related thereto}
 - WARNING
 - 1. Pending reorganisation see provisionally also [H01L 24/10](#) for Under Bump Metallization [UBM] 2. Pending reorganisation, subgroups of this group are not complete; see also this group
- H01L 24/10
 - • {Bump connectors ([-bumps on insulating substrates, e.g. chip carriers, \[H01L 23/49816\]\(#\)](#)); Manufacturing methods related thereto}
 - WARNING
- H01L 24/11
 - • • {Manufacturing methods ([-for bumps on insulating substrates \[H01L 21/4853\]\(#\)](#))}

- H01L 24/18
- {High density interconnect [HDI]connectors; Manufacturing methods related thereto (-interconnection structure between a plurality of semiconductor chips [H01L 23/5389](#)-)}
- WARNING
1. Pending reorganisation, see provisionally also **H01L24/822** 2. Pending reorganisation, subgroups of this group are not complete; see also this group . Pending reorganisation, subgroups of this group are not complete; see also this group
- H01L 24/50
- {Tape automated bonding [TAB]connectors, i.e. film carriers; Manufacturing methods related thereto (-thin flexible metallic tape with or without a film carrier [H01L 23/49572](#) , flexible insulating substrates [H01L 23/4985](#) , [H01L 23/5387](#)-)}
- WARNING
- [H01L 24/86](#)
- H01L 24/63
- {-Connectors not provided for in any of the groups [H01L 24/10](#) to [H01L 24/50](#) and subgroups; Manufacturing methods related thereto-}
- H01L 24/71
- {Means for bonding not being attached to, or not being formed on, the surface to be connected (-holders for supporting the complete device in operation [H01L 23/32](#)-)}
- H01L 24/73
- {-Means for bonding being of different types provided for in two or more of groups [H01L 24/10](#) , [H01L 24/18](#) , [H01L 24/26](#) , [H01L 24/34](#) , [H01L 24/42](#) , [H01L 24/50](#) , [H01L 24/63](#) , [H01L 24/71](#)-}
- U H01L 24/80
- {Methods for connecting semiconductor or other solid state bodies using means for bonding being attached to, or being formed on, the surface to be connected}
- WARNING
1. Pending reorganisation see provisionally also **H01L21/60** 2. Subgroups of this group are not complete; see also this group and the other subgroups
- H01L 24/82
- {-by forming build-up interconnects at chip-level, e.g. for high density interconnects [HDI]}(-interconnection structure between a plurality of semiconductor chips [H01L 23/5389](#)-)}
- H01L 24/85
- {-using a wire connector (-wire bonding in general [B23K 20/004](#)-)}
- H01L 24/86
- {-using tape automated bonding [TAB]}
- H01L 24/89
- {-using at least one connector not provided for in any of the groups [H01L 24/81](#) to [H01L 24/86](#)-}
- H01L 24/91
- {-Methods for connecting semiconductor or solid state bodies including different methods provided for in two or more of groups [H01L 24/80](#) to [H01L 24/90](#)-}
- U H01L 25/00
- Assemblies consisting of a plurality of individual semiconductor or other solid state devices{; Multistep manufacturing processes thereof}{lead frames with assemblies of semiconductor devices thereon [H01L 23/49575](#); assembling semiconductor devices using processes or apparatus not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#), e.g. sealing of a cap to a base of a container, [H01L 21/50](#);} devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); photovoltaic modules or arrays of photovoltaic cells [H01L 31/042](#){, [H01G 9/20](#))**
- H01L 25/03
- all the devices being of a type provided for in the same subgroup of groups [H01L 27/00](#) to [H01L 51/00](#) , e.g. assemblies of rectifier diodes
- U H01L 25/04
- • the devices not having separate containers
- H01L 25/041
- • • {-the devices being of a type provided for in group [H01L 31/00](#)-}

- H01L 25/042 . . . {the devices being arranged next to each other (~~-solar cells~~
[H01L 31/042\)}](#)
- H01L 25/046 . . . {the devices being of a type provided for in group [H01L 51/00](#)}
- H01L 25/047 . . . {the devices being of a type provided for in group [H01L 51/42](#) , e.g.
photovoltaic modules based on organic solar cells}
- H01L 25/048 . . . {the devices being of a type provided for in group [H01L 51/50](#) , e.g.
assembly of organic light emitting devices}
- H01L 25/065 . . . the devices being of a type provided for in group [H01L 27/00](#)
- NOTE
Group [H01L 25/0652](#) takes precedence over groups [H01L 25/0655](#) and
[H01L 25/0657](#)
- H01L 25/07 . . . the devices being of a type provided for in group [H01L 29/00](#)
- NOTE
Group [H01L 25/071](#) takes precedence over groups [H01L 25/072](#) to
[H01L 25/074](#)
- H01L 25/075 . . . the devices being of a type provided for in group [H01L 33/00](#)
- U H01L 25/10 . . . the devices having separate containers
- H01L 25/105 . . . {the devices being of a type provided for in group [H01L 27/00](#)}
- NOTE
When classifying in group [H01L 25/105](#) , details of the assemblies are to be
further indexed by using the indexing codes chosen from [H01L 2225/1005](#)
and subgroups
- H01L 25/11 . . . the devices being of a type provided for in group [H01L 29/00](#)
- NOTE
Group [H01L 25/112](#) takes precedence over groups [H01L 25/115](#) and
[H01L 25/117](#)
- H01L 25/13 . . . the devices being of a type provided for in group [H01L 33/00](#)
- H01L 25/16 . . . the devices being of types provided for in two or more different main groups
of [H01L 27/00](#) to [H01L 49/00](#) { and [H01L 51/00](#) }, e.g. forming hybrid
circuits(~~-interconnections for hybrid circuits~~ [H01L 23/5389\)}](#)
- H01L 25/18 . . . the devices being of types provided for in two or more different subgroups
of the same main group of groups [H01L 27/00](#) to [H01L 51/00](#) {(~~-comprising~~
devices provided for in [H01L 27/144](#) and subgroups, see [H01L 27/144](#) and
subgroups)}
- H01L 25/50 . . . {~~Multistep manufacturing processes of assemblies consisting of~~
devices, each device being of a type provided for in group [H01L 27/00](#) or
[H01L 29/00](#) (~~-H01L 21/50 takes precedence-~~)}
- H01L 27/00** **Devices consisting of a plurality of semiconductor or other solid state**
components formed in or on a common substrate (~~-processes or apparatus~~
specially adapted for the manufacture or treatment thereof or of parts
thereof [H01L 21/70](#) , [H01L 31/00](#) to [H01L 51/00](#) ; details thereof [H01L 23/00](#) ,
[H01L 29/00](#) to [H01L 51/00](#) ; assemblies consisting of a plurality of individual
solid state devices [H01L 25/00](#) ; assemblies of electrical components in
general [H05K](#)-)
- NOTE
In this group, in the absence of an indication to the contrary, classification is
made in the last appropriate place.

- H01L 27/01
- comprising only passive thin-film or thick-film elements formed on a common insulating substrate (passive two-terminal components without a potential-jump or surface barrier for integrated circuits, details thereof and multistep manufacturing processes therefor [H01L 28/00](#))
- NOTE**
- In groups [H01L 27/01](#) to [H01L 27/26](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
- U H01L 27/02
- including semiconductor components specially adapted for rectifying, oscillating, amplifying or switching and having at least one potential-jump barrier or surface barrier; including integrated passive circuit elements with at least one potential-jump barrier or surface barrier
- U H01L 27/0203
- {Particular design considerations for integrated circuits}
- U H01L 27/0207
- {Geometrical layout of the components, e.g. computer aided design; custom LSI, semi-custom LSI, standard cell technique}
- H01L 27/0211
- {adapted for requirements of temperature (cooling arrangements per se [H01L 23/34](#))}
- U H01L 27/0214
- {for internal polarisation, e.g. I²L}
- U H01L 27/0218
- {of field effect structures}
- H01L 27/0222
- {Charge pumping, substrate bias generation structures (circuits [G05F 3/205](#))}
- H01L 27/0225
- {Charge injection in static induction transistor logic structures, i.e. SITL (circuits [H03K 19/0912](#))}
- U H01L 27/0229
- {of bipolar structures}
- H01L 27/0233
- {Integrated injection logic structures, i.e. I²L (circuits [H03K 19/091](#))}
- H01L 27/0248
- {for electrical or thermal protection, e.g. electrostatic discharge [ESD] protection (emergency protective circuit arrangements [H02H](#); circuit arrangements for protecting electronic switches [H03K 17/08](#); circuit arrangements for protecting logic circuits [H03K 19/003](#))}
- U H01L 27/0251
- {for MOS devices}
- H01L 27/0255
- {using diodes as protective elements (diode connected field effect transistors [H01L 27/0266](#); diode connected bipolar transistors [H01L 27/0259](#))}
- U H01L 27/0259
- {using bipolar transistors as protective elements}
- H01L 27/0262
- {including a PNP transistor and a NPN transistor, wherein each of said transistors has its base coupled to the collector of the other transistor, e.g. silicon controlled rectifier [SCR] devices}
- U H01L 27/0266
- {using field effect transistors as protective elements}
- H01L 27/0285
- {bias arrangements for gate electrode of field effect transistors, e.g. RC networks, voltage partitioning circuits ([H01L 27/0281](#) takes precedence)}
- U H01L 27/04
- the substrate being a semiconductor body
- U H01L 27/06
- including a plurality of individual components in a non-repetitive configuration
- U H01L 27/0611
- {integrated circuits having a two-dimensional layout of components without a common active region}
- H01L 27/0617
- {comprising components of the field-effect type ([H01L 27/0251](#) takes precedence)}
- U H01L 27/08
- including only semiconductor components of a single kind
- U H01L 27/082
- including bipolar components only
- U H01L 27/0823
- {including vertical bipolar transistors only}

- H01L 27/0825 {Combination of vertical direct transistors of the same conductivity type having different characteristics, *(e.g. Darlington transistors)*} ~~(e.g. Darlington transistors)}~~
- U H01L 27/10 . . . including a plurality of individual components in a repetitive configuration
- U H01L 27/102 including bipolar components
- U H01L 27/1022 {including bipolar transistors}
- H01L 27/1023 {Bipolar dynamic random access memory structures ~~(-circuits G11C 11/24 , G11C 11/34-)~~}
- H01L 27/1025 {Static bipolar memory cell structures ~~(-circuits G11C 11/40-)~~}
- H01L 27/1026 {Bipolar electrically programmable memory structures ~~(-using fuses H01L 23/525-)~~}
- U H01L 27/105 including field-effect components
- WARNING
In this group and its subgroups classification is made in any appropriate place
- H01L 27/1052 {~~Memory structures and multistep manufacturing processes therefor not provided for in groups H01L 27/1055 to H01L 27/112-~~}
- H01L 27/108 Dynamic random access memory structures ~~(-circuits G11C 11/24 , G11C 11/34-)~~
- NOTE
In this group and its subgroups classification is made in any appropriate place
- H01L 27/10802 {comprising floating-body transistors, e.g. floating-body cells ~~(-floating-body transistors per se H01L 29/7841-)~~}
- U H01L 27/10844 {Multistep manufacturing methods}
- U H01L 27/10847 {for structures comprising one transistor one-capacitor memory cells}
- WARNING
not complete pending completion of reclassification; see also [H01L 27/10844](#)
- H01L 27/1085 {with at least one step of making the capacitor or connections thereto ~~(-making a capacitor for integrated circuits H01L 28/40 , H01L 29/66181-)~~}
- H01L 27/10873 {with at least one step of making the transistor ~~(-making the transistor per se H01L 29/66409-)~~}
- H01L 27/10876 {the transistor having a trench structure in the substrate ~~(-vertical transistor in combination with a capacitor formed in a substrate trench H01L 27/10864-)~~}
- H01L 27/11 Static random access memory structures ~~(and multistep manufacturing processes therefor (-circuits G11C 11/40-))~~
- H01L 27/1112 {the load element being a resistor ~~(-resistors for integrated circuits H01L 28/20 , H01L 29/8605-)~~}
- H01L 27/112 Read-only memory structures ~~{[ROM]} and multistep manufacturing processes therefor}~~
- H01L 27/115 Electrically programmable read-only memories ~~(and multistep manufacturing processes therefor)}~~

- U H01L 27/11517 {with floating gate}
- WARNING
Group [H01L 27/11517](#) and subgroups are not complete pending reorganisation. See also [H01L 27/115](#)
- H01L 27/11521 {Memory core region core region (-three-dimensional arrangements [H01L 27/11551-](#))}
- U H01L 27/11563 {with charge trapping gate insulator, e.g. MNOS, NROM}
- H01L 27/11568 {Memory core region (-three-dimensional arrangements [H01L 27/11578-](#))}
- U H01L 27/118 Masterslice integrated circuits
- U H01L 27/11803 {using field effect technology}
- U H01L 27/11807 {CMOS gate arrays}
- U H01L 2027/11868 {Macro-architecture}
- H01L 2027/1187 {Number of core or basic cells in the macro (~~RAM, ROM~~)}(~~RAM, ROM~~)}
- U H01L 27/12 . . . the substrate being other than a semiconductor body, e.g. an insulating body
- H01L 27/1203 . . . {the substrate comprising an insulating body on a semiconductor body, e.g. SOI (-three-dimensional layout [H01L 27/0688-](#))}
- U H01L 27/1214 . . . {comprising a plurality of TFTs formed on a non-semiconducting substrate, e.g. driving circuits for AMLCDs}
- WARNING
Subgroups of [H01L 27/1214](#) are not complete, pending reorganisation; see provisionally also this group
- H01L 27/124 {with a particular composition, shape or layout of the wiring layers specially adapted to the circuit arrangement, e.g. scanning lines in LCD pixel circuits (-wiring structures per se [H01L 23/52-](#))}
- U H01L 27/1259 {Multistep manufacturing methods}
- U H01L 27/127 {with a particular formation, treatment or patterning of the active layer specially adapted to the circuit arrangement}
- H01L 27/1274 {using crystallisation of amorphous semiconductor or recrystallisation of crystalline semiconductor (-crystallisation per se [H01L 21/02667-](#))}
- H01L 27/13 combined with thin-film or thick-film passive components (-passive two-terminal components without a potential-jump or surface barrier for integrated circuits, details thereof and multistep manufacturing processes therefor [H01L 28/00-](#))}
- H01L 27/14 . . . including semiconductor components sensitive to infra-red radiation, light, electromagnetic radiation of shorter wavelength, or corpuscular radiation and specially adapted either for the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation (-radiation-sensitive components structurally associated with one or more electric light sources only [H01L 31/14](#) ; couplings of light guides with optoelectronic elements [G02B 6/42-](#))}
- U H01L 27/144 . . . Devices controlled by radiation
- U H01L 27/146 . . . Imager structures
- U H01L 27/14601 {Structural or functional details thereof}
- H01L 27/14609 {Pixel-elements with integrated switching, control, storage or amplification elements (-scanning details of imagers [H04N 3/15](#) ; circuitry of imagers [H04N 5/369-](#))}
- U H01L 27/14643 {Photodiode arrays; MOS imagers}

- H01L 27/14658
 - {X-ray, gamma-ray or corpuscular radiation imagers (-measuring X-, gamma- or corpuscular radiation [G01T 1/00-](#))}
- U H01L 27/14665
 - {Imagers using a photoconductor layer}
- H01L 27/14676
 - {X-ray, gamma-ray or corpuscular radiation imagers (-measuring X-, gamma- or corpuscular radiation [G01T 1/00-](#))}
- H01L 27/14683
 - {Processes or apparatus peculiar to the manufacture or treatment of these devices or parts thereof (-not peculiar thereto [H01L 21/00-](#))}
- H01L 27/148
 - Charge coupled imagers{(-individual charge coupled devices [H01L 29/765-](#))}
- H01L 27/15
 - . including semiconductor components with at least one potential-jump barrier or surface barrier specially adapted for light emission{(-monolithically integrated components including semiconductor laser components [H01S 5/026-](#))}
- H01L 27/16
 - . including thermoelectric components with or without a junction of dissimilar materials; including thermomagnetic components (-using the Peltier effect only for cooling of semiconductor or other solid state devices [H01L 23/38-](#))
- U H01L 27/28
 - . including components using organic materials as the active part, or using a combination of organic materials with other materials as the active part
- H01L 27/30
 - . with components specially adapted for sensing infra-red radiation, light, electromagnetic radiation of shorter wavelength, or corpuscular radiation; with components specially adapted for either the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation{(-combination of organic light sensitive components with organic light emitting components, e.g. optocoupler [H01L 27/288-](#))}
- U H01L 27/305
 - . . . {Devices controlled by radiation}
- H01L 27/308
 - {Devices specially adapted for detecting X-ray radiation (-measuring X-radiation [G01T 1/00-](#))}
- H01L 27/32
 - . with components specially adapted for light emission, e.g. flat-panel displays using organic light-emitting diodes (OLED){ combination of organic light sensitive components with organic light emitting components, e.g. optocoupler [H01L 27/288-](#)}
- H01L 27/3225
 - . . . {OLED integrated with another component (-[H01L 27/3223](#) takes precedence-)}
- H01L 27/3227
 - {the other component being a light sensitive element, e.g. inorganic solar cell, inorganic photodiode (-[H01L 27/288](#) takes precedence-)}
- H01L 27/3234
 - {the other component being an imager structure (-[H01L 27/146](#) takes precedence-)}
- H01L 27/3237
 - . . . {-Displays not provided for in group [H01L 27/3241](#) and subgroups, e.g. segment-type displays-}
- U H01L 27/3241
 - . . . {Matrix-type displays}

NOTE
From 1.2.2012 onwards, groups [H01L 27/3295](#) and [H01L 27/3297](#) are no longer used for classification of new documents. The backfile is being reclassified to [H01L 27/3244](#) and [H01L 27/3281](#) and subgroups thereof
- U H01L 27/3244
 - {Active matrix displays}
- H01L 27/3274
 - {including organic thin film transistors [[OTFT](#)]}}

- H01L 28/00** {Passive two-terminal components without a potential-jump or surface barrier for integrated circuits; Details thereof; Multistep manufacturing processes therefor (-testing or measuring during manufacture [H01L 22/00](#) ; integration methods [H01L 21/70](#) ; integrated circuits [H01L 27/00](#) ; two-terminal components with a potential-jump or surface barrier [H01L 29/00](#) ; resistors in general [H01C](#); inductors in general [H01F](#); capacitors in general [H01G](#)-)}
- U H01L 28/20 · {Resistors}
- H01L 28/22 · · {with an active material comprising carbon, e.g. diamond or diamond-like carbon [DLC]}
- H01L 29/00** Semiconductor devices adapted for rectifying, amplifying, oscillating or switching, or capacitors or resistors with at least one potential-jump barrier or surface barrier, e.g. PN junction depletion layer or carrier concentration layer; Details of semiconductor bodies or of electrodes thereof; {Multistep manufacturing processes therefor} (-[H01L 31/00](#) - [H01L 47/00](#) , [H01L 51/05](#) take precedence; processes or apparatus adapted for the manufacture or treatment thereof or of parts thereof [H01L 21/00](#) ; details other than of semiconductor bodies or of electrodes thereof [H01L 23/00](#) ; devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#) ; { passive two-terminal components without a potential-jump or surface barrier for integrated circuits, details thereof and multistep manufacturing processes therefor [H01L 28/00](#) ; }resistors in general [H01C](#); capacitors in general [H01G](#),{ e.g. ceramic barrier-layer capacitors [H01G 4/1272](#) }
- NOTE
- In this main group, classification is made both in groups [H01L 29/02](#) to [H01L 29/51](#) and in groups [H01L 29/66](#) to [H01L 29/94](#) if both of these sets of groups are relevant.
- U H01L 29/02 · Semiconductor bodies;{Multistep manufacturing processes therefor}
- H01L 29/04 · · characterised by their crystalline structure, e.g. polycrystalline, cubic, particular orientation of crystalline planes (-imperfections [H01L 29/30](#)-)
- U H01L 29/06 · · characterised by their shape; characterised by the shapes, relative sizes, or dispositions of the semiconductor regions;{characterised by the concentration or distribution of impurities within semiconductor regions}
- H01L 29/0603 · · · {characterised by particular constructional design considerations, e.g. for preventing surface leakage, for controlling electric field concentration or for internal isolations regions (-isolation regions between components [H01L 21/76](#) ; design considerations for integrated circuits [H01L 27/00](#) ; geometrical design considerations for devices [H01L 29/0657](#)-)}
- U H01L 29/0607 · · · · {for preventing surface leakage or controlling electric field concentration}
- H01L 29/0611 · · · · · {for increasing or controlling the breakdown voltage of reverse biased devices (-[H01L 29/0661](#) takes precedence-)}
- H01L 29/0615 · · · · · {by the doping profile or the shape or the arrangement of the PN junction, or with supplementary regions, e.g. junction termination extension (JTE)(-LDD or drain offset regions [H01L 29/7833](#)-)}
- U H01L 29/0619 · · · · · · {with a supplementary region doped oppositely to or in rectifying contact with the semiconductor containing or contacting region, e.g. guard rings with PN or Schottky junction}
- H01L 29/0623 · · · · · · · {Buried supplementary region, e.g. buried guard ring (-multi-RESURF [H01L 29/0634](#)-)}
- H01L 29/0626 · · · · · · · {with a localised breakdown region, e.g. built-in avalanching region (-in self-protected thyristors [H01L 29/7424](#)-)}

- H01L 29/0638 {for preventing surface leakage due to surface inversion layer, e.g. with channel stopper (-channel stoppers in combination with isolation region for integrated circuits [H01L 21/762-](#))}
- U H01L 29/0657 . . . {characterised by the shape of the body}
- H01L 29/0665 {the shape of the body defining a nanostructure (nanotechnology per se [B82B](#))}
- H01L 29/0669 {Nanowires or nanotubes (-carbon nanotubes as material of solid-state device active part [H01L 51/0048-](#))}
- U H01L 29/08 . . . with semiconductor regions connected to an electrode carrying current to be rectified, amplified or switched and such electrode being part of a semiconductor device which comprises three or more electrodes
- U H01L 29/0804 {Emitter regions of bipolar transistors}
- H01L 29/0817 {of heterojunction bipolar transistors (-[H01L 29/7375](#) takes precedence-)}
- U H01L 29/0843 {Source or drain regions of field-effect devices}
- H01L 29/0847 {of field-effect transistors with insulated gate ([H01L 29/0653](#) takes precedence; with a passive supplementary region between source or drain and substrate related to punch-through, capacity or isolation phenomena [H01L 29/1079](#) ; with LDD or DDD structure [H01L 29/7833](#) ; for thin film transistors [H01L 29/78618-](#))}
- U H01L 29/0852 {of DMOS transistors}
- WARNING
This group and subgroups thereof are not complete, see provisionally also [H01L 29/0847](#) and [H01L 29/7801](#) and subgroups thereof
- U H01L 29/0856 {Source regions}
- H01L 29/0869 {Shape (-cell layout [H01L 29/0696-](#))}
- U H01L 29/10 . . . with semiconductor regions connected to an electrode not carrying current to be rectified, amplified or switched and such electrode being part of a semiconductor device which comprises three or more electrodes
- H01L 29/1012 {Base regions of thyristors (-[H01L 29/083](#) takes precedence-)}
- U H01L 29/1025 {Channel region of field-effect devices}
- U H01L 29/1029 {of field-effect transistors}
- H01L 29/1033 {with insulated gate, e.g. characterised by the length, the width, the geometric contour or the doping structure (-with channel and gate aligned in the lengthwise direction [H01L 29/42376](#) ; with buried channel [H01L 29/7838-](#))}
- H01L 29/1037 {and non-planar channel (-resulting from the gate electrode disposition, e.g. within a trench, [H01L 29/42356-](#))}
- H01L 29/105 {with vertical doping variation (-[H01L 29/7827](#) takes precedence-)}
- H01L 29/1095 {Body region, i.e. base region, of DMOS transistors or IGBTs (-cell layout [H01L 29/0696-](#))}
- U H01L 29/12 . . . characterised by the materials of which they are formed
- H01L 29/122 . . . {Single quantum well structures (-single heterojunctions, couples of materials [H01L 29/165](#) , [H01L 29/205](#) , [H01L 29/225](#) , [H01L 29/267-](#))}

- H01L 29/15
- • • Structures with periodic or quasi periodic potential variation, e.g. multiple quantum wells, superlattices (-such structures applied for the control of light [G02F 1/017](#) , applied in semiconductor lasers [H01S 5/34](#)-)
- NOTE
Group [H01L 29/15](#) takes precedence over groups [H01L 29/16](#) to [H01L 29/26](#) .
- H01L 29/151
- • • • {Compositional structures (-[H01L 29/157](#) and [H01L 29/158](#) take precedence-)}
- U H01L 29/152
- • • • • {with quantum effects only in vertical direction, i.e. layered structures with quantum effects solely resulting from vertical potential variation}
- H01L 29/155
- • • • • {Comprising only semiconductor materials (-[H01L 29/154](#) takes precedence-)}
- H01L 29/157
- • • • {Doping structures, e.g. doping superlattices, nipi superlattices (-delta doping in general [H01L 29/365](#)-)}
- H01L 29/16
- • • including, apart from doping materials or other impurities, only elements of the fourth group of the Periodic System in uncombined form{(including SiC [H01L 29/24](#)-)}
- H01L 29/161
- • • • including two or more of the elements provided for in group [H01L 29/16](#) , {e.g. alloys (-[H01L 29/1604](#) takes precedence-)}
- H01L 29/167
- • • • further characterised by the doping material{([H01L 29/1604](#) takes precedence-)}
- U H01L 29/20
- • • including, apart from doping materials or other impurities, only AIIIBV compounds
- H01L 29/201
- • • • including two or more compounds,{e.g. alloys (-[H01L 29/2006](#) takes precedence-)}
- H01L 29/207
- • • • further characterised by the doping material{([H01L 29/2006](#) takes precedence-)}
- U H01L 29/22
- • • including, apart from doping materials or other impurities, only AIIBVI compounds
- H01L 29/2203
- • • • {Cd X compounds being one element of the 6th group of the Periodic System (-[H01L 29/2206](#) takes precedence-)}
- H01L 29/221
- • • • including two or more compounds,{e.g. alloys (-[H01L 29/2206](#) takes precedence-)}
- H01L 29/227
- • • • further characterised by the doping material{([H01L 29/2206](#) takes precedence-)}
- H01L 29/24
- • • including, apart from doping materials or other impurities, only semiconductor materials not provided for in groups [H01L 29/16](#) , [H01L 29/18](#) , [H01L 29/20](#) , [H01L 29/22](#) (-including organic materials [H01L 51/00](#)-)
- H01L 29/242
- • • • {AIBVI or AIBVII compounds, e.g. Cu₂O, Cu I (-[H01L 29/247](#) takes precedence-)}
- H01L 29/245
- • • • {Pb compounds, e.g. PbO (-[H01L 29/247](#) takes precedence-)}
- H01L 29/26
- • • including, apart from doping materials or other impurities, elements provided for in two or more of the groups [H01L 29/16](#) , [H01L 29/18](#) , [H01L 29/20](#) , [H01L 29/22](#) , [H01L 29/24](#) , {e.g. alloys}
- H01L 29/267
- • • • in different semiconductor regions,{e.g. heterojunctions (-[H01L 29/263](#) takes precedence-)}
- H01L 29/36
- • characterised by the concentration or distribution of impurities {in the bulk material (-within semiconductor regions [H01L 29/06](#)-)}
- U H01L 29/40
- Electrodes;{Multistep manufacturing processes therefor}

- U H01L 29/41
H01L 29/413
- • characterised by their shape, relative sizes or dispositions
 - • • {Nanosized electrodes, e.g. nanowire electrodes comprising one or a plurality of nanowires (-transparent electrodes comprising carbon nanotubes [H01L 51/444](#) , nanotechnology per se [B82B](#); nanosized carbon materials, e.g. carbon nanotubes, per se [C01B 31/0206](#)-)}
- U H01L 29/417
H01L 29/41725
H01L 29/41758
- • • carrying the current to be rectified, amplified or switched
 - • • • {Source or drain electrodes for field effect devices (-with monocrystalline semiconductor on source/drain region [H01L 29/0843](#)-)}
 - • • • • {for lateral devices with structured layout for source or drain region, i.e. the source or drain region having cellular, interdigitated or ring structure or being curved or angular (-[H01L 29/41733](#) to [H01L 29/4175](#) take precedence-)}
- NOTE
- Interdigitated structure means that at least one of the source or drain region has two or more fingers
- H01L 29/41766
- • • • • {with at least part of the source or drain electrode having contact below the semiconductor surface, e.g. the source or drain electrode formed at least partially in a groove or with inclusions of conductor inside the semiconductor (-[H01L 29/41733](#) to [H01L 29/41758](#) take precedence-)}
- U H01L 29/423
- • • not carrying the current to be rectified, amplified or switched
- U H01L 29/42312
- • • • {Gate electrodes for field effect devices}
- U H01L 29/42316
- • • • • {for field-effect transistors}
- U H01L 29/4232
- • • • • • {with insulated gate}
- H01L 29/42356
- • • • • • • {Disposition, e.g. buried gate electrode (-[H01L 29/42324](#) and [H01L 29/4234](#) take precedence-)}
- WARNING
- This group and subgroup thereof are not complete, see provisionally also [H01L 29/78](#) , [H01L 29/7801](#) and subgroups thereof, [H01L 29/7827](#) and [H01L 29/7834](#)
- H01L 29/42364
- • • • • • • {characterised by the insulating layer, e.g. thickness or uniformity} (-[H01L 29/42324](#) and [H01L 29/4234](#) take precedence-)
- H01L 29/42372
- • • • • • • {characterised by the conducting layer, e.g. the length, the sectional shape or the lay-out (-[H01L 29/42324](#) takes precedence-)}
- U H01L 29/43
H01L 29/47
H01L 29/49
- • characterised by the materials of which they are formed
 - • • Schottky barrier electrodes(-[H01L 29/435](#) takes precedence-)}
 - • • Metal-insulator-semiconductor electrodes,{e.g. gates of MOSFET (-[H01L 29/435](#) takes precedence-)}
- NOTE
- This group covers also devices using any other conductor material in place of metal
- H01L 29/4916
- • • • {the conductor material next to the insulator being a silicon layer, e.g. polysilicon doped with boron, phosphorus or nitrogen (-[H01L 29/4908](#) , [H01L 29/4983](#) take precedence-)}
- H01L 29/4925
- • • • • {with a multiple layer structure, e.g. several silicon layers with different crystal structure or grain arrangement (-with only a vertical doping structure or vertical doping variation [H01L 29/4916](#)-)}
- H01L 29/4933
- • • • • • {with a silicide layer contacting the silicon layer, e.g. Polycide gate (-with a barrier layer between the silicide and silicon layers [H01L 29/4941](#)-)}

- H01L 29/495 {the conductor material next to the insulator being a simple metal, e.g. W, Mo (~~H01L 29/4908~~ , ~~H01L 29/4983~~ take precedence-)}
- H01L 29/4966 {the conductor material next to the insulator being a composite material, e.g. organic material, TiN, MoSi₂ (~~H01L 29/4908~~ , ~~H01L 29/4983~~ take precedence-)}
- H01L 29/51 Insulating materials associated therewith{(for MIS structures on thin film semiconductor ~~H01L 29/4908~~-)}
- H01L 29/511 {with a compositional variation, e.g. multilayer structures (~~H01L 29/516~~ takes precedence-)}
- H01L 29/517 {the insulating material comprising a metallic compound, e.g. metal oxide, metal silicate (~~H01L 29/518~~ takes precedence-)}
- U H01L 29/66 . Types of semiconductor device;{Multistep manufacturing processes therefor}
- U H01L 29/66007 . . {Multistep manufacturing processes}
- H01L 29/66075 . . . {of devices having semiconductor bodies comprising group 14 or group 13/15 materials (-comprising semiconducting carbon ~~H01L 29/66015~~ ; comprising crystalline silicon carbide ~~H01L 29/66053~~-)}
- U H01L 29/66083 {the devices being controllable only by variation of the electric current supplied or the electric potential applied, to one or more of the electrodes carrying the current to be rectified, amplified, oscillated or switched, e.g. two-terminal devices}
- U H01L 29/6609 {Diodes}
- H01L 29/66151 {Tunnel diodes (~~group 13/15 resonant tunneling diodes H01L 29/66219~~-~~group 13/15 resonant tunneling diodes H01L 29/66219~~-)}
- H01L 29/66174 {Capacitors with PN or Schottky junction, e.g. varactors (-capacitors with PN junction combined with MOS control ~~H01L 29/66189~~-)}
- U H01L 29/66196 {with an active layer made of a group 13/15 material}
- U H01L 29/66204 {Diodes}
- H01L 29/66219 {with a heterojunction, e.g. resonant tunneling diodes [RTD]}
- U H01L 29/66227 {the devices being controllable only by the electric current supplied or the electric potential applied, to an electrode which does not carry the current to be rectified, amplified or switched, e.g. three-terminal devices}
- H01L 29/66234 {Bipolar junction transistors [BJT]}
- H01L 29/66242 {Heterojunction transistors [HBT]}(-with an active layer made of a group 13/15 material ~~H01L 29/66318~~-)}
- H01L 29/6625 {Lateral transistors (~~H01L 29/66242~~ and ~~H01L 29/66265~~ take precedence-)}
- H01L 29/66265 {Thin film bipolar transistors (~~H01L 29/66242~~ takes precedence-)}
- H01L 29/66272 {Silicon vertical transistors (~~H01L 29/66242~~ , ~~H01L 29/66257~~ and ~~H01L 29/66265~~ take precedence-)}
- H01L 29/66287 {with a single crystalline emitter, collector or base including extrinsic, link or graft base formed on the silicon substrate, e.g. by epitaxy, recrystallisation, after insulating device isolation (~~H01L 29/6628~~ takes precedence-)}
- H01L 29/66325 {controlled by field-effect, e.g. insulated gate bipolar transistors [IGBT]}
- U H01L 29/66333 {Vertical insulated gate bipolar transistors}
- H01L 29/6634 {with a recess formed by etching in the source/emitter contact region (~~H01L 29/66348~~ takes precedence; etching of semiconductor bodies ~~H01L 21/302~~-)}

- H01L 29/66356 {Gated diodes, e.g. field controlled diodes [FCD]}, static induction thyristors [SITh], field controlled thyristors [FCTh]}
- U H01L 29/66363 {Thyristors}
- H01L 29/66371 {structurally associated with another device, e.g. built-in diode (-making integrated circuits [H01L 21/82](#)-)}
- U H01L 29/66409 {Unipolar field-effect transistors}
- H01L 29/66416 {Static induction transistors [SIT]}(-with an active layer made of a group 13/15 material [H01L 29/66454](#)-)}
- H01L 29/66424 {Permeable base transistors [PBT]}
- H01L 29/66431 {with a heterojunction interface channel or gate, e.g. HFET, HIGFET, SISFET, HJFET, HEMT (-with an active layer made of a group 13/15 material [H01L 29/66462](#)-)}
- H01L 29/66439 {with a one- or zero-dimensional channel, e.g. quantum wire FET, in-plane gate transistor [IPG]}, single electron transistor [SET], striped channel transistor, Coulomb blockade transistor (-with an active layer made of a group 13/15 material [H01L 29/66469](#)-)}
- H01L 29/66446 {with an active layer made of a group 13/15 material, e.g. group 13/15 velocity modulation transistor [VMT]}, group 13/15 negative resistance FET [NERFET]}
- H01L 29/66454 {Static induction transistors [SIT]}, e.g. permeable base transistors [PBT]}
- H01L 29/66469 {with one- or zero-dimensional channel, e.g. quantum wire field-effect transistors, in-plane gate transistors [IPG]}, single electron transistors [SET], Coulomb blockade transistors, striped channel transistors]}
- U H01L 29/66477 {with an insulated gate, i.e. MISFET}
- H01L 29/66484 {with multiple gate, at least one gate being an insulated gate (-[H01L 29/66742](#) takes precedence-)}
- H01L 29/665 {using self aligned silicidation, i.e. salicide (-formation of conductive layers comprising silicides [H01L 21/28518](#)-)}
- H01L 29/66522 {with an active layer made of a group 13/15 material (-[H01L 29/66446](#) takes precedence-)}
- H01L 29/66537 {using a self aligned punch through stopper or threshold implant under the gate region (-[H01L 29/66606](#) takes precedence-)}
- U H01L 29/66568 {Lateral single gate silicon transistors}
- H01L 29/66575 {where the source and drain or source and drain extensions are self-aligned to the sides of the gate (-[H01L 29/66606](#) takes precedence-)}
- H01L 29/6659 {with both lightly doped source and drain extensions and source and drain self-aligned to the sides of the gate, e.g. lightly doped drain [LDD]} MOSFET, double diffused drain [DDD] MOSFET]}
- H01L 29/66598 {forming drain [D]} and lightly doped drain [LDD] simultaneously, e.g. using implantation through the wings a T-shaped layer, or through a specially shaped layer]}
- H01L 29/66606 {with final source and drain contacts formation strictly before final or dummy gate formation, e.g. contact first technology (-[H01L 29/66621](#) takes precedence-)}
- H01L 29/66613 {with a gate recessing step, e.g. using local oxidation (-making recessed gate LD MOS transistors [H01L 29/66704](#)-)}
- H01L 29/66621 {using etching to form a recess at the gate location (-etching of semiconductor bodies [H01L 21/302](#)-)}

- H01L 29/66666 {Vertical transistors ([H01L 29/66712](#) , [H01L 29/66742](#) take precedence-)}
- H01L 29/66674 {DMOS transistors, i.e. MISFETs with a channel accommodating body or base region adjoining a drain drift region (-making lateral high-voltage MISFETs with channel well and drain offset region [H01L 29/66659](#)-)}
- U H01L 29/66681 {Lateral DMOS transistors, i.e. LDMOS transistors}
WARNING
[H01L 29/66674](#)
- H01L 29/66689 {with a step of forming an insulating sidewall spacer (-forming insulating material on a substrate [H01L 21/02107](#)-)}
- U H01L 29/66742 {Thin film unipolar transistors}
- H01L 29/66772 {Monocrystalline silicon transistors on insulating substrates, e.g. quartz substrates (-[H01L 29/66666](#) takes precedence; thin film FinFETs [H01L 29/66795](#)-)}
- H01L 29/66825 {with a floating gate (-[H01L 29/6684](#) takes precedence-)}
- U H01L 29/66848 {with a Schottky gate, i.e. MESFET}
- H01L 29/66856 {with an active layer made of a group 13/15 material (-[H01L 29/66446](#) takes precedence-)}
- U H01L 29/66893 {with a PN junction gate, i.e. JFET}
- H01L 29/66924 {with an active layer made of a group 13/15 material (-[H01L 29/66446](#) takes precedence-)}
- H01L 29/66931 {BJT-like unipolar transistors, e.g. hot electron transistors [HET]}, metal base transistors [MBT], resonant tunneling transistor [RTT], bulk barrier transistor [BBT], planar doped barrier transistor [PDBT], charge injection transistor [CHINT]}
- H01L 29/66969 {of devices having semiconductor bodies not comprising group 14 or group 13/15 materials (-comprising selenium or tellurium in uncombined form other than as impurities in semiconductor bodies of other materials, comprising cuprous oxide or cuprous iodide [H01L 21/02365](#)-)}
- H01L 29/66992 {controllable only by the variation of applied heat (-controllable by IR radiation [H01L 31/00](#) ; measuring quantity of heat [G01K 17/00](#)-)}
- U H01L 29/68 controllable by only the electric current supplied, or only the electric potential applied, to an electrode which does not carry the current to be rectified, amplified or switched
- U H01L 29/70 Bipolar devices
- U H01L 29/72 Transistor-type devices, i.e. able to continuously respond to applied control signals
- U H01L 29/73 Bipolar junction transistors
- H01L 29/7302 {structurally associated with other devices (-assemblies of devices [H01L 25/00](#) ; integrated circuits [H01L 27/00](#) ; IGBT [H01L 29/7393](#)-)}
- H01L 29/7304 {the device being a resistive element, e.g. ballasting resistor (-transistors integrated with resistors [H01L 27/075](#)-)}
- H01L 29/739 controlled by field-effect,{e.g. bipolar static induction transistors (BSIT) (-unijunction transistors [H01L 29/705](#)-)}
- U H01L 29/7393 {Insulated gate bipolar mode transistors, i.e. IGBT; IGT; COMFET}
- H01L 29/7394 {on an insulating layer or substrate, e.g. thin film device or device isolated from the bulk substrate (-[H01L 29/7398](#) takes precedence-)}

- U H01L 29/7395 {Vertical transistors, e.g. vertical IGBT}
- NOTE
The transistor is called vertical if the emitter and the collector are not on the same main surface or, if they are on the same main surface, at least a part of the main current has a component substantially not parallel to the main surface
- H01L 29/7396 {with a non planar surface, e.g. with a non planar gate or with a trench or recess or pillar in the surface of the emitter, base or collector region for improving current density or short circuiting the emitter and base regions ([H01L 29/7398](#) takes precedence)}
- H01L 29/74 Thyristor-type devices, e.g. having four-zone regenerative action{(two-terminal thyristors [H01L 29/87](#))}
- H01L 29/7404 {structurally associated with at least one other device (-assemblies [H01L 25/00](#) ; integrated circuits [H01L 27/00](#))}
- U H01L 29/7412 {the device being a diode}
- H01L 29/7416 {the device being an antiparallel diode, e.g. RCT (-shorted anode structures enabling reverse conduction [H01L 29/0834](#))}
- H01L 29/742 {the device being a field effect transistor (-for turn-on or turn-off by field effect [H01L 29/745](#) , [H01L 29/749](#))}
- H01L 29/7432 {Asymmetrical thyristors (-with a particular shorted anode structure [H01L 29/0834](#))}
- U H01L 29/76 Unipolar devices,{e.g. field effect transistors}
- H01L 29/7613 {Single electron transistors; Coulomb blockade devices (-[H01L 29/7888](#) takes precedence)}
- U H01L 29/762 Charge transfer devices
- H01L 29/765 Charge-coupled devices{(-peripheral circuits for CCD storage devices [G11C 19/285](#))}
- U H01L 29/772 Field effect transistors
- H01L 29/7725 {with delta-doped channel (-[H01L 29/778](#) takes precedence)}
- H01L 29/778 with two-dimensional charge carrier gas channel, e.g. HEMT; {with two-dimensional charge-carrier layer formed at a heterojunction interface (-[H01L 29/803](#) takes precedence)}
- U H01L 29/7782 {with confinement of carriers by at least two heterojunctions, e.g. DHHEMT, quantum well HEMT, DHMODFET}
- U H01L 29/7783 {using III-V semiconductor material}
- H01L 29/7784 {with delta or planar doped donor layer (-[H01L 29/7785](#) takes precedence)}
- H01L 29/78 with field effect produced by an insulated gate{(-[H01L 29/7725](#) , [H01L 29/775](#) , [H01L 29/778](#) take precedence)}
- H01L 29/7801 {DMOS transistors, i.e. MISFETs with a channel accommodating body or base region adjoining a drain drift region (-lateral high-voltage MISFETs with channel well and drain offset region [H01L 29/7835](#))}
- U H01L 29/7802 {Vertical DMOS transistors, i.e. VDMOS transistors}
- H01L 29/7803 {structurally associated with at least one other device (-assemblies [H01L 25/00](#) ; integrated circuits [H01L 27/00](#))}

WARNING

This group and subgroups thereof are not complete, see provisionally also [H01L 29/7802](#)

- H01L 29/7811 {with an edge termination structure (-guard regions per se [H01L 29/0619](#) ; field plates per se [H01L 29/402](#)-)}
- WARNING
This group is not complete, see provisionally also [H01L 29/7802](#) ,
[H01L 29/7809](#) and [H01L 29/7813](#)
- H01L 29/7813 {with trench gate electrode, e.g. UMOS transistors (-trench gate electrodes per se [H01L 29/4236](#)-)}
- U H01L 29/7816 {Lateral DMOS transistors, i.e. LDMOS transistors}
- WARNING
This group and subgroups thereof are not complete, see provisionally also [H01L 29/7801](#)
- H01L 29/7817 {structurally associated with at least one other device (-assemblies [H01L 25/00](#) ; integrated circuits [H01L 27/00](#)-)}
- H01L 29/7823 {with an edge termination structure (-guard regions per se [H01L 29/0619](#) ; field plates per se [H01L 29/402](#)-)}
- H01L 29/7825 {with trench gate electrode (-trench gate electrodes per se [H01L 29/4236](#)-)}
- H01L 29/7827 {Vertical transistors (-[H01L 29/7802](#) , [H01L 29/78642](#) take precedence-)}
- H01L 29/783 {comprising a gate to body connection, i.e. bulk dynamic threshold voltage MOSFET (-for thin film transistors [H01L 29/78612](#) , [H01L 29/78696](#)-)}
- H01L 29/7831 {with multiple gate structure (-~~FinFETs or MuGFETs~~ [H01L 29/7855](#) ; ~~thin film transistors~~ [H01L 29/78645](#) ~~FinFETs or MuGFETs~~ [H01L 29/7855](#) , ~~thin film transistors~~ [H01L 29/78645](#)-)}
- H01L 29/7833 {with lightly doped drain or source extension, e.g. LDD MOSFET's; DDD MOSFET's (-for thin film transistors [H01L 29/78618](#)-)}
- H01L 29/7836 {with a significant overlap between the lightly doped extension and the gate electrode (-[H01L 29/7834](#) , [H01L 29/7835](#) take precedence-)}
- H01L 29/7842 {means for exerting mechanical stress on the crystal lattice of the channel region, e.g. using a flexible substrate (-variation of the composition of the channel [H01L 29/1054](#)-)}
- WARNING
The groups [H01L 29/7843](#) to [H01L 29/7849](#) are not complete, see provisionally also [H01L 29/7842](#)
- U H01L 29/785 {having a channel with a horizontal current flow in a vertical sidewall of a semiconductor body, e.g. FinFET, MuGFET}
- H01L 29/7856 {with an non-uniform gate, e.g. varying doping structure, shape or composition on different sides of the fin, or different gate insulator thickness or composition on opposing fin sides (-[H01L 29/7855](#) takes precedence-)}
- H01L 29/786 Thin film transistors, {i.e. transistors with a channel being at least partly a thin film (-transistors having only the source or the drain region on an insulator layer [H01L 29/0653](#) ; thin film FinFETs [H01L 29/785](#)-)}
- H01L 29/78603 {characterised by the insulating substrate or support (-[H01L 29/78657](#) takes precedence-)}

- H01L 29/78606 {with supplementary region or layer in the thin film or in the insulated bulk substrate supporting it for controlling or increasing the safety of the device (~~H01L 29/78642~~ , ~~H01L 29/78645~~ take precedence-)}
- H01L 29/78609 {for preventing leakage current (~~H01L 29/78618~~ takes precedence-)}
- H01L 29/78618 {characterised by the drain or the source properties, e.g. the doping structure, the composition, the sectional shape or the contact structure (~~silicide contacts, electrodes in general H01L 29/458-~~)}
- H01L 29/78651 {Silicon transistors (~~H01L 29/78606~~ to ~~H01L 29/78645~~ take precedence-)}
- H01L 29/78684 {having a semiconductor body comprising semiconductor materials of the fourth group not being silicon, or alloys including an element of the group IV, e.g. Ge, SiN alloys, SiC alloys (~~H01L 29/7869~~ takes precedence-)}
- H01L 29/78696 {characterised by the structure of the channel, e.g. multichannel, transverse or longitudinal shape, length or width, doping structure, or the overlap or alignment between the channel and the gate, the source or the drain, or the contacting structure of the channel (~~H01L 29/78612~~ takes precedence; transistors having a drain offset region or a lightly doped drain (LDD) ~~H01L 29/78621-~~)}
- H01L 29/788 with floating gate(~~H01L 29/78391~~ takes precedence-)}
- H01L 29/7881 {Programmable transistors with only two possible levels of programming (~~H01L 29/7888~~ takes precedence-)}
- U H01L 29/80 with field effect produced by a PN or other rectifying junction gate,{i.e. potential-jump barrier}
- H01L 29/802 {with heterojunction gate, e.g. transistors with semiconductor layer acting as gate insulating layer, MIS-like transistors (~~H01L 29/806~~ takes precedence; with one dimensional electron gas ~~H01L 29/775~~ ; with dimensional electron gas ~~H01L 29/778-~~)}
- H01L 29/808 with a PN junction gate,{e.g. PN homojunction gate (~~H01L 29/7725~~ , ~~H01L 29/775~~ , ~~H01L 29/778~~ , ~~H01L 29/806~~ take precedence-)}
- H01L 29/8083 {Vertical transistors (~~SIT H01L 29/7722-~~)}
- H01L 29/812 with a Schottky gate(~~H01L 29/7725~~ , ~~H01L 29/775~~ , ~~H01L 29/778~~ , ~~H01L 29/806~~ take precedence; with Schottky contact on top of heterojunction gate ~~H01L 29/802-~~)}
- H01L 29/8122 {Vertical transistors (~~SIT, PBT H01L 29/7722-~~)}
- U H01L 29/86 controllable only by variation of the electric current supplied, or only the electric potential applied, to one or more of the electrodes carrying the current to be rectified, amplified, oscillated or switched
- U H01L 29/861 Diodes
- U H01L 29/872 Schottky diodes
- H01L 29/8725 {of the trench MOS barrier type [TMBS]}

H01L 31/00	Semiconductor devices sensitive to infra-red radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation and adapted either for the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof; Details thereof (-H01L 51/42 takes precedence; devices consisting of a plurality of solid state components formed in, or on, a common substrate, other than combinations of radiation-sensitive components with one or more electric light sources, H01L 27/00 ; production of heat using solar heat F24J 2/00 ; measurement of X-radiation, gamma radiation, corpuscular radiation or cosmic radiation with semiconductor detectors G01T 1/24 , with resistance detectors G01T 1/26 ; measurement of neutron radiation with semiconductor detectors G01T 3/08 ; couplings of light guides with optoelectronic elements G02B 6/42 ; obtaining energy from radioactive sources G21H-)
U H01L 31/02	• Details
H01L 31/0203	• • Containers; Encapsulations {, e.g. encapsulation of photodiodes} (for photovoltaic devices H01L 31/048; for organic photosensitive devices H01L 51/44)
H01L 31/0216	• • Coatings (H01L 31/041 takes precedence)
U H01L 31/02161	• • • {for devices characterised by at least one potential jump barrier or surface barrier}
U H01L 31/02162	• • • • {for filtering or shielding light, e.g. multicolour filters for photodetectors}
H01L 31/02165	• • • • • {using interference filters, e.g. multilayer dielectric filters (-interference filters G02B 5/28-)}
U H01L 31/0224	• • Electrodes
U H01L 31/022408	• • • {for devices characterised by at least one potential jump barrier or surface barrier}
U H01L 31/022425	• • • • {for solar cells}
U H01L 31/022441	• • • • • {Electrode arrangements specially adapted for back-contact solar cells}
H01L 31/02245	• • • • • • {for metallisation wrap-through [MWT]} type solar cells}}
H01L 31/022458	• • • • • • • {for emitter wrap-through [EWT]} type solar cells, e.g. interdigitated emitter-base back-contacts}}
U H01L 31/022466	• • • {made of transparent conductive layers, e.g. TCO, ITO layers}
H01L 31/022475	• • • • {composed of indium tin oxide [ITO]}
H01L 31/022483	• • • • • {composed of zinc oxide [ZnO]}
H01L 31/0232	• • Optical elements or arrangements associated with the device (H01L 31/0236 takes precedence; for photovoltaic cells H01L 31/054; for photovoltaic modules H02S 40/20)
H01L 31/02327	• • • {the optical elements being integrated or being directly associated to the device, e.g. back reflectors (-optical coatings H01L 31/0216-)}
H01L 31/024	• • Arrangements for cooling, heating, ventilating or temperature compensation (for photovoltaic devices H01L 31/052)
U H01L 31/0248	• characterised by their semiconductor bodies
U H01L 31/0256	• • characterised by the material
U H01L 31/0264	• • • Inorganic materials
U H01L 31/028	• • • • including, apart from doping material or other impurities, only elements of the fourth group of the Periodic System
H01L 31/0284	• • • • • {comprising porous silicon as part of the active layer(s)(-porous silicon as antireflective layer for photodiodes H01L 31/0216 ; for solar cells H01L 31/02168-)}

- H01L 31/032 . . . including, apart from doping materials or other impurities, only compounds not provided for in groups [H01L 31/0272](#) to [H01L 31/0312](#)
- H01L 31/0321 {characterised by the doping material (~~H01L 31/0323~~ , [H01L 31/0325](#) take precedence)}
- H01L 31/0328 . . . including, apart from doping materials or other impurities, semiconductor materials provided for in two or more of groups [H01L 31/0272](#) to [H01L 31/032](#)
- U H01L 31/0352 . . characterised by their shape or by the shapes, relative sizes or disposition of the semiconductor regions
- U H01L 31/035209 . . . {comprising a quantum structures}
- H01L 31/035227 {the quantum structure being quantum wires, or nano-rods (~~carbon nano-tubes [H01L 51/0048](#)~~)}
- U H01L 31/036 . . characterised by their crystalline structure or particular orientation of the crystalline planes
- H01L 31/0368 . . . including polycrystalline semiconductors (~~H01L 31/0392~~ takes precedence)
- H01L 31/0376 . . . including amorphous semiconductors (~~H01L 31/0392~~ takes precedence)
- H01L 31/0384 . . . including other non-monocrystalline materials, e.g. semiconductor particles embedded in an insulating material (~~H01L 31/0392~~ takes precedence)
- H01L 31/03845 {comprising semiconductor nano-particles embedded in a semiconductor matrix (~~in insulating matrix [H01L 31/0384](#)~~)}
- H01L 31/0392 . . . including thin films deposited on metallic or insulating substrates; {characterised by specific substrate materials or substrate features or by the presence of intermediate layers, e.g. barrier layers, on the substrate (~~textured substrates [H01L 31/02366](#)~~)}
- U H01L 31/04 . . adapted as photovoltaic [PV] conversion devices, e.g. PV modules or single PV cells (testing thereof during manufacture {[H01L 22/00](#)}; testing thereof after manufacture [H02S 50/10](#))
- H01L 31/042 . . PV modules or arrays of single PV cells (supporting structures for PV modules [H02S 20/00](#))
- H01L 31/052 . . Cooling means directly associated or integrated with the PV cell, e.g. integrated Peltier elements for active cooling or heat sinks directly associated with the PV cells (cooling means in combination with the PV module [H02S 40/42](#))
- U H01L 31/06 . . characterised by at least one potential-jump barrier or surface barrier
- NOTE**
Groups [H01L 31/061](#) to [H01L 31/078](#) are based on IPC2012.01]
- H01L 31/061 . . . the potential barriers being of the point-contact type (~~H01L 31/07~~ takes precedence ~~H01L 31/07~~ takes precedence)
- U H01L 31/068 . . . the potential barriers being only of the PN homojunction type, e.g. bulk silicon PN homojunction solar cells or thin film polycrystalline silicon PN homojunction solar cells
- U H01L 31/0687 Multiple junction or tandem solar cells
- H01L 31/06875 {inverted grown metamorphic [IMM] multiple junction solar cells, e.g. III-V compounds inverted metamorphic multi-junction cells}
- H01L 31/078 . . . including different types of potential barriers provided for in two or more of groups [H01L 31/062](#) to [H01L 31/075](#)
- U H01L 31/08 . . in which radiation controls flow of current through the device, e.g. photoresistors

- H01L 31/09
- • Devices sensitive to infra-red, visible or ultraviolet radiation (~~H01L 31/101 takes precedence~~)
- H01L 31/12
- Structurally associated with, e.g. formed in or on a common substrate with, one or more electric light sources, e.g. electroluminescent light sources, and electrically or optically coupled thereto (~~semiconductor devices with at least one potential barrier or surface barrier adapted for light emission H01L 33/00 ; amplifiers using electroluminescent element and photocell H03F 17/00 ; electroluminescent light sources per se H05B 33/00~~)
- H01L 31/18
- Processes or apparatus peculiar to the manufacture or treatment of these devices or of parts thereof (~~not peculiar thereto H01L 21/00~~)
- H01L 33/00**
- Semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission; Processes or apparatus specially adapted for the manufacture or treatment thereof or of parts thereof; Details thereof (~~H01L 51/50 takes precedence; devices consisting of a plurality of semiconductor components formed in or on a common substrate and including semiconductor components with at least one potential-jump barrier or surface barrier, specially adapted for light emission H01L 27/15 ; semiconductor lasers H01S 5/00~~)**
- NOTE
1. This group covers light emitting diodes [LEDs] or superluminescent diodes [SLDs], including LEDs or SLDs emitting infra-red [IR] light or ultra-violet [UV] light. 2. In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.
- U H01L 33/02
- characterised by the semiconductor bodies
- H01L 33/08
- • with a plurality of light emitting regions, e.g. laterally discontinuous light emitting layer or photo-luminescent region integrated within the semiconductor body (~~H01L 27/15 takes precedence~~)
- H01L 35/00**
- Thermo-electric devices comprising a junction of dissimilar materials, i.e. exhibiting Seebeck or Peltier effect with or without other thermo-electric effects or thermomagnetic effects; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof; Details thereof (~~devices consisting of a plurality of solid state components formed in or on a common substrate H01L 27/00 ; refrigerating machines using electric or magnetic effects F25B 21/00 ; thermometers using thermoelectric or thermomagnetic elements G01K 7/00 ; obtaining energy from radioactive sources G21H~~)**
- U H01L 35/12
- Selection of the material for the legs of the junction
- U H01L 35/14
- • using inorganic compositions
- H01L 35/18
- • • comprising arsenic or antimony or bismuth (~~H01L 35/16 takes precedence~~), {e.g. AlIIBV compounds}
- H01L 35/20
- • • comprising metals only (~~H01L 35/16 , H01L 35/18 take precedence~~)
- H01L 35/22
- • • comprising compounds containing boron, carbon, oxygen or nitrogen {or germanium or silicon, e.g. superconductors}
- U H01L 35/28
- operating with Peltier or Seebeck effect only
- H01L 35/32
- • characterised by the structure or configuration of the cell or thermo-couple forming the device {including details about, e.g., housing, insulation, geometry, module}
- H01L 35/34
- Processes or apparatus peculiar to the manufacture or treatment of these devices or of parts thereof (~~not peculiar thereto H01L 21/00~~)

H01L 37/00 Thermoelectric devices without a junction of dissimilar materials; Thermomagnetic devices, e.g. using Nernst-Ettinghausen effect; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (- devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#) ; { radiation pyrometers using pyroelectric detectors [G01J 5/34](#) } thermometers using thermo-electric or thermomagnetic elements [G01K 7/00](#) ; selection of materials for magnetography, e.g. for Curie-point writing [G03G 5/00](#))

H01L 37/02 · using thermal change of dielectric constant, e.g. working above and below Curie point {e.g. pyroelectric devices}

H01L 37/04 · using thermal change of magnetic permeability, e.g. working above and below the Curie point {e.g. pyromagnetic devices}

H01L 39/00 Devices using superconductivity; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (- devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#) ; { light detection [G01J](#) , [G02F 2/00](#) ; application to memories [G11C 11/44](#) , [G11C 15/00](#) , [G11C 19/32](#) } ; superconducting conductors cables or transmission lines [H01B 12/00](#) ; { microwaves [H01P 7/00](#) , [H01P 11/00](#) } ; superconductive coils or windings [H01F](#) ; amplifiers using superconductivity [H03F 19/00](#) ; { impulse generators and logic circuits [H03K 3/38](#) , [H03K 17/92](#) , [H03K 19/195](#) ; lasers [H01S 3/00](#) , [H01S 5/00](#) })

NOTE

In this group, in the absence of an indication to the contrary, an invention is classified in the last appropriate place

U H01L 39/02 · Details

H01L 39/10 · · characterised by the means for switching {between superconductive and normal states}

U H01L 39/12 · · characterised by the material

U H01L 39/121 · · · {Organic materials}

H01L 39/123 · · · · {Fullerene superconductors, e.g. soccerball-shaped allotrope of carbon, e.g. C₆₀, C₉₄ (-fullerenes in general [C07C 13/00](#))}

U H01L 39/14 · Permanent superconductor devices

H01L 39/145 · · {Three or more electrode devices (-[H01L 39/228](#) takes precedence-)}

H01L 39/16 · Devices switchable between superconductive and normal states, {e.g. switches, current limiters (-circuits for current limitation using superconductor elements [H02H 9/023](#))}

H01L 39/24 · Processes or apparatus peculiar to the manufacture or treatment of devices provided for in [H01L 39/00](#) or of parts thereof

H01L 39/2403 · · {Processes peculiar to the manufacture or treatment of composite superconductor filaments (-comprising copper oxide [H01L 39/2419](#))}

H01L 39/249 · · {Treatment of superconductive layers by irradiation, e.g. ion-beam, electron-beam, laser beam, X-rays (-irradiation devices [G21K](#) , [H01J](#))}

H01L 41/00 Piezo-electric devices in general; Electrostrictive devices in general; Magnetostrictive devices in general; Processes or apparatus specially adapted for the manufacture or treatment thereof or of parts thereof; Details thereof (- devices consisting of a plurality of solid-state components formed in or on a common substrate [H01L 27/00](#))

WARNING

1. Groups [H01L 41/22](#) - [H01L 41/47](#) correspond to IPC2013.01. Concordance CPC : IPC for these groups is as follows: - [H01L 41/22](#) - [H01L 41/37](#) : [H01L 41/22](#) - [H01L 41/39](#) - [H01L 41/43](#) : [H01L 41/24](#) - [H01L 41/45](#) : [H01L 41/26](#)

- [H01L 41/47](#) : [H01L 41/22](#) 2. Pending reorganisation, the groups [H01L 41/23](#) to [H01L 41/47](#) are not complete; see provisionally also [H01L 41/22](#)

- U H01L 41/02
 - Details
- U H01L 41/04
 - · of piezo-electric or electrostrictive devices
- U H01L 41/042
 - · · {Drive or control circuitry or methods for piezo-electric or electrostrictive devices not otherwise provided for}
- H01L 41/044
 - · · · {for piezoelectric transformers (-conversion of DC or AC power [H02M](#); for operating discharge lamps [H05B 41/282](#)-)}
- H01L 41/047
 - · · Electrodes {or electrical connection arrangements}
 - WARNING
Pending reorganisation, the groups [H01L 41/0471](#) to [H01L 41/0477](#) are not complete, see provisionally also [H01L 41/047](#)
- H01L 41/0477
 - · · · {Conductive materials (-in general [H01B 1/00](#)-)}
- U H01L 41/053
 - · · Mounts, supports, enclosures or casings
 - WARNING
Pending reorganisation, the groups [H01L 41/0533](#) to [H01L 41/0536](#) are not complete, see provisionally also [H01L 41/053](#)
- H01L 41/0536
 - · · · {Mechanical prestressing means, e.g. springs (-in general [F16F 1/00](#)-)}
- U H01L 41/08
 - Piezo-electric or electrostrictive devices
 - WARNING
Pending reorganisation, the groups [H01L 41/0805](#), [H01L 41/082](#), and [H01L 41/0825](#) are not complete, see provisionally also [H01L 41/08](#)
- H01L 41/107
 - · with electrical input and electrical output {e.g. transformers}
- H01L 41/113
 - · with mechanical input and electrical output {e.g. generators, sensors}
 - WARNING
Pending reorganisation, the groups [H01L 41/113](#) to [H01L 41/1138](#) are not complete, see provisionally also [H01L 41/113](#) and [H02N 2/18](#)
- U H01L 41/16
 - Selection of materials
- H01L 41/18
 - · for piezo-electric or electrostrictive devices {e.g. bulk piezo-electric crystals}
- H01L 41/187
 - · · Ceramic compositions {i.e. synthetic inorganic polycrystalline compounds incl. epitaxial, quasi-crystalline materials}
 - WARNING
Pending reorganisation, the groups [H01L 41/1871](#) to [H01L 41/1878](#) are not complete, see provisionally also [H01L 41/187](#)]
- H01L 41/193
 - · · Macromolecular compositions {e.g. piezo-electric polymers}
- H01L 43/00**
 - Devices using galvano-magnetic or similar magnetic effects; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (- devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#) ; devices with potential-jump barrier, or surface barrier controllable by variation of a magnetic field [H01L 29/82](#)-)**
- H01L 43/12
 - Processes or apparatus peculiar to the manufacture or treatment of these devices or of parts thereof (-not peculiar thereto [H01L 21/00](#)-)

H01L 45/00 Solid state devices adapted for rectifying, amplifying, oscillating or switching without a potential-jump barrier or surface barrier, e.g. dielectric triodes; Ovshinsky-effect devices; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (-devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#) ; devices using superconductivity [H01L 39/00](#) ; piezo-electric devices [H01L 41/00](#) ; bulk negative resistance effect devices [H01L 47/00](#) ; { memories [G11C 11/34](#) ; [G11C 13/0002](#) ; amplifying circuits [H03F 11/00](#) ; pulse generation [H03K 3/02](#) ; electronic switching circuits [H03K 17/00](#) ; logic circuits [H03K 19/00](#) })

WARNING

Groups [H01L 45/04](#) - [H01L 45/16](#) do not correspond to former or current IPC groups. IPC concordance of said groups is - [H01L 45/04](#) - [H01L 45/16](#) : [H01L 45/00](#) . Groups [H01L 45/06](#) to [H01L 45/1691](#) are not complete pending reclassification; see provisionally also group [H01L 45/04](#)

H01L 47/00 Bulk negative resistance effect devices, e.g. Gunn-effect devices; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (-devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#))

H01L 47/005 · {Processes or apparatus peculiar to the manufacture or treatment of these devices or of parts thereof (-not peculiar thereto [H01L 21/00](#)-)}

H01L 47/02 · Gunn-effect devices {or transferred electron devices}

H01L 47/026 · · {Gunn diodes (-[H01L 47/02](#) takes precedence-)}

H01L 49/00 Solid state devices not provided for in groups [H01L 27/00](#) to [H01L 47/00](#) and [H01L 51/00](#) and not provided for in any other subclass ; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof

H01L 49/006 · {Quantum devices, e.g. Quantum Interference Devices, Metal Single Electron Transistor (-using semiconductors in the active part [H01L 29/00](#)-)}

H01L 51/00 Solid state devices using organic materials as the active part, or using a combination of organic materials with other materials as the active part; Processes or apparatus specially adapted for the manufacture or treatment of such devices, or of parts thereof (-devices consisting of a plurality of components formed in or on a common substrate [H01L 27/28](#) ; thermoelectric devices using organic material [H01L 35/00](#) , [H01L 37/00](#) ; piezoelectric, electrostrictive or magnetostrictive elements using organic material [H01L 41/00](#)-)

H01L 51/0001 · {Processes specially adapted for the manufacture or treatment of devices or of parts thereof (-multistep processes [H01L 51/0098](#) , [H01L 51/05](#) , [H01L 51/42](#) , [H01L 51/50](#)-)}

H01L 51/0029 · · {Special provisions for controlling the atmosphere during processing (-[H01L 51/0026](#) takes precedence-)}

U H01L 51/0032 · {Selection of organic semiconducting materials, e.g. organic light sensitive or organic light emitting materials}

NOTE

This group only covers the selection of organic materials for their electrical or other properties insofar as they are specific for their use in devices covered by the group [H01L 51/00](#) .

For the materials per se, see the relevant subclasses.

Attention is drawn to the following places:

- organic materials in general [C07C](#), [C07D](#), [C07F](#), [C08L](#);

- organic materials as electrical conductors [H01B 1/12](#) ;

- organic materials as electrical insulators [H01B 3/18](#)
- H01L 51/0034 • {Organic polymers or oligomers (organic macromolecular compounds or compositions per se [C08](#))}
- H01L 51/0035 • • {comprising aromatic, heteroaromatic, or aryl chains, e.g. polyaniline (-per se [C08G 73/026](#)), polyphenylene (-per se [C08G 61/10](#)), polyphenylene vinylene (-per se [C08G 61/02](#))}
- H01L 51/0036 • • • {Heteroaromatic compounds comprising sulfur or selenium, e.g. polythiophene (-per se [C08G 61/126](#))}
- H01L 51/0038 • • • {Poly-phenylenevinylene and derivatives (-per se [C08G 61/10](#))}
- U H01L 51/004 • • • {comprising aliphatic or olefinic chains, e.g. poly N-vinylcarbazol, PVC, PTFE}
- H01L 51/0041 • • • • {Poly acetylene (-per se [C08G 61/04](#), [C08F 38/02](#), [C08F 138/02](#), [C08F 238/02](#)) or derivatives}
- H01L 51/0045 • • {Carbon containing materials, e.g. carbon nanotubes, fullerenes (-per se [C01B 31/0206](#))}
- H01L 51/005 • • {Macromolecular systems with low molecular weight, e.g. cyanine dyes, coumarine dyes, tetrathiafulvalene (-[H01L 51/0045](#), [H01L 51/0077](#), [H01L 51/0093](#), [H01L 51/0094](#) take precedence)}
- H01L 51/0059 • • • {Amine compounds having at least two aryl rest on at least one amine-nitrogen atom, e.g. triphenylamine (-per se [C07C 211/00](#))}
- U H01L 51/0062 • • • {aromatic compounds comprising a hetero atom, e.g.: N,P,S}
- H01L 51/0067 • • • • {comprising only nitrogen as heteroatom (-[H01L 51/0064](#) takes precedence)}
- H01L 51/0069 • • • • {comprising two or more different heteroatoms per ring, e.g. S and N (-[H01L 51/0064](#) takes precedence)}
- H01L 51/0075 • • {Langmuir Blodgett films (-per se [B05D 1/202](#))}
- H01L 51/0076 • • {Liquid crystalline materials (-per se [C09K 19/00](#))}
- U H01L 51/0077 • • {Coordination compounds, e.g. porphyrin}
- H01L 51/0078 • • • {Phthalocyanine (-per se [C09B 47/04](#))}
- H01L 51/0079 • • • {~~Metal complexes comprising a IIIB-metal (B, Al, Ga, In or Tl)~~ {~~Metal complexes comprising a IIIB-metal (B, Al, Ga, In or Tl)~~, e.g. Tris (8-hydroxyquinoline) gallium (Ga₃)}
- H01L 51/0091 • • • {Metal complexes comprising a IB-metal (~~Cu, Ag, Au~~)}{~~Cu, Ag, Au~~}
- H01L 51/0092 • • • {Metal complexes comprising a IIB-metal (~~Zn, Cd, Hg~~)}{~~Zn, Cd, Hg~~}
- H01L 51/0098 • • {Molecular electronic devices (-molecular computers [G06F 15/80](#); molecular memories [G11C 11/00](#), [G11C 13/02](#))}
- H01L 51/05 • • specially adapted for rectifying, amplifying, oscillating or switching, or capacitors or resistors with at least one potential- jump barrier or surface barrier {multistep processes for their manufacture}
- U H01L 51/0504 • • {the devices being controllable only by the electric current supplied or the electric potential applied, to an electrode which does not carry the current to be rectified, amplified or switched, e.g. three-terminal devices}
- U H01L 51/0508 • • • {Field-effect devices, e.g. TFTs}
- U H01L 51/0512 • • • • {insulated gate field effect transistors}
- H01L 51/057 • • • • • {having a vertical structure, e.g. vertical carbon nanotube field effect transistors [CNT-FETs]}
- U H01L 51/0575 • • {the devices being controllable only by variation of the electric current supplied or the electric potential applied, to one or more of the electrodes carrying the current to be rectified, amplified, oscillated or switched, e.g. two-terminal devices}

- H01L 51/0595
 - • • {molecular electronic devices (-molecular computers [G06F 15/80](#) ; molecular memories [G11C 11/00](#) , [G11C 13/02](#)-)}
- H01L 51/42
 - specially adapted for sensing infra-red radiation, light, electro-magnetic radiation of shorter wavelength or corpuscular radiation and adapted for the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation {using organic materials as the active part, or using a combination of organic materials with other material as the active part; Multistep processes for their manufacture}
- H01L 51/4213
 - • {Comprising organic semiconductor-inorganic semiconductor hetero-junctions (-[H01L 51/4253](#) takes precedence-)}
- H01L 51/422
 - • • {Majority carrier devices using sensitisation of widebandgap semiconductors, e.g. TiO₂ (-photoelectrochemical devices with a liquid or solid electrolyte [H01G 9/20](#)-)}
- H01L 51/424
 - • {comprising organic semiconductor-organic semiconductor hetero-junctions (-[H01L 51/4253](#) takes precedence-)}
- H01L 51/50
 - specially adapted for light emission, e.g. organic light emitting diodes [OLED] or polymer light emitting devices (PLED); (-organic semiconductor lasers [H01S 5/36](#) ; { circuit arrangements for OLED or PLED [H05B 33/0896](#) ; control arrangements for organic electroluminescent displays [G09G 3/3208](#) })
- U H01L 51/52
 - • Details of devices
- H01L 51/5293
 - • • {Arrangements for polarized light emission (-[H01L 51/5281](#) takes precedence-)}
- H01L 2221/00**

Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof covered by [H01L 21/00](#)
- U H01L 2221/67
 - Apparatus for handling semiconductor or electric solid state devices during manufacture or treatment thereof; Apparatus for handling wafers during manufacture or treatment of semiconductor or electric solid state devices or components; Apparatus not specifically provided for elsewhere
- U H01L 2221/683
 - • for supporting or gripping
- U H01L 2221/68304
 - • • using temporarily an auxiliary support
- H01L 2221/68372
 - • • • used to support a device or wafer when forming electrical connections thereto (-when forming bonding pads [H01L 24/03](#) ; when forming bump connectors [H01L 24/11](#) ; when forming layer connectors [H01L 24/27](#)-)
- H01L 2223/00**

Details relating to semiconductor or other solid state devices covered by the group [H01L 23/00](#)
- U H01L 2223/58
 - Structural electrical arrangements for semiconductor devices not otherwise provided for
- U H01L 2223/64
 - • Impedance arrangements
- U H01L 2223/66
 - • • High-frequency adaptations
- H01L 2223/6644
 - • • • Packaging aspects of high-frequency amplifiers (amplifiers per se [H03F](#))
- H01L 2223/6661
 - • • • for passive devices (-passive components per se [H01L 28/00](#)-)
- H01L 2223/6672
 - • • • • for integrated passive components, e.g. semiconductor device with passive components only (-integrated circuits with passive components only per se [H01L 27/01](#)-)
- H01L 2223/6677
 - • • • • for antenna, e.g. antenna included within housing of semiconductor device (antennas per se [H01Q](#))
- U **H01L 2224/00**

Indexing scheme for arrangements for connecting or disconnecting semiconductor or solid-state bodies and methods related thereto as covered by [H01L 24/00](#)

- U H01L 2224/01 · Means for bonding being attached to, or being formed on, the surface to be connected, e.g. chip-to-package, die-attach, "first-level" interconnects; Manufacturing methods related thereto
- U H01L 2224/02 · · Bonding areas; Manufacturing methods related thereto
- U H01L 2224/03 · · · Manufacturing methods
- U H01L 2224/034 · · · · by blanket deposition of the material of the bonding area
- U H01L 2224/0341 · · · · · in liquid form
- H01L 2224/03422 · · · · · · by dipping, e.g. in a solder bath (-hot-dipping [C23C 2/00](#)-)
- H01L 2224/03424 · · · · · · Immersion coating, e.g. in a solder bath (-immersion processes [C23C 2/00](#)-)
- H01L 2224/036 · · · · by patterning a pre-deposited material (-treatment of parts prior to assembly of the devices [H01L 21/48](#)-)
- U H01L 2224/038 · · · · Post-treatment of the bonding area
- H01L 2224/0383 · · · · · Reworking, e.g. shaping (-reflowing [H01L 2224/03849](#)-)
- U H01L 2224/04 · · · Structure, shape, material or disposition of the bonding areas prior to the connecting process
- U H01L 2224/05 · · · · of an individual bonding area
- U H01L 2224/05001 · · · · · Internal layers
- U H01L 2224/05099 · · · · · · Material
- U H01L 2224/05186 · · · · · · with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/05187 · · · · · · · Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/05188](#)-)
- H01L 2224/05193 · · · · · · with a principal constituent of the material being a solid not provided for in groups [H01L 2224/051](#) to [H01L 2224/05191](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/05194 · · · · · · with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/051](#) to [H01L 2224/05191](#)
- H01L 2224/05195 · · · · · · with a principal constituent of the material being a gas not provided for in groups [H01L 2224/051](#) to [H01L 2224/05191](#)
- U H01L 2224/05198 · · · · · · with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/05199 · · · · · · · Material of the matrix
- U H01L 2224/05286 · · · · · · · with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/05287 · · · · · · · · Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/05288](#)-)
- H01L 2224/05293 · · · · · · · with a principal constituent of the material being a solid not provided for in groups [H01L 2224/052](#) to [H01L 2224/05291](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/05294 · · · · · · · with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/052](#) to [H01L 2224/05291](#)
- H01L 2224/05295 · · · · · · · with a principal constituent of the material being a gas not provided for in groups [H01L 2224/052](#) to [H01L 2224/05291](#)
- U H01L 2224/05298 · · · · · · · Fillers
- U H01L 2224/05299 · · · · · · · Base material

- U H01L 2224/05386 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/05387 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/05388](#)-)
- H01L 2224/05393 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/053](#) to [H01L 2224/05391](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/05394 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/053](#) to [H01L 2224/05391](#)
- H01L 2224/05395 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/053](#) to [H01L 2224/05391](#)
- U H01L 2224/05399 Coating material
- U H01L 2224/05486 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/05487 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/05488](#)-)
- H01L 2224/05493 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/054](#) to [H01L 2224/05491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/05494 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/054](#) to [H01L 2224/05491](#)
- H01L 2224/05495 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/054](#) to [H01L 2224/05491](#)
- U H01L 2224/0554 External layer
- U H01L 2224/05599 Material
- U H01L 2224/05686 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/05687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/05688](#)-)
- H01L 2224/05693 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/056](#) to [H01L 2224/05691](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/05694 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/056](#) to [H01L 2224/05691](#)
- H01L 2224/05695 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/056](#) to [H01L 2224/05691](#)
- U H01L 2224/05698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/05699 Material of the matrix
- U H01L 2224/05786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/05787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/05788](#)-)
- H01L 2224/05793 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/057](#) to [H01L 2224/05791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond

	H01L 2224/05794	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/057 to H01L 2224/05791
	H01L 2224/05795	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/057 to H01L 2224/05791
U	H01L 2224/05798	. . . . . Fillers
U	H01L 2224/05799	. . . . . Base material
U	H01L 2224/05886	. . . . . with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/05887	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/05888 -)
	H01L 2224/05893	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/058 to H01L 2224/05891 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/05894	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/058 to H01L 2224/05891
	H01L 2224/05895	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/058 to H01L 2224/05891
U	H01L 2224/05899	. . . . . Coating material
U	H01L 2224/05986	. . . . . with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/05987	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/05988 -)
	H01L 2224/05993	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/059 to H01L 2224/05991 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/05994	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/059 to H01L 2224/05991
	H01L 2224/05995	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/059 to H01L 2224/05991
U	H01L 2224/07	. . . Structure, shape, material or disposition of the bonding areas after the connecting process
U	H01L 2224/09	. . . . of a plurality of bonding areas
U	H01L 2224/091	. . . . Disposition
	H01L 2224/0912	. . . . . Layout (-layout of bonding areas prior to the connecting process H01L 2224/0612 -)
U	H01L 2224/10	. . Bump connectors; Manufacturing methods related thereto
U	H01L 2224/11	. . . Manufacturing methods
U	H01L 2224/114	. . . . by blanket deposition of the material of the bump connector
U	H01L 2224/1141	. . . . . in liquid form
	H01L 2224/11422	. . . . . by dipping, e.g. in a solder bath (-hot-dipping C23C 2/00 -)
	H01L 2224/11424	. . . . . Immersion coating, e.g. in a solder bath (-immersion processes C23C 2/00 -)
	H01L 2224/116	. . . . by patterning a pre-deposited material (-treatment of parts prior to assembly of the devices H01L 21/48 -)
U	H01L 2224/118	. . . . Post-treatment of the bump connector
	H01L 2224/1183	. . . . . Reworking, e.g. shaping (-reflowing H01L 2224/11849 -)

- U H01L 2224/12 . . . Structure, shape, material or disposition of the bump connectors prior to the connecting process
- U H01L 2224/13 of an individual bump connector
- U H01L 2224/13001 Core members of the bump connector
- U H01L 2224/13099 Material
- U H01L 2224/13186 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/13187 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/13188](#)-)
- H01L 2224/13193 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/131](#) to [H01L 2224/13191](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/13194 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/131](#) to [H01L 2224/13191](#)
- H01L 2224/13195 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/131](#) to [H01L 2224/13191](#)
- U H01L 2224/13198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/13199 Material of the matrix
- U H01L 2224/13286 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/13287 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/13288](#)-)
- H01L 2224/13293 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/132](#) to [H01L 2224/13291](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/13294 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/132](#) to [H01L 2224/13291](#)
- H01L 2224/13295 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/132](#) to [H01L 2224/13291](#)
- U H01L 2224/13298 Fillers
- U H01L 2224/13299 Base material
- U H01L 2224/13386 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/13387 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/13388](#)-)
- H01L 2224/13393 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/133](#) to [H01L 2224/13391](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/13394 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/133](#) to [H01L 2224/13391](#)
- H01L 2224/13395 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/133](#) to [H01L 2224/13391](#)
- U H01L 2224/13399 Coating material
- U H01L 2224/13486 with a principal constituent of the material being a non metallic, non metalloid inorganic material

	H01L 2224/13487	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides [glass ceramics H01L 2224/13488]
	H01L 2224/13493	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/134 to H01L 2224/13491 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/13494	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/134 to H01L 2224/13491
	H01L 2224/13495	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/134 to H01L 2224/13491
U	H01L 2224/1354	. . . . . Coating
U	H01L 2224/13599	. . . . . Material
U	H01L 2224/13686	. . . . . with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/13687	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/13688-)
	H01L 2224/13693	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/136 to H01L 2224/13691 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/13694	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/136 to H01L 2224/13691
	H01L 2224/13695	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/136 to H01L 2224/13691
U	H01L 2224/13698	. . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
U	H01L 2224/13699	. . . . . Material of the matrix
U	H01L 2224/13786	. . . . . with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/13787	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/13788-)
	H01L 2224/13793	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/137 to H01L 2224/13791 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/13794	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/137 to H01L 2224/13791
	H01L 2224/13795	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/137 to H01L 2224/13791
U	H01L 2224/13798	. . . . . Fillers
U	H01L 2224/13799	. . . . . Base material
U	H01L 2224/13886	. . . . . with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/13887	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides [glass ceramics H01L 2224/13888]
	H01L 2224/13893	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/138 to H01L 2224/13891 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/13894	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/138 to H01L 2224/13891

	H01L 2224/13895	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/138 to H01L 2224/13891
U	H01L 2224/13899	. . . . . Coating material
U	H01L 2224/13986	. . . . . with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/13987	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/13988 -)
	H01L 2224/13993	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/139 to H01L 2224/13991 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/13994	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/139 to H01L 2224/13991
	H01L 2224/13995	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/139 to H01L 2224/13991
U	H01L 2224/15	. . . Structure, shape, material or disposition of the bump connectors after the connecting process
U	H01L 2224/17	. . . . of a plurality of bump connectors
U	H01L 2224/171	. . . . Disposition
	H01L 2224/1712	. . . . . Layout (-layout of bump connectors prior to the connecting process H01L 2224/1412 -)
U	H01L 2224/26	. . Layer connectors, e.g. plate connectors, solder or adhesive layers; Manufacturing methods related thereto
U	H01L 2224/27	. . . Manufacturing methods
U	H01L 2224/274	. . . . by blanket deposition of the material of the layer connector
U	H01L 2224/2741	. . . . . in liquid form
	H01L 2224/27422	. . . . . by dipping, e.g. in a solder bath (-hot-dipping C23C 2/00 -)
	H01L 2224/27424	. . . . . Immersion coating, e.g. in a solder bath (-immersion processes C23C 2/00 -)
	H01L 2224/276	. . . . by patterning a pre-deposited material (-treatment of parts prior to assembly of the devices H01L 21/48 -)
U	H01L 2224/278	. . . . Post-treatment of the layer connector
	H01L 2224/2783	. . . . . Reworking, e.g. shaping (-reflowing H01L 2224/27849 -)
U	H01L 2224/28	. . . Structure, shape, material or disposition of the layer connectors prior to the connecting process
U	H01L 2224/29	. . . . of an individual layer connector
U	H01L 2224/29001	. . . . . Core members of the layer connector
U	H01L 2224/2902	. . . . . Disposition
	H01L 2224/29021	. . . . . the layer connector being disposed in a recess of the surface (-embedded layer connector H01L 2224/29022 -)
U	H01L 2224/29099	. . . . . Material
U	H01L 2224/29186	. . . . . with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/29187	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/29188 -)
	H01L 2224/29193	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/291 to H01L 2224/29191 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond

- H01L 2224/29194 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/291](#) to [H01L 2224/29191](#)
- H01L 2224/29195 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/291](#) to [H01L 2224/29191](#)
- U H01L 2224/29198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/29199 Material of the matrix
- U H01L 2224/29286 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/29287 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/29288](#)-)
- H01L 2224/29293 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/292](#) to [H01L 2224/29291](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/29294 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/292](#) to [H01L 2224/29291](#)
- H01L 2224/29295 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/292](#) to [H01L 2224/29291](#)
- U H01L 2224/29298 Fillers
- U H01L 2224/29299 Base material
- U H01L 2224/29386 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/29387 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/29388](#)-)
- H01L 2224/29393 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/293](#) to [H01L 2224/29391](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/29394 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/293](#) to [H01L 2224/29391](#)
- H01L 2224/29395 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/293](#) to [H01L 2224/29391](#)
- U H01L 2224/29399 Coating material
- U H01L 2224/29486 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/29487 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/29488](#)-)
- H01L 2224/29493 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/294](#) to [H01L 2224/29491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/29494 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/294](#) to [H01L 2224/29491](#)
- H01L 2224/29495 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/294](#) to [H01L 2224/29491](#)
- U H01L 2224/2954 Coating
- U H01L 2224/29599 Material
- U H01L 2224/29686 with a principal constituent of the material being a non metallic, non metalloid inorganic material

	H01L 2224/29687	. . . . .	• Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/29688 -)
	H01L 2224/29693	. . . . .	• with a principal constituent of the material being a solid not provided for in groups H01L 2224/296 to H01L 2224/29691 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/29694	. . . . .	• with a principal constituent of the material being a liquid not provided for in groups H01L 2224/296 to H01L 2224/29691
	H01L 2224/29695	. . . . .	• with a principal constituent of the material being a gas not provided for in groups H01L 2224/296 to H01L 2224/29691
U	H01L 2224/29698	. . . . .	• with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
U	H01L 2224/29699	. . . . .	• Material of the matrix
U	H01L 2224/29786	. . . . .	• with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/29787	. . . . .	• Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/29788 -)
	H01L 2224/29793	. . . . .	• with a principal constituent of the material being a solid not provided for in groups H01L 2224/297 to H01L 2224/29791 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/29794	. . . . .	• with a principal constituent of the material being a liquid not provided for in groups H01L 2224/297 to H01L 2224/29791
	H01L 2224/29795	. . . . .	• with a principal constituent of the material being a gas not provided for in groups H01L 2224/297 to H01L 2224/29791
U	H01L 2224/29798	. . . . .	• Fillers
U	H01L 2224/29799	. . . . .	• Base material
U	H01L 2224/29886	. . . . .	• with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/29887	. . . . .	• Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/29888 -)
	H01L 2224/29893	. . . . .	• with a principal constituent of the material being a solid not provided for in groups H01L 2224/298 to H01L 2224/29891 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/29894	. . . . .	• with a principal constituent of the material being a liquid not provided for in groups H01L 2224/298 to H01L 2224/29891
	H01L 2224/29895	. . . . .	• with a principal constituent of the material being a gas not provided for in groups H01L 2224/298 to H01L 2224/29891
U	H01L 2224/29899	. . . . .	• Coating material
U	H01L 2224/29986	. . . . .	• with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/29987	. . . . .	• Ceramics, e.g. crystalline carbides, nitrides or oxides [glass ceramics H01L 2224/29988]
	H01L 2224/29993	. . . . .	• with a principal constituent of the material being a solid not provided for in groups H01L 2224/299 to H01L 2224/29991 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/29994	. . . . .	• with a principal constituent of the material being a liquid not provided for in groups H01L 2224/299 to H01L 2224/29991

- H01L 2224/29995 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/299](#) to [H01L 2224/29991](#)
- U H01L 2224/31 . . . Structure, shape, material or disposition of the layer connectors after the connecting process
- U H01L 2224/33 of a plurality of layer connectors
- U H01L 2224/331 Disposition
- H01L 2224/3312 Layout (-layout of layer connectors prior to the connecting process [H01L 2224/3012-](#))
- U H01L 2224/34 . . Strap connectors, e.g. copper straps for grounding power devices; Manufacturing methods related thereto
- U H01L 2224/36 . . . Structure, shape, material or disposition of the strap connectors prior to the connecting process
- U H01L 2224/37 of an individual strap connector
- U H01L 2224/37001 Core members of the connector
- U H01L 2224/37099 Material
- U H01L 2224/37186 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/37187 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/37188-](#))
- H01L 2224/37193 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/371](#) to [H01L 2224/37191](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/37194 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/371](#) to [H01L 2224/37191](#)
- H01L 2224/37195 with a principal constituent of the material being a gas not provided for in groups **T01L224/44100** to **T01L224/44191**
- U H01L 2224/37198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/37199 Material of the matrix
- U H01L 2224/37286 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/37287 Ceramics, e.g. crystalline carbides, nitrides or oxides [glass ceramics [H01L 2224/37288](#)]
- H01L 2224/37293 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/372](#) to [H01L 2224/37291](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/37294 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/372](#) to [H01L 2224/37291](#)
- H01L 2224/37295 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/372](#) to [H01L 2224/37291](#)
- U H01L 2224/37298 Fillers
- U H01L 2224/37299 Base material
- U H01L 2224/37386 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/37387 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/37388-](#))

	H01L 2224/37393	. . . . .	with a principal constituent of the material being a solid not provided for in groups H01L 2224/373 to H01L 2224/37391 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/37394	. . . . .	with a principal constituent of the material being a liquid not provided for in groups H01L 2224/373 to H01L 2224/37391
	H01L 2224/37395	. . . . .	with a principal constituent of the material being a gas not provided for in groups H01L 2224/373 to H01L 2224/37391
U	H01L 2224/37399	. . . . .	Coating material
U	H01L 2224/37486	. . . . .	with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/37487	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides [glass ceramics H01L 2224/37488]
	H01L 2224/37493	. . . . .	with a principal constituent of the material being a solid not provided for in groups H01L 2224/374 to H01L 2224/37491 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/37494	. . . . .	with a principal constituent of the material being a liquid not provided for in groups H01L 2224/374 to H01L 2224/37491
	H01L 2224/37495	. . . . .	with a principal constituent of the material being a gas not provided for in groups H01L 2224/374 to H01L 2224/37491
U	H01L 2224/3754	. . . . .	Coating
U	H01L 2224/37599	. . . . .	Material
U	H01L 2224/37686	. . . . .	with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/37687	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/37688 -)
	H01L 2224/37693	. . . . .	with a principal constituent of the material being a solid not provided for in groups H01L 2224/376 to H01L 2224/37691 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/37694	. . . . .	with a principal constituent of the material being a liquid not provided for in groups H01L 2224/376 to H01L 2224/37691
	H01L 2224/37695	. . . . .	with a principal constituent of the material being a gas not provided for in groups H01L 2224/376 to H01L 2224/37691
U	H01L 2224/37698	. . . . .	with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
U	H01L 2224/37699	. . . . .	Material of the matrix
U	H01L 2224/37786	. . . . .	with a principal constituent of the material being a non metallic, non metalloid inorganic material
	H01L 2224/37787	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics H01L 2224/37788 -)
	H01L 2224/37793	. . . . .	with a principal constituent of the material being a solid not provided for in groups H01L 2224/377 to H01L 2224/37791 , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
	H01L 2224/37794	. . . . .	with a principal constituent of the material being a liquid not provided for in groups H01L 2224/377 to H01L 2224/37791
	H01L 2224/37795	. . . . .	with a principal constituent of the material being a gas not provided for in groups H01L 2224/377 to H01L 2224/37791
U	H01L 2224/37798	. . . . .	Fillers

- U H01L 2224/37799 Base material
- U H01L 2224/37886 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/37887 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/37888](#)-)
- H01L 2224/37893 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/378](#) to [H01L 2224/37891](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/37894 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/378](#) to [H01L 2224/37891](#)
- H01L 2224/37895 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/378](#) to [H01L 2224/37891](#)
- U H01L 2224/37899 Coating material
- U H01L 2224/37986 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/37987 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/37988](#)-)
- H01L 2224/37993 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/379](#) to [H01L 2224/37991](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/37994 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/379](#) to [H01L 2224/37991](#)
- H01L 2224/37995 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/379](#) to [H01L 2224/37991](#)
- U H01L 2224/39 . . . Structure, shape, material or disposition of the strap connectors after the connecting process
- U H01L 2224/40 of an individual strap connector
- U H01L 2224/404 Connecting portions
- U H01L 2224/40475 connected to auxiliary connecting means on the bonding areas
- H01L 2224/40477 being a pre-ball (*i.e. a ball formed by capillary bonding*) (~~*i.e. a ball formed by capillary bonding*~~)
- U H01L 2224/42 . . . Wire connectors; Manufacturing methods related thereto
- U H01L 2224/44 . . . Structure, shape, material or disposition of the wire connectors prior to the connecting process
- U H01L 2224/45 of an individual wire connector
- U H01L 2224/45001 Core members of the connector
- U H01L 2224/45099 Material
- U H01L 2224/45186 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45187 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45188](#)-)
- H01L 2224/45193 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/451](#) to [H01L 2224/45191](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45194 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/451](#) to [H01L 2224/45191](#)
- H01L 2224/45195 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/451](#) to [H01L 2224/45191](#)

- U H01L 2224/45198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/45199 Material of the matrix
- U H01L 2224/45286 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45287 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45288](#)-)
- H01L 2224/45293 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/452](#) to [H01L 2224/45291](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45294 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/452](#) to [H01L 2224/45291](#)
- H01L 2224/45295 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/452](#) to [H01L 2224/45291](#)
- U H01L 2224/45298 Fillers
- U H01L 2224/45299 Base material
- U H01L 2224/45386 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45387 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45388](#)-)
- H01L 2224/45393 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/453](#) to [H01L 2224/45391](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45394 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/453](#) to [H01L 2224/45391](#)
- H01L 2224/45395 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/453](#) to [H01L 2224/45391](#)
- U H01L 2224/45399 Coating material
- U H01L 2224/45486 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45487 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45488](#)-)
- H01L 2224/45493 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/454](#) to [H01L 2224/45491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45494 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/454](#) to [H01L 2224/45491](#)
- H01L 2224/45495 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/454](#) to [H01L 2224/45491](#)
- U H01L 2224/4554 Coating
- U H01L 2224/45599 Material
- U H01L 2224/45686 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45688](#)-)

- H01L 2224/45693 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/456](#) to [H01L 2224/45691](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45694 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/456](#) to [H01L 2224/45691](#)
- H01L 2224/45695 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/456](#) to [H01L 2224/45691](#)
- U H01L 2224/45698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/45699 Material of the matrix
- U H01L 2224/45786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45788](#)-)
- H01L 2224/45793 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/457](#) to [H01L 2224/45791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45794 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/457](#) to [H01L 2224/45791](#)
- H01L 2224/45795 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/457](#) to [H01L 2224/45791](#)
- U H01L 2224/45798 Fillers
- U H01L 2224/45799 Base material
- U H01L 2224/45886 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45887 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45888](#)-)
- H01L 2224/45893 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/458](#) to [H01L 2224/45891](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45894 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/458](#) to [H01L 2224/45891](#)
- H01L 2224/45895 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/458](#) to [H01L 2224/45891](#)
- U H01L 2224/45899 Coating material
- U H01L 2224/45986 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/45987 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/45988](#)-)
- H01L 2224/45993 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/459](#) to [H01L 2224/45991](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/45994 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/459](#) to [H01L 2224/45991](#)
- H01L 2224/45995 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/459](#) to [H01L 2224/45991](#)

- U H01L 2224/47 . . . Structure, shape, material or disposition of the wire connectors after the connecting process
- U H01L 2224/48 of an individual wire connector
- U H01L 2224/484 Connecting portions
- U H01L 2224/48475 connected to auxiliary connecting means on the bonding areas, e.g. pre-ball, wedge-on-ball, ball-on-ball
- U H01L 2224/48476 between the wire connector and the bonding area
- H01L 2224/48477 being a pre-ball (*i.e. a ball formed by capillary bonding*) (~~*i.e. a ball formed by capillary bonding*~~)
- U H01L 2224/485 Material
- U H01L 2224/48505 at the bonding interface
- U H01L 2224/48599 Principal constituent of the connecting portion of the wire connector being Gold (Au)
- U H01L 2224/48686 with a principal constituent of the bonding area being a non metallic, non metalloid inorganic material
- H01L 2224/48687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/48688](#)-)
- H01L 2224/48693 with a principal constituent of the bonding area being a solid not provided for in groups [H01L 2224/486](#) to [H01L 2224/4869](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/48694 with a principal constituent of the bonding area being a liquid not provided for in groups [H01L 2224/486](#) to [H01L 2224/4869](#)
- U H01L 2224/48699 Principal constituent of the connecting portion of the wire connector being Aluminium (Al)
- U H01L 2224/48786 with a principal constituent of the bonding area being a non metallic, non metalloid inorganic material
- H01L 2224/48787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/48788](#)-)
- H01L 2224/48793 with a principal constituent of the bonding area being a solid not provided for in groups [H01L 2224/487](#) to [H01L 2224/4879](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/48794 with a principal constituent of the bonding area being a liquid not provided for in groups [H01L 2224/487](#) to [H01L 2224/4879](#)
- U H01L 2224/48799 Principal constituent of the connecting portion of the wire connector being Copper (Cu)
- U H01L 2224/48886 with a principal constituent of the bonding area being a non metallic, non metalloid inorganic material
- H01L 2224/48887 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/48888](#)-)
- H01L 2224/48893 with a principal constituent of the bonding area being a solid not provided for in groups [H01L 2224/488](#) to [H01L 2224/4889](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/48894 with a principal constituent of the bonding area being a liquid not provided for in groups [H01L 2224/488](#) to [H01L 2224/4889](#)
- H01L 2224/63 . . Connectors not provided for in any of the groups [H01L 2224/10](#) to [H01L 2224/50](#) and subgroups-; Manufacturing methods related thereto

- H01L 2224/73 · Means for bonding being of different types provided for in two or more of groups [H01L 2224/10](#) , [H01L 2224/18](#) , [H01L 2224/26](#) , [H01L 2224/34](#) , [H01L 2224/42](#) , [H01L 2224/50](#) , [H01L 2224/63](#) , [H01L 2224/71](#)
- U H01L 2224/80 · Methods for connecting semiconductor or other solid state bodies using means for bonding being attached to, or being formed on, the surface to be connected
- U H01L 2224/80001 · · by connecting a bonding area directly to another bonding area, i.e. connectorless bonding, e.g. bumpless bonding
- U H01L 2224/80009 · · · Pre-treatment of the bonding area
- U H01L 2224/8001 · · · · Cleaning the bonding area, e.g. oxide removal step, desmearing
- H01L 2224/80019 · · · · · Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8001](#) to [H01L 2224/80014](#)
- H01L 2224/80052 · · · Detaching bonding areas, e.g. after testing (-unsoldering in general [B23K 1/018-](#))
- U H01L 2224/802 · · · Applying energy for connecting
- H01L 2224/80237 · · · · using an electron beam (electron beam welding in general [B23K 15/00](#))
- U H01L 2224/8036 · · · Bonding interfaces of the semiconductor or solid state body
- H01L 2224/80379 · · · · Material (-material of the bonding area prior to the connecting process [H01L 2224/05099](#) and [H01L 2224/05599-](#))
- U H01L 2224/8038 · · · Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/80399 · · · · Material
- U H01L 2224/80486 · · · · · with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/80487 · · · · · · Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/80488-](#))
- H01L 2224/80493 · · · · · with a principal constituent of the material being a solid not provided for in groups [H01L 2224/804](#) to [H01L 2224/80491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/80494 · · · · · with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/804](#) to [H01L 2224/80491](#)
- H01L 2224/80495 · · · · · with a principal constituent of the material being a gas not provided for in groups [H01L 2224/804](#) to [H01L 2224/80491](#)
- U H01L 2224/80498 · · · · · with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/80499 · · · · · · Material of the matrix
- U H01L 2224/80586 · · · · · · with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/80587 · · · · · · · Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/80588-](#))
- H01L 2224/80593 · · · · · · with a principal constituent of the material being a solid not provided for in groups [H01L 2224/805](#) to [H01L 2224/80591](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/80594 · · · · · · with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/805](#) to [H01L 2224/80591](#)
- H01L 2224/80595 · · · · · · with a principal constituent of the material being a gas not provided for in groups [H01L 2224/805](#) to [H01L 2224/80591](#)
- U H01L 2224/80598 · · · · · · Fillers
- U H01L 2224/80599 · · · · · · Base material
- U H01L 2224/80686 · · · · · · with a principal constituent of the material being a non metallic, non metalloid inorganic material

- H01L 2224/80687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/80688](#)-)
- H01L 2224/80693 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/806](#) to [H01L 2224/80691](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/80694 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/806](#) to [H01L 2224/80691](#)
- H01L 2224/80695 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/806](#) to [H01L 2224/80691](#)
- U H01L 2224/80699 Coating material
- U H01L 2224/80786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/80787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/80788](#)-)
- H01L 2224/80793 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/807](#) to [H01L 2224/80791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/80794 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/807](#) to [H01L 2224/80791](#)
- H01L 2224/80795 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/807](#) to [H01L 2224/80791](#)
- U H01L 2224/808 . . . Bonding techniques
- U H01L 2224/8085 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/80885 Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/80855](#) to [H01L 2224/8088](#) , e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/809 . . . with the bonding area not providing any mechanical bonding
- H01L 2224/80901 Pressing a bonding area against another bonding area by means of a further bonding area or connector (-detachable pressure contact [H01L224/72](#)-)
- H01L 2224/80905 . . . Combinations of bonding methods provided for in at least two different groups from [H01L 2224/808](#) to [H01L 2224/80904](#)
- U H01L 2224/80909 . . . Post-treatment of the bonding area
- U H01L 2224/8091 Cleaning, e.g. oxide removal step, desmearing
- H01L 2224/80919 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8091](#) to [H01L 2224/80914](#)
- U H01L 2224/81 . . . using a bump connector
- U H01L 2224/81009 . . . Pre-treatment of the bump connector or the bonding area
- U H01L 2224/8101 Cleaning the bump connector, e.g. oxide removal step, desmearing
- H01L 2224/81019 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8101](#) to [H01L 2224/81014](#)
- H01L 2224/81052 . . . Detaching bump connectors, e.g. after testing (-unsoldering in general [B23K 1/018](#)-)
- U H01L 2224/812 . . . Applying energy for connecting
- H01L 2224/81237 using an electron beam (electron beam welding in general [B23K 15/00](#))
- U H01L 2224/8136 . . . Bonding interfaces of the semiconductor or solid state body

- H01L 2224/81379 Material (-material of the bump connector prior to the connecting process [H01L 2224/13099](#) and [H01L 2224/13599](#) , and subgroups-)
- U H01L 2224/8138 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/81399 Material
- U H01L 2224/81486 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/81487 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/81488](#)-)
- H01L 2224/81493 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/814](#) to [H01L 2224/81491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/81494 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/814](#) to [H01L 2224/81491](#)
- H01L 2224/81495 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/814](#) to [H01L 2224/81491](#)
- U H01L 2224/81498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/81499 Material of the matrix
- U H01L 2224/81586 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/81587 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/81588](#)-)
- H01L 2224/81593 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/815](#) to [H01L 2224/81591](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/81594 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/815](#) to [H01L 2224/81591](#)
- H01L 2224/81595 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/815](#) to [H01L 2224/81591](#)
- U H01L 2224/81598 Fillers
- U H01L 2224/81599 Base material
- U H01L 2224/81686 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/81687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/81688](#)-)
- H01L 2224/81693 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/816](#) to [H01L 2224/81691](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/81694 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/816](#) to [H01L 2224/81691](#)
- H01L 2224/81695 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/816](#) to [H01L 2224/81691](#)
- U H01L 2224/81699 Coating material
- U H01L 2224/81786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/81787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/81788](#)-)

- H01L 2224/81793 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/817](#) to [H01L 2224/81791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/81794 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/817](#) to [H01L 2224/81791](#)
- H01L 2224/81795 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/817](#) to [H01L 2224/81791](#)
- U H01L 2224/818 . . . Bonding techniques
- U H01L 2224/8185 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/81885 Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/81855](#) to [H01L 2224/8188](#) , e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/819 . . . with the bump connector not providing any mechanical bonding
- H01L 2224/81901 Pressing the bump connector against the bonding areas by means of another connector (-detachable pressure contact **H01L224/72-**)
- H01L 2224/81905 Combinations of bonding methods provided for in at least two different groups from [H01L 2224/818](#) to [H01L 2224/81904](#)
- U H01L 2224/81909 . . . Post-treatment of the bump connector or bonding area
- U H01L 2224/8191 Cleaning, e.g. oxide removal step, desmearing
- H01L 2224/81919 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8191](#) to [H01L 2224/81914](#)
- U H01L 2224/82 . . . by forming build-up interconnects at chip-level, e.g. for high density interconnects [HDI]
- U H01L 2224/822 . . . Applying energy for connecting
- H01L 2224/82237 using electron beam, electron beam in general [B23K 15/00](#)
- U H01L 2224/828 . . . Bonding techniques
- U H01L 2224/8285 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/82885 Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/82855](#) to [H01L 2224/8288](#) , e.g. for hybrid thermoplastic-thermosetting adhesives
- H01L 2224/82899 Combinations of bonding methods provided for in at least two different groups from [H01L 2224/828](#) to [H01L 2224/82897](#)
- U H01L 2224/83 . . . using a layer connector
- U H01L 2224/83009 . . . Pre-treatment of the layer connector or the bonding area
- U H01L 2224/8301 Cleaning the layer connector, e.g. oxide removal step, desmearing
- H01L 2224/83019 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8301](#) to [H01L 2224/83014](#)
- H01L 2224/83052 Detaching layer connectors, e.g. after testing (-unsoldering in general [B23K 1/018-](#))
- U H01L 2224/832 . . . Applying energy for connecting
- H01L 2224/83237 using an electron beam (electron beam welding in general [B23K 15/00](#))
- U H01L 2224/8336 . . . Bonding interfaces of the semiconductor or solid state body
- H01L 2224/83379 Material (-material of the layer connector prior to the connecting process [H01L 2224/29099](#) and [H01L 2224/29599](#) , and subgroups-)
- U H01L 2224/8338 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/83399 Material

- U H01L 2224/83486 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/83487 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/83488](#)-)
- H01L 2224/83493 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/834](#) to [H01L 2224/83491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/83494 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/834](#) to [H01L 2224/83491](#)
- H01L 2224/83495 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/834](#) to [H01L 2224/83491](#)
- U H01L 2224/83498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/83499 Material of the matrix
- U H01L 2224/83586 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/83587 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/83588](#)-)
- H01L 2224/83593 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/835](#) to [H01L 2224/83591](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/83594 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/835](#) to [H01L 2224/83591](#)
- H01L 2224/83595 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/835](#) to [H01L 2224/83591](#)
- U H01L 2224/83598 Fillers
- U H01L 2224/83599 Base material
- U H01L 2224/83686 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/83687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/83688](#)-)
- H01L 2224/83693 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/836](#) to [H01L 2224/83691](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/83694 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/836](#) to [H01L 2224/83691](#)
- H01L 2224/83695 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/836](#) to [H01L 2224/83691](#)
- U H01L 2224/83699 Coating material
- U H01L 2224/83786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/83787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/83788](#)-)
- H01L 2224/83793 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/837](#) to [H01L 2224/83791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/83794 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/837](#) to [H01L 2224/83791](#)

- H01L 2224/83795 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/837](#) to [H01L 2224/83791](#)
- U H01L 2224/838 . . . Bonding techniques
- U H01L 2224/8385 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/83885 Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/83855](#) to [H01L 2224/8388](#) , e.g. for hybrid thermoplastic-thermosetting adhesives
- H01L 2224/83905 . . . Combinations of bonding methods provided for in at least two different groups from [H01L 2224/838](#) to [H01L 2224/83904](#)
- U H01L 2224/83909 . . . Post-treatment of the layer connector or bonding area
- U H01L 2224/8391 Cleaning, e.g. oxide removal step, desmearing
- H01L 2224/83919 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8391](#) to [H01L 2224/83914](#)
- U H01L 2224/84 . . . using a strap connector
- U H01L 2224/84009 . . . Pre-treatment of the connector and/or the bonding area
- U H01L 2224/8401 Cleaning, e.g. oxide removal step, desmearing
- H01L 2224/84019 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8401](#) to [H01L 2224/84014](#)
- U H01L 2224/842 . . . Applying energy for connecting
- H01L 2224/84237 using an electron beam (electron beam welding in general [B23K 15/00](#))
- U H01L 2224/8438 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/84399 Material
- U H01L 2224/84486 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/84487 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/84488](#)-)
- H01L 2224/84493 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/844](#) to [H01L 2224/84491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/84494 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/844](#) to [H01L 2224/84491](#)
- H01L 2224/84495 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/844](#) to [H01L 2224/84491](#)
- U H01L 2224/84498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/84499 Material of the matrix
- U H01L 2224/84586 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/84587 Ceramics, e.g. crystalline carbides, nitrides or oxides [glass ceramics [H01L 2224/84588](#)]
- H01L 2224/84593 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/845](#) to [H01L 2224/84591](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/84594 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/845](#) to [H01L 2224/84591](#)
- H01L 2224/84595 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/845](#) to [H01L 2224/84591](#)

- U H01L 2224/84598 Fillers
- U H01L 2224/84599 Base material
- U H01L 2224/84686 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/84687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/84688](#))
- H01L 2224/84693 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/846](#) to [H01L 2224/84691](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/84694 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/846](#) to [H01L 2224/84691](#)
- H01L 2224/84695 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/846](#) to [H01L 2224/84691](#)
- U H01L 2224/84699 Coating material
- U H01L 2224/84786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/84787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/84788](#))
- H01L 2224/84793 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/847](#) to [H01L 2224/84791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/84794 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/847](#) to [H01L 2224/84791](#)
- H01L 2224/84795 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/847](#) to [H01L 2224/84791](#)
- U H01L 2224/848 . . . Bonding techniques
- U H01L 2224/8485 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/84885 Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/84855](#) to [H01L 2224/8488](#) , e.g. for hybrid thermoplastic-thermosetting adhesives
- H01L 2224/84899 Combinations of bonding methods provided for in at least two different groups from [H01L 2224/848](#) to **T01L224/84896**
- U H01L 2224/84909 . . . Post-treatment of the connector or bonding area
- U H01L 2224/8491 Cleaning, e.g. oxide removal step, desmearing
- H01L 2224/84919 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8491](#) to [H01L 2224/84914](#)
- U H01L 2224/85 . . . using a wire connector
- U H01L 2224/85009 . . . Pre-treatment of the connector or the bonding area
- U H01L 2224/8501 Cleaning, e.g. oxide removal step, desmearing
- H01L 2224/85019 Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8501](#) to [H01L 2224/85014](#)
- U H01L 2224/852 . . . Applying energy for connecting
- H01L 2224/85237 using electron beam (-using electron beam in general [B23K 15/00](#)-)
- U H01L 2224/8538 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/85399 Material

- U H01L 2224/85486 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/85487 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/85488](#)-)
- H01L 2224/85493 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/854](#) to [H01L 2224/85491](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/85494 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/854](#) to [H01L 2224/85491](#)
- H01L 2224/85495 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/854](#) to [H01L 2224/85491](#)
- U H01L 2224/85498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/85499 Material of the matrix
- U H01L 2224/85586 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/85587 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/85588](#)-)
- H01L 2224/85593 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/855](#) to [H01L 2224/85591](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/85594 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/855](#) to [H01L 2224/85591](#)
- H01L 2224/85595 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/855](#) to [H01L 2224/85591](#)
- U H01L 2224/85598 Fillers
- U H01L 2224/85599 Base material
- U H01L 2224/85686 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/85687 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/85688](#)-)
- H01L 2224/85693 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/856](#) to [H01L 2224/85691](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/85694 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/856](#) to [H01L 2224/85691](#)
- H01L 2224/85695 with a principal constituent of the material being a gas not provided for in groups [H01L 2224/856](#) to [H01L 2224/85691](#)
- U H01L 2224/85699 Coating material
- U H01L 2224/85786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2224/85787 Ceramics, e.g. crystalline carbides, nitrides or oxides (-glass ceramics [H01L 2224/85788](#)-)
- H01L 2224/85793 with a principal constituent of the material being a solid not provided for in groups [H01L 2224/857](#) to [H01L 2224/85791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/85794 with a principal constituent of the material being a liquid not provided for in groups [H01L 2224/857](#) to [H01L 2224/85791](#)

- H01L 2224/85795 · · · · · with a principal constituent of the material being a gas not provided for in groups [H01L 2224/857](#) to [H01L 2224/85791](#)
- U H01L 2224/858 · · · Bonding techniques
- U H01L 2224/8585 · · · · using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/85885 · · · · · Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/85855](#) to [H01L 2224/8588](#) , e.g. for hybrid thermoplastic-thermosetting adhesives
- H01L 2224/85899 · · · · · Combinations of bonding methods provided for in at least two different groups from [H01L 2224/858](#) to [H01L 2224/85898](#)
- U H01L 2224/85909 · · · Post-treatment of the connector or wire bonding area
- U H01L 2224/8591 · · · · · Cleaning, e.g. oxide removal step, desmearing
- H01L 2224/85919 · · · · · Combinations of two or more cleaning methods provided for in at least two different groups from [H01L 2224/8591](#) to [H01L 2224/85914](#)
- U H01L 2224/86 · · using tape automated bonding [TAB]
- U H01L 2224/862 · · · Applying energy for connecting
- U H01L 2224/8621 · · · · with energy being in the form of electromagnetic radiation
- H01L 2224/86237 · · · · · using electron beam (-electron beam in general [B23K 15/00](#)-)
- U H01L 2224/868 · · · Bonding techniques
- U H01L 2224/8685 · · · · using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/86885 · · · · · Combinations of two or more hardening methods provided for in at least two different groups selected from [H01L 2224/86855](#) to [H01L 2224/8688](#) , e.g. hybrid thermoplastic-thermosetting adhesives
- H01L 2224/86899 · · · · · Combinations of bonding methods provided for in at least two different groups from [H01L 2224/868](#) to [H01L 2224/86897](#)
- H01L 2224/89 · · using at least one connector not provided for in any of the groups [H01L 2224/81](#) to [H01L 2224/86](#)
- H01L 2224/91 · Methods for connecting semiconductor or solid state bodies including different methods provided for in two or more of groups [H01L 2224/80](#) to [H01L 2224/90](#)
- H01L 2225/00** **Details relating to assemblies covered by the group [H01L 25/00](#) but not provided for in its subgroups**
- H01L 2225/03 · All the devices being of a type provided for in the same subgroup of groups [H01L 27/00](#) to [H01L 51/00](#)
- U H01L 2225/04 · · the devices not having separate containers
- H01L 2225/065 · · · the devices being of a type provided for in group [H01L 27/00](#)
- U H01L 2225/06503 · · · · Stacked arrangements of devices
- H01L 2225/06541 · · · · · Conductive via connections through the device, e.g. vertical interconnects, through silicon via [TSV](-manufacturing via connections per se [H01L 21/76898](#)-)
- H01L 2225/06593 · · · · · Mounting aids permanently on device; arrangements for alignment (-use of temporary supports [H01L 21/6835](#)-)
- H01L 2225/06596 · · · · · Structural arrangements for testing (-testing or measuring during manufacture or treatment [H01L 22/00](#) ; testing electrical properties or locating electrical faults [G01R 31/00](#)-)
- U H01L 2225/10 · · the devices having separate containers
- H01L 2225/1005 · · · the devices being of a type provided for in group [H01L 27/00](#)
- U H01L 2225/1011 · · · · the containers being in a stacked arrangement
- U H01L 2225/1047 · · · · · Details of electrical connections between containers

- H01L 2225/107 Indirect electrical connections, e.g. via an interposer, a flexible substrate, using TAB (-printed circuits [H05K 1/00-](#))
- H01L 2227/00** **Indexing scheme for devices consisting of a plurality of semiconductor or other solid state components formed in or on a common substrate covered by group [H01L 27/00](#)**
- H01L 2251/00** **Indexing scheme relating to organic semiconductor devices covered by group [H01L 51/00](#)**
- H01L 2924/00** **Indexing scheme for arrangements or methods for connecting or disconnecting semiconductor or solid-state bodies as covered by [H01L 24/00](#)**
- U H01L 2924/042 . Borides composed of metals from groups of the periodic table
H01L 2924/0449 . . being a combination of two or more materials provided in the groups [H01L 2924/0421](#) to [H01L 2924/0446](#)
- U H01L 2924/045 . Carbides composed of metals from groups of the periodic table
H01L 2924/0469 . . being a combination of two or more materials provided in the groups [H01L 2924/0451](#) to [H01L 2924/0466](#)
- U H01L 2924/047 . Silicides composed of metals from groups of the periodic table
H01L 2924/0489 . . being a combination of two or more materials provided in the groups [H01L 2924/0471](#) to [H01L 2924/0486](#)
- U H01L 2924/049 . Nitrides composed of metals from groups of the periodic table
H01L 2924/0509 . . being a combination of two or more materials provided in the groups [H01L 2924/0491](#) to [H01L 2924/0506](#)
- U H01L 2924/051 . Phosphides composed of metals from groups of the periodic table
H01L 2924/0529 . . being a combination of two or more materials provided in the groups [H01L 2924/0511](#) to [H01L 2924/0526](#)
- U H01L 2924/053 . Oxides composed of metals from groups of the periodic table
H01L 2924/0549 . . being a combination of two or more materials provided in the groups [H01L 2924/0531](#) to [H01L 2924/0546](#)
- U H01L 2924/055 . Chalcogenides other than oxygen i.e.sulfides, selenides and tellurides composed of metals from groups of the periodic table
H01L 2924/0569 . . being a combination of two or more materials provided in the groups [H01L 2924/0551](#) to [H01L 2924/0566](#)
- U H01L 2924/057 . Halides composed of metals from groups of the periodic table
H01L 2924/0589 . . being a combination of two or more materials provided in the groups [H01L 2924/0571](#) to [H01L 2924/0586](#)
- H01L 2924/059 . Being combinations of any of the materials from the groups [H01L 2924/042](#) to [H01L 2924/0584](#) e.g. oxynitrides
- H01L 2924/06 . Polymers (polymers per se [C08](#); polymer adhesives [C09J](#))
H01L 2924/095 . with a principal constituent of the material being a combination of two or more materials provided in the groups [H01L 2924/013](#) to [H01L 2924/0715](#)
- U H01L 2924/15 . Details of package parts other than the semiconductor or other solid state devices to be connected
- U H01L 2924/151 . . Die mounting substrate
- U H01L 2924/156 . . . Material
- U H01L 2924/15786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2924/15787 Ceramics, e.g. crystalline carbides, nitrides or oxides

- H01L 2924/15793 with a principal constituent of the material being a solid not provided for in groups [H01L 2924/157](#) to [H01L 2924/15791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/161 . . Cap
- U H01L 2924/1615 . . . Shape
- U H01L 2924/16152 Cap comprising a cavity for hosting the device, e.g. U-shaped cap
- U H01L 2924/1617 Cavity coating
- U H01L 2924/16171 Material
- U H01L 2924/16173 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2924/16174 Ceramics, e.g. crystalline carbides, nitrides or oxides [glass ceramics [H01L 2224/16175](#)]
- H01L 2924/16178 with a principal constituent of the material being a solid not provided for in groups [H01L 2924/157](#) to [H01L 2924/15791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/163 . . . Connection portion e.g. seal
- U H01L 2924/164 Material
- U H01L 2924/16586 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2924/16587 Ceramics, e.g. crystalline carbides, nitrides or oxides
- H01L 2924/16593 with a principal constituent of the material being a solid not provided for in groups [H01L 2924/157](#) to [H01L 2924/15791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/166 . . . Material
- H01L 2924/16793 with a principal constituent of the material being a solid not provided for in groups [H01L 2924/167](#) to [H01L 2924/16791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/171 . . Frame
- U H01L 2924/176 . . . Material
- U H01L 2924/17786 with a principal constituent of the material being a non metallic, non metalloid inorganic material
- H01L 2924/17787 Ceramics, e.g. crystalline carbides, nitrides or oxides
- H01L 2924/17793 with a principal constituent of the material being a solid not provided for in groups [H01L 2924/177](#) to [H01L 2924/17791](#) , e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2933/00** **Details relating to devices covered by the group [H01L 33/00](#) but not provided for in its subgroups**
- H01L 2933/0091 . Scattering means in or on the semiconductor body or semiconductor body package (~~[H01L 33/22](#)~~ takes precedence)

Project: N/A (H01M)

- U H01M 2/00** **Constructional details or processes of manufacture of the non-active parts**
- U H01M 2/02 . Cases, jackets or wrappings (working of plastics or substances in plastic state [B29](#))
- U H01M 2/0202 . . {for small-sized cells or batteries, e.g. miniature battery or power cells, batteries or cells for portable equipment ([H01M 2/025](#) takes precedence)}
- H01M 2002/0205 . . . {Cases with a shape not covered by groups [H01M 2/0207](#) to [H01M 2/0235](#)}
- H01M 2/0207 . . . {Flat-shaped cells or batteries of flat cells ([H01M 2/0222](#) takes precedence)}

- H01M 2/0217 . . . {-Cases of prismatic shape}
- H01M 2/022 . . . {-Cases of cylindrical or round shape}
- H01M 2/0222 {-Button or coin cell cases}
- H01M 2/0225 {-with cup-shaped terminals }
- H01M 2/0227 {-with both cup-shaped terminals}
- H01M 2/023 {-with one cup-shaped terminal}
- H01M 2/0232 {-with a passing-through terminal ([H01M 2/0235](#) takes precedence)}
- H01M 2/0235 {-with a collector centrally disposed in the active mass, e.g. Leclanch cells}
- U H01M 2/025 . . {-for cells or batteries working under specific conditions such as high temperature, gas diffusion, external electrolyte circulation, external supply of reactants}
- H01M 2/0255 . . . {-Hybrid cells or batteries ([H01M 2/0222](#) takes precedence)}
- U H01M 2/0257 . . {-characterised by the material}
- H01M 2/026 . . . {-for small-sized cells or batteries, batteries or cells for portable equipment}
- H01M 2/0262 . . . {-for large-sized cells or batteries, batteries or cells for traction or motive power or standby power}
- H01M 2/0267 . . . {-of wrappings, outside coatings, jackets around completely closed cell elements}
- H01M 2/027 . . . {-Casing material forming terminal of the cell}
- H01M 2/0272 {-characterized by the internal coating or internal conductive layer}
- H01M 2/0275 . . . {-of flexible envelopes or bags around open cell elements}
- H01M 2/0277 . . . {-Insulating material ([H01M 2/029](#) takes precedence)}
- H01M 2/028 {-being one layer}
- H01M 2/0282 {-having particulate or reinforced material}
- H01M 2/0285 . . . {-Conductive material}
- H01M 2/0287 . . . {-comprising layers}
- H01M 2/029 {-consisting only of insulating material}
- H01M 2/0292 {-characterised by the external coating on the casing}
- H01M 2/0295 . . . {-Composite material consisting of mixed or dispersed phases}
- U H01M 2/04 . . . Lids or covers
- H01M 2/0404 . . . {-for small-sized cells or batteries, e.g. miniature battery or power cells, batteries or cells for portable equipment ([H01M 2/0443](#) takes precedence)}
- H01M 2/0408 {-Crimp-sealed cells or batteries; Cells or batteries with turned-over edges}
- H01M 2/0413 {-provided with an intermediary sealing member between the crimped or curled edges ([H01M 2/0417](#) takes precedence)}
- H01M 2/0417 {-comprising an insulating cover provided with an axial bore for receiving a central current collector}
- H01M 2/0421 {-with an external conductive cover}
- H01M 2/0426 {-with a metallic cover of which the borders are soldered or welded with the case}
- H01M 2/043 . . . {-for large-sized cells or batteries, e.g. LIS batteries, traction or motive power type or standby power batteries ([H01M 2/0443](#) takes precedence)}
- H01M 2/0434 {-Methods for assembling case and cover}
- H01M 2/0439 {-without provisions for disassembling}

- H01M 2/0443
 - • • {for cells or batteries working under specific conditions such as high temperature, gas diffusion, external electrolyte circulation, external supply of reactants}
- H01M 2/0447
 - • • • {High-temperature cells or batteries}
- H01M 2/0452
 - • • • {Hybrid cells or batteries}
- H01M 2/0456
 - • • {characterised by the shape}
- H01M 2/046
 - • • • {Disk-like lids for cylindrical batteries}
- H01M 2/0465
 - • • • • {Button cell lids}
- H01M 2/0469
 - • • • {Lids for flat or sheet-like batteries }
- H01M 2/0473
 - • • • {Lids for prismatic cells}
- H01M 2/0478
 - • • {characterised by the material}
- H01M 2/0482
 - • • • {Insulating materials}
- H01M 2/0486
 - • • • {Conducting materials}
- H01M 2/0491
 - • • • {characterised by the coating}
- H01M 2/0495
 - • • • • {Conductive coating material}
- U H01M 2/06
 - • Arrangements for introducing electric connectors into or through cases
- H01M 2/065
 - • • {using glass or ceramic sealing material}
- U H01M 2/10
 - Mountings; Suspension devices; Shock absorbers; Transport or carrying devices; Holders (structural combination of accumulators with charging apparatus [H01M 10/46](#))
- H01M 2/1016
 - • {Cabinets, cases, fixing devices, adapters, racks or battery packs}
- H01M 2/1022
 - • • {for miniature batteries or batteries for portable equipment (batteries in portable systems [H01M 2220/30](#))}
- H01M 2/1027
 - • • • {with the possibility of incorporating batteries of different sizes}
- H01M 2/1033
 - • • • • {providing adapters around the batteries}
- H01M 2/1072
 - • • {for starting, lighting or ignition batteries; Vehicle traction batteries; Stationary or load leading batteries (batteries in stationary systems [H01M 2220/10](#), batteries in motive systems [H01M 2220/20](#))}
- U H01M 2/12
 - Vent plugs or other mechanical arrangements for facilitating escape of gases
- H01M 2/1223
 - • {Vent arrangements of resealable design ([H01M 2/1205](#), [H01M 2/1247](#)-[H01M 2/1294](#) take precedence)}
- H01M 2/1235
 - • {Emergency or safety arrangements of non-resealable design ([H01M 2/1205](#), [H01M 2/1247](#)-[H01M 2/1294](#) take precedence)}
- H01M 2/1258
 - • {containing electrolyte neutralising or absorbing means}
- H01M 2/1264
 - • {comprising gas-pervious parts or elements}
- H01M 2/127
 - • • {as flame arrester or ignition preventing means}
- H01M 2/1276
 - • {Spring-loaded vent valves}
- H01M 2/1282
 - • {Thermally responsive or sensitive vent means}
- H01M 2/1288
 - • {Film- or sheet-like elastic valve members optionally coated with non-drying glue}
- H01M 2/1294
 - • {Slit, perforated or punctured elastic valve members}
- U H01M 2/14
 - Separators; Membranes; Diaphragms; Spacing elements
- H01M 2/145
 - • {Manufacturing processes}
- U H01M 2/16
 - • characterised by the material
- U H01M 2/1673
 - • • {Electrode-separator combination}
- H01M 2/168
 - • • • {with adhesive layers between electrodes and separators}

- H01M 2/1686
 - • • {Separators having two or more layers of either fibrous or non-fibrous materials}
- U H01M 2/18
 - • characterised by the shape
- H01M 2/185
 - • • {Separators made of one single microscopic fiber}
- U H01M 2/20
 - Current conducting connections for cells
- H01M 2/34
 - • with provision for preventing undesired use or discharge, { e.g. complete cut of current-(safety devices [H01M 2200/00](#))}
- H01M 2/341
 - • • {Anti-theft provisions}
- H01M 2/345
 - • • {in response to pressure}
- H01M 2/347
 - • • {in response to shock}
- H01M 2/348
 - • • {in response to temperature}
- U H01M 2/36
 - arrangements for filling, topping-up or emptying cases with or of liquid, e.g. for filling with electrolytes, for washing-out
- H01M 2/362
 - • {Filling or topping up of large-sized cells or batteries, e.g. L.I.S. batteries, traction or motive power type or standby power batteries}
- H01M 2/365
 - • {means or methods for closing or sealing the liquid supply hole}
- H01M 2/367
 - • {with means for preventing spilling of liquid or electrolyte , e.g. when the battery is tilted or turned over}
- H01M 2/368
 - • • {by closing the vent passages with a valve}
- U H01M 2/38
 - Arrangements for moving electrolytes
- H01M 2/385
 - • {Electrolyte stirring by action of gases on or in the electrolyte}
- U H01M 4/00**
 - Electrodes (electrodes for electrolytic processes [C25](#), { electrodes for hybrid or electric double capacitor [H01G 11/22](#)})**
- U H01M 4/02
 - Electrodes composed of or comprising active material
- U H01M 4/04
 - • Processes of manufacture in general
- H01M 4/0402
 - • • {Methods of deposition of the material}
- H01M 4/0404
 - • • • {by coating on electrode collectors}
- H01M 4/0407
 - • • • {by coating on an electrolyte layer}
- H01M 4/0409
 - • • • {by a doctor blade method, slip-casting or roller coating}
- H01M 4/0411
 - • • • {by extrusion}
- H01M 4/0414
 - • • • {by screen printing}
- H01M 4/0416
 - • • • {involving impregnation with a solution, dispersion, paste or dry powder ([H01M 4/0438](#) takes precedence)}
- H01M 4/0419
 - • • • {involving spraying}
- H01M 4/0421
 - • • • {involving vapour deposition}
- H01M 4/0423
 - • • • • {Physical vapour deposition}
- H01M 4/0426
 - • • • • • {Sputtering}
- H01M 4/0428
 - • • • • • {Chemical vapour deposition}
- H01M 4/043
 - • • {involving compressing or compaction}
- H01M 4/0433
 - • • • {Molding}
- H01M 4/0435
 - • • • {Rolling or calendering}
- H01M 4/0438
 - • • {by electrochemical processing (electroless electrochemical plating [C23C 18/54](#))}
- H01M 4/044
 - • • • {Activating, forming or electrochemical attack of the supporting material}
- H01M 4/0442
 - • • • • {Anodisation, Oxidation (electrolytic coating by anodisation [C25D 9/00](#))}

- H01M 4/0445 {-Forming after manufacture of the electrode, e.g. first charge, cycling}
- H01M 4/0447 {-of complete cells or cells stacks}
- H01M 4/045 {-Electrochemical coating; Electrochemical impregnation}
- H01M 4/0452 {-from solutions}
- H01M 4/0454 {-from melts}
- H01M 4/0457 {-from dispersions or suspensions; Electrophoresis}
- H01M 4/0459 {-Electrochemical doping, intercalation, occlusion or alloying}
- H01M 4/0461 {-Electrochemical alloying}
- H01M 4/0464 {-Electro organic synthesis}
- H01M 4/0466 {-Electrochemical polymerisation}
- H01M 4/0469 {-Electroforming a self-supporting electrode; Electroforming of powdered electrode material}
- H01M 4/0471 {-involving thermal treatment, e.g. firing, sintering, backing particulate active material, thermal decomposition, pyrolysis}
- H01M 4/0473 {-Filling tube-or pockets type electrodes; Applying active mass in cup-shaped terminals}
- H01M 4/0476 {-with molten material}
- H01M 4/0478 {-with dispersions, suspensions or pastes}
- H01M 4/048 {-with dry powder}
- H01M 4/0483 {-by methods including the handling of a melt ([H01M 4/0438](#), take precedence)}
- H01M 4/0485 {-Casting}
- H01M 4/0488 {-Alloying}
- H01M 4/049 {-Manufacturing of an active layer by chemical means}
- H01M 4/0492 {-Chemical attack of the support material}
- H01M 4/0495 {-Chemical alloying}
- H01M 4/0497 {-Chemical precipitation}
- U H01M 4/36 Selection of substances as active materials, active masses, active liquids {(electrode materials of hybrid or double layer capacitors [H01G 11/30-H01G 11/50](#))}
- H01M 4/362 {-Composites}
- H01M 4/364 {-as mixtures}
- H01M 4/366 {-as layered products}
- H01M 4/368 {-Liquid depolarisers}
- U H01M 4/38 of elements or alloys
- H01M 4/381 {-Alkaline or alkaline earth metals elements ([H01M 4/40](#) takes precedence)}
- H01M 4/382 {-Lithium ([H01M 4/405](#) takes precedence)}
- U H01M 4/383 {Hydrogen absorbing alloys}
- H01M 4/385 {-of the type LaNi₅}
- H01M 4/386 {-Silicon or alloys based on silicon}
- H01M 4/387 {-Tin or alloys based on tin}
- H01M 4/388 {-Halogens}
- U H01M 4/40 Alloys based on alkali metals
- H01M 4/405 {-Alloys based on lithium}
- U H01M 4/46 Alloys based on magnesium or aluminium

- H01M 4/463 {-Aluminium based}
- H01M 4/466 {-Magnesium based}
- U H01M 4/48 . . . of inorganic oxides or hydroxides
- H01M 4/481 {-of mercury}
- H01M 4/483 {-for non-aqueous cells ([H01M 4/485](#) takes precedence)}
- U H01M 4/50 of manganese
- H01M 4/502 {-for non-aqueous cells ([H01M 4/505](#) takes precedence)}
- U H01M 4/52 of nickel, cobalt or iron
- H01M 4/523 {-for non-aqueous cells ([H01M 4/525](#) takes precedence)}
- U H01M 4/58 . . . of inorganic compounds other than oxides or hydroxides, e.g. sulfides, selenides, tellurides, halogenides or LiCoFy
- H01M 4/5805 {-Phosphides}
- U H01M 4/581 {-Chalcogenides or intercalation compounds thereof}
- H01M 4/5815 {-Sulfides}
- H01M 4/5825 {-Oxygenated metallic slats or polyanionic structures, e.g. borates, phosphates, silicates, olivines}
- NOTE
- Polyanionic structures comprises elements not changing oxidation state during electrochemical reaction, e.g. P, Si, B
- U H01M 4/583 Carbonaceous material, e.g. graphite-intercalation compounds or CFx
- H01M 4/5835 {-Comprising fluorine or fluoride salts}
- U H01M 4/60 . . . of organic compounds
- H01M 4/602 {-Polymers}
- H01M 4/604 {-containing aliphatic main chain polymers}
- H01M 4/606 {-containing aromatic main chain polymers}
- H01M 4/608 {-containing heterocyclic rings}
- U H01M 4/62 . . . Selection of inactive substances as ingredients for active masses, e.g. binders, fillers
- U H01M 4/621 . . . {Binders}
- H01M 4/622 {-being polymers}
- H01M 4/623 {-fluorinated polymers}
- U H01M 4/624 . . . {Electric conductive fillers}
- H01M 4/626 {-Metals}
- H01M 4/628 . . . {-Inhibitors, e.g. gassing inhibitors, corrosion inhibitors}
- U H01M 4/64 . . . Carriers or collectors {(current collector for hybrid or electric double layer capacitors [H01G 11/66](#))}
- U H01M 4/66 . . . Selection of materials
- H01M 4/661 {-Metal or alloys, e.g. alloy coatings ([H01M 4/669](#) take precedence-)}
- H01M 4/662 {-Alloys (collectors of lead alloys [H01M 4/685](#))}
- H01M 4/665 {-Composites}
- H01M 4/666 {-in the form of mixed materials ([H01M 4/668](#) takes precedence)}
- H01M 4/667 {-in the form of layers, e.g. coatings}
- U H01M 4/70 . . . characterised by shape or form
- U H01M 4/72 Grids
- U H01M 4/74 Meshes or woven material; Expanded metal

- H01M 4/742 {perforated material}
- H01M 4/747 {Woven material}
- U H01M 4/76 Containers for holding the active material, e.g. tubes, capsules
- U H01M 4/765 {Tubular type or pencil type electrodes; tubular or multitubular sheaths or covers of insulating material for said tubular-type electrodes}
- H01M 4/767 {Multitubular sheaths or covers}
- U H01M 4/80 Porous plates, e.g. sintered carriers
- H01M 4/801 {Sintered carriers}
- H01M 4/803 {of only powdered material}
- H01M 4/805 {of powdered and fibrous material}
- H01M 4/806 {Nonwoven fibrous fabric containing only fibres}
- U H01M 4/86 Inert electrodes with catalytic activity, e.g. for fuel cells
- U H01M 4/8605 . . . {Porous electrodes}
- H01M 4/861 . . . {with a gradient in the porosity}
- H01M 4/8636 . . . {with a gradient in another property than porosity ([H01M 4/861](#) takes precedence)}
- H01M 4/8642 . . . {Gradient in composition}
- H01M 4/8647 . . . {consisting of more than one material, e.g. consisting of composites}
- H01M 4/8652 . . . {as mixture}
- H01M 4/8657 . . . {layered}
- H01M 4/8663 . . . {Selection of inactive substances as ingredients for catalytic active masses, e.g. binders, fillers}
- H01M 4/8668 . . . {Binders}
- H01M 4/8673 . . . {Electrically conductive fillers}
- U H01M 4/88 . . . Processes of manufacture
- H01M 4/8803 . . . {Supports for the deposition of the catalytic active composition ([H01M 4/90](#) takes precedence)}
- H01M 4/8807 {Gas diffusion layers}
- H01M 4/881 {Electrolytic membranes}
- H01M 4/8814 {Temporary supports, e.g. decal}
- H01M 4/8817 {Treatment of supports before application of the catalytic active composition (coated porous composites [H01M 8/0245](#))}
- H01M 4/8821 {Wet proofing}
- H01M 4/8825 {Methods for deposition of the catalytic active composition}
- H01M 4/8828 {Coating with slurry or ink}
- H01M 4/8832 {Ink jet printing}
- H01M 4/8835 {Screen printing}
- H01M 4/8839 {Painting}
- H01M 4/8842 {Coating using a catalyst salt precursor in solution followed by evaporation and reduction of the precursor}
- H01M 4/8846 {Impregnation}
- H01M 4/885 {followed by reduction of the catalyst salt precursor}
- H01M 4/8853 {Electrodeposition}
- H01M 4/8857 {Casting, e.g. tape casting, vacuum slip casting}
- H01M 4/886 {Powder spraying, e.g. wet or dry powder spraying, plasma spraying}
- H01M 4/8864 {Extrusion}

- H01M 4/8867 {-Vapour deposition}
- H01M 4/8871 {-Sputtering}
- H01M 4/8875 . . . {-Methods for shaping the electrode into free-standing bodies, like sheets, films or grids, e.g. moulding, hot-pressing, casting without support, extrusion without support}
- H01M 4/8878 . . . {-Treatment steps after deposition of the catalytic active composition or after shaping of the electrode being free-standing body}
- H01M 4/8882 {-Heat treatment, e.g. drying, baking}
- H01M 4/8885 {-Sintering or firing}
- H01M 4/8889 {-Cosintering or cofiring of a catalytic active layer with another type of layer}
- H01M 4/8892 {-Impregnation or coating of the catalyst layer, e.g. by an ionomer}
- H01M 4/8896 {-Pressing, rolling, calendaring (membrane electrode assemblies [H01M 8/1004](#))}
- U H01M 4/90 . . . Selection of catalytic material
- U H01M 4/9016 . . . {-Oxides, hydroxides or oxygenated metallic salts}
- H01M 4/9025 {-Oxides specially used in fuel cell operating at high temperature, e.g. SOFC}
- H01M 4/9033 {-Complex oxides, optionally doped, of the type M_1MeO_3 , M_1 being an alkaline earth metal or a rare earth, Me being a metal, e.g. perovskites}
- H01M 4/9041 . . . {-Metals or alloys ([H01M 4/92](#) takes precedence)}
- H01M 4/905 {-specially used in fuel cell operating at high temperature, e.g. SOFC}
- H01M 4/9058 {-of noble metals or noble-metal based alloys}
- H01M 4/9066 {-of metal-ceramic composites or mixtures, e.g. cermets}
- H01M 4/9075 . . . {-Catalytic material supported on carriers, e.g. powder carriers ([H01M 4/8807](#), [H01M 4/881](#), [H01M 4/8814](#), [H01M 4/925](#) take precedence)}
- H01M 4/9083 {-on carbon or graphite}
- H01M 4/9091 . . . {-Unsupported catalytic particles; loose particulate catalytic materials, e.g. in fluidised state}
- U H01M 4/92 . . . Metals of platinum group ([H01M 4/94](#), { [H01M 4/9058](#) } take precedence)
- H01M 4/925 {-supported on carriers, e.g. powder carriers}
- H01M 4/926 {-on carbon or graphite}
- H01M 4/928 {-Unsupported catalytic particles; loose particulate catalytic materials, e.g. in fluidised state}

U H01M 6/00 Primary cells; Manufacture thereof

NOTE

In this group, primary cells are electrochemical generators in which the cell energy is present in chemical form and is not regenerated.

- H01M 6/005 . . . {-Devices for making primary cells}
- U H01M 6/04 . . . Cells with aqueous electrolyte
- H01M 6/045 . . . {-characterised by aqueous electrolyte}
- U H01M 6/06 . . . Dry cells, i.e. cells wherein the electrolyte is rendered non-fluid
- U H01M 6/08 with cup shaped electrodes
- H01M 6/085 {-of the reversed type, i.e. anode in the centre}
- U H01M 6/10 with wound or folded electrodes
- H01M 6/103 {-Cells with electrode of only one polarity being folded or wound}

- U H01M 6/14 · Cells with non-aqueous electrolyte {[H01M 10/05](#) takes precedence}
- U H01M 6/16 · · with organic electrolyte ([H01M 6/18](#) ,{[H01M 10/05](#) take precedence)}
- U H01M 6/162 · · · {characterised by the electrolyte}
- H01M 6/164 · · · · {-by the solvent (organic electrolyte solvents [H01M 2300/0028](#))}
- U H01M 6/18 · · with solid electrolyte
- H01M 6/182 · · · {-with halogenide as solid electrolyte (halide solid electrolytes [H01M 2300/008](#))}
- H01M 6/185 · · · {-with oxides, hydroxides or oxysalts as solid electrolytes (oxides solid electrolyte [H01M 2300/0071](#))}
- H01M 6/186 · · · · {-Only oxysalts-containing solid electrolytes}
- H01M 6/187 · · · {-Solid electrolyte characterised by the form (layered solid electrolytes [H01M 2300/0094](#))}
- U H01M 6/30 · Deferred-action cells
- U H01M 6/36 · · containing electrolyte and made operational by physical means, e.g. thermal cells (thermoelectric solid state devices [H01L 35/00](#), [H01L 37/00](#))
- U H01M 6/38 · · · by mechanical means
- H01M 6/385 · · · · {-by insertion of electrodes}
- U H01M 6/42 · Grouping of primary cells into batteries ([H01M 6/40](#) takes precedence)
- U H01M 6/46 · · of flat cells
- U H01M 6/48 · · · with bipolar electrodes
- H01M 6/485 · · · · {-Side-by-side bipolar batteries}
- U H01M 6/50 · Methods or arrangements for servicing or maintenance, e.g. maintaining operating temperature {(cells or batteries combined with safety devices [H01M 2200/00](#))}
- H01M 6/5005 · · {-Auxiliary electrodes}
- H01M 6/5011 · · {-for several cells simultaneously or successively}
- H01M 6/5016 · · · {-Multimode utilisation}
- H01M 6/5027 · · {-Dummy cells}
- H01M 6/5033 · · {-used as charging means for another battery}
- U H01M 6/5044 · · {Cells or batteries structurally combined with cell condition indicating means ([H01M 2/34](#) takes precedence)}
- H01M 6/505 · · · {-Cells combined with indicating means for externally visualisation of the condition, e.g. by change of colour or of light intensity}
- H01M 6/5061 · · · {-cells combined with sound indicating means}
- H01M 6/5066 · · {-Type recognition}
- H01M 6/5072 · · {-Preserving or storing cells}
- H01M 6/5088 · · {-Initial activation; predischage; Stabilisation of initial voltage}

U H01M 8/00 Fuel cells; Manufacture thereof

NOTE

Fuel cells are electrochemical generators wherein the reactants are supplied from outside

- H01M 8/002 · {-Shape, form of a fuel cell}
- H01M 8/004 · · {-Cylindrical, tubular or wound}
- H01M 8/006 · · {-Flat}
- H01M 8/008 · {-Destruction or recycling of fuel cells}
- U H01M 8/02 · Details

- H01M 8/0202 . . {-Collectors, separators, interconnectors, e.g. bipolar separators}
- H01M 8/0204 . . . {-Non-porous and characterised by the material}
- H01M 8/0221 {-Polymers or organic resins}
- H01M 8/023 . . . {-Porous and characterised by the material}
- H01M 8/0232 {-Metals or alloys}
- H01M 8/0234 {-Carbonaceous material}
- H01M 8/0236 {-Glass, ceramics or cermets}
- H01M 8/0239 {-Polymers or organic resins}
- H01M 8/0241 {-Composites}
- H01M 8/0243 {-in the form of mixtures}
- H01M 8/0245 {-in the form of layered products, e.g. coatings}
- H01M 8/0247 . . . {-Porous or non porous and characterised by the form (characterised by a channel configuration [H01M 8/0258](#))}
- H01M 8/025 {-Semicylindrical}
- H01M 8/0252 {-Tubular}
- H01M 8/0254 {-Corrugated or undulate shaped}
- H01M 8/0256 {-Vias, i.e. connector passing through the separator material}
- H01M 8/0258 . . . {-Porous or non-porous and characterised by a channel configuration, i.e. by the flow field}
- H01M 8/026 {-Grooves characteristics, pitch, depth}
- H01M 8/0263 {-Meander or serpentine path}
- H01M 8/0265 {-Variable section of reactant channel}
- H01M 8/0267 . . . {-Heating or cooling facilities in the separators, collectors or interconnectors}
- H01M 8/0269 . . . {-Separators, collectors or interconnectors including a printed circuit board}
- U H01M 8/0271 . . {-of surrounding electrodes, matrices, membranes or fuel cell elements with sealing or supporting material}
- H01M 8/0276 . . . {-Seals characterised by their form}
- H01M 8/0278 {-O-rings}
- H01M 8/028 . . . {-Seals characterised by their composition}
- H01M 8/0282 {-Inorganic material}
- H01M 8/0284 {-Organic resins or polymers}
- H01M 8/0286 . . . {-Process of seal formation}
- U H01M 8/04 . . . {-Auxiliary arrangements or processes, e.g. for control of pressure, for circulation of fluids}
- H01M 8/04007 . . {-Arrangements or means or processes related to heat exchange or temperature measurements (methods for controlling fuel cells or fuel cell systems [H01M 8/04298](#))}
- H01M 8/04037 . . . {-Electrical heating}
- H01M 8/04044 . . . {-Coolant purification}
- H01M 8/04052 . . . {-Storage of heat in the fuel cell system}
- H01M 8/04059 . . . {-Evaporative processes for the cooling of a fuel cell}
- H01M 8/04067 . . . {-Heat exchange or temperature measuring elements, thermal insulation, e.g. heat pipes, heat pumps, fins}
- H01M 8/04074 {-Heat exchange unit structures specially adapted for fuel cell (heat exchanger [F28](#), heat exchangers for fuel cells [F28D 2021/0043](#))}

- H01M 8/04082 . . {-Arrangements or means for reactant regulation. E.g. pressure or concentration}
- U H01M 8/04089 . . . {of gaseous reactants}
- H01M 8/04111 {-Using a compressor turbine assembly}
- U H01M 8/04119 {with simultaneous supply or evacuation of electrolyte; Humidifying or dehumidifying}
- H01M 8/04126 {-Humidifying}
- H01M 8/04134 {-by coolants}
- H01M 8/04141 {-by water containing exhaust gases}
- H01M 8/04149 {-by diffusion, e.g. making use of membranes}
- U H01M 8/04156 {with product water removal}
- H01M 8/04164 {-by condensers, gas-liquid separators or filters}
- H01M 8/04171 {-using adsorbents, wicks or hydrophilic material}
- H01M 8/04179 {-by purging or increasing flow or pressure of reactants}
- U H01M 8/04186 . . . {of liquid- or electrolyte-charged reactants}
- H01M 8/04194 {-Concentration measuring cells}
- H01M 8/04201 . . . {-Reactant storage and supply, e.g. means for feeding, pipes}
- H01M 8/04208 {-Cartridges, cryogenic media or cryogenic reservoirs}
- H01M 8/04216 {-characterised by the choice for a specific material, e.g. carbon, hydride, absorbent}
- H01M 8/04223 . . . {-Arrangements or means particularly during start-up or shut-down; Depolarisation or activation treatment, e.g. purging; Short-circuiting means for defective fuel cells}
- H01M 8/04231 {-Purging of the reactants}
- H01M 8/04238 {-Depolarisation}
- H01M 8/04246 {-Short circuiting means for defective fuel cells (detection of defective fuel cells [H01M 8/04664](#), methods for shunting fuel cells [H01M 8/04955](#))}
- H01M 8/04253 {-Means for solving freezing problems}
- H01M 8/04261 {-Preventing means for fuel crossover}
- H01M 8/04268 {-Heating of fuel cells during the start-up of the fuel cells}
- H01M 8/04276 . . {-Arrangements or means related to the management of the electrolyte stream, e.g. heat exchange ([H01M 8/04119](#) takes precedence; Treatment of electrolyte residue [H01M 8/0693](#))}
- H01M 8/04283 . . . {-Supply means of electrolyte to or in matrix-fuel cells}
- H01M 8/04298 . . {-Methods for controlling fuel cells or fuel cell systems (means for control [H01M 8/04007](#) to [H01M 8/04291](#))}
- H01M 8/04305 . . . {-Modelling, demonstration models of fuel cells, e.g. for training purposes}
- H01M 8/04313 . . . {-characterised by variables to be detected or calculated, failure or abnormal functionality of the system}
- H01M 8/0432 {-Temperature including ambient temperature}
- H01M 8/04328 {-of anode reactants at the inlet or inside the fuel cell}
- H01M 8/04335 {-of cathode reactants at the inlet or inside the fuel cell}
- H01M 8/04343 {-of anode exhausts}
- H01M 8/0435 {-of cathode exhausts}
- H01M 8/04358 {-of the coolant}
- H01M 8/04365 {-of other components of a fuel cell or fuel cell stacks}
- H01M 8/04373 {-of auxiliary devices, e.g. reformers, compressors, burners}

H01M 8/0438	. . . . {-Pressure or flow including ambient pressure}
H01M 8/04388	. . . . . {-of anode reactants at the inlet or inside the fuel cell}
H01M 8/04395	. . . . . {-of cathode reactants at the inlet or inside the fuel cell}
H01M 8/04402	. . . . . {-of anode exhausts}
H01M 8/0441	. . . . . {-of cathode exhausts}
H01M 8/04417	. . . . . {-of the coolant}
H01M 8/04425	. . . . . {-at auxiliary devices, e.g. reformers, compressors, burners}
H01M 8/04432	. . . . . {-Pressure differences, e.g. between anode and cathode}
H01M 8/0444	. . . . . {-Concentrations or densities}
H01M 8/04447	. . . . . {-of anode reactants at the inlet or inside the fuel cell}
H01M 8/04455	. . . . . {-of cathode reactants at the inlet or inside the fuel cell}
H01M 8/04462	. . . . . {-of anode exhausts}
H01M 8/0447	. . . . . {-of cathode exhausts}
H01M 8/04477	. . . . . {-of the electrolyte}
H01M 8/04485	. . . . . {-of the coolant}
H01M 8/04492	. . . . {-Humidity, moisture or water content including ambient humidity}
H01M 8/045	. . . . . {-of anode reactants at the inlet or inside the fuel cell}
H01M 8/04507	. . . . . {-of cathode reactants at the inlet or inside the fuel cell}
H01M 8/04514	. . . . . {-of anode exhausts}
H01M 8/04522	. . . . . {-of cathode exhausts}
H01M 8/04529	. . . . . {-of the electrolyte}
H01M 8/04537	. . . . {-Electric variables}
H01M 8/04544	. . . . . {-Voltage}
H01M 8/04552	. . . . . . {-of the individual fuel cell}
H01M 8/04559	. . . . . . . {-of fuel cell stacks}
H01M 8/04567	. . . . . . . {-of auxiliary devices, e.g. batteries, capacitors}
H01M 8/04574	. . . . . . {-Current}
H01M 8/04582	. . . . . . . {-of the individual fuel cell}
H01M 8/04589	. . . . . . . {-of fuel cell stacks}
H01M 8/04597	. . . . . . . {-of auxiliary devices, e.g. batteries, capacitors}
H01M 8/04604	. . . . . . {-Power, energy, capacity or load}
H01M 8/04611	. . . . . . . {-of the individual fuel cell}
H01M 8/04619	. . . . . . . {-of fuel cell stacks}
H01M 8/04626	. . . . . . . {-of auxiliary devices, e.g. batteries, capacitors}
H01M 8/04634	. . . . . . {-Other electric variables, e.g. resistance or impedance}
H01M 8/04641	. . . . . . . {-of the individual fuel cell}
H01M 8/04649	. . . . . . . {-of fuel cell stacks}
H01M 8/04656	. . . . . . . {-of auxiliary devices, e.g. batteries, capacitors}
H01M 8/04664	. . . . {-Failure or abnormal functionality}
H01M 8/04671	. . . . . {-of the individual fuel cell}
H01M 8/04679	. . . . . {-of fuel cell stacks}
H01M 8/04686	. . . . . {-of auxiliary devices, e.g. batteries, capacitors}
H01M 8/04694	. . . {-characterised by variables to be regulated}
H01M 8/04701	. . . . {-Temperature}

- H01M 8/04708 {-of fuel cell reactants}
- H01M 8/04716 {-of fuel cell exhausts}
- H01M 8/04723 {-of the coolant}
- H01M 8/04731 {-of other components of a fuel cell or fuel cell stacks}
- H01M 8/04738 {-of auxiliary devices, e.g. reformer, compressor, burner}
- H01M 8/04746 {-Pressure or flow}
- H01M 8/04753 {-of fuel cell reactants}
- H01M 8/04761 {-of fuel cell exhausts}
- H01M 8/04768 {-of the coolant}
- H01M 8/04776 {-at auxiliary devices, e.g. reformer, compressor, burner}
- H01M 8/04783 {-Pressure differences, e.g. between anode and cathode}
- H01M 8/04791 {-Concentrations or densities}
- H01M 8/04798 {-of fuel cell reactants}
- H01M 8/04805 {-of fuel cell exhausts}
- H01M 8/04813 {-of the coolant}
- H01M 8/0482 {-of the electrolyte}
- H01M 8/04828 {-Humidity, moisture or water content}
- H01M 8/04835 {-of fuel cell reactants}
- H01M 8/04843 {-of fuel cell exhausts}
- H01M 8/0485 {-of the electrolyte}
- H01M 8/04858 {-Electric variables}
- H01M 8/04865 {-Voltage}
- H01M 8/04873 {-of the individual fuel cell}
- H01M 8/0488 {-of fuel cell stacks}
- H01M 8/04888 {-of auxiliary devices, e.g. batteries, capacitors}
- H01M 8/04895 {-Current}
- H01M 8/04902 {-of the individual fuel cell}
- H01M 8/0491 {-of fuel cell stacks}
- H01M 8/04917 {-of auxiliary devices, e.g. batteries, capacitors}
- H01M 8/04925 {-Power, energy, capacity or load}
- H01M 8/04932 {-of the individual fuel cell}
- H01M 8/0494 {-of fuel cell stacks}
- H01M 8/04947 {-of auxiliary devices, e.g. batteries, capacitors}
- H01M 8/04955 {-Turning on/off, shunting of fuel cells or fuel cell system components (arrangements or means during start-up or shut-down [H01M 8/04223](#))}
- H01M 8/04962 {-Other electric variables e.g. resistance or impedance}
- H01M 8/0497 {-of the individual fuel cell}
- H01M 8/04977 {-of fuel cell stacks}
- H01M 8/04985 {-of auxiliary devices, e.g. batteries, capacitors}
- H01M 8/04992 {-characterised by the implementation of the control method by mathematical or computational algorithm, e.g. control feedback loop mechanisms, fuzzy logic, neural networks, artificial intelligence}
- U H01M 8/06 Combination of fuel cell with means for production of reactants or for treatment of residues

- U H01M 8/0606 . . {Producing gaseous reactants}
 - U H01M 8/0612 . . . {from carbon containing material}
 - H01M 8/0618 {-Reforming processes, e.g. autothermal, partial oxidation or steam reforming}
 - U H01M 8/0625 {in a modular combined reactor/fuel cell structure}
 - H01M 8/0631 {-Reactor construction specially adapted for combination reactor/fuel cell (Hydrogen [C01B 3/00](#), reactors for physicochemical processes [B01J 19/00](#))}
 - H01M 8/0637 {-Direct internal reforming at the anode of the fuel cell}
 - H01M 8/065 . . . {-by dissolution of metals or alloys or by dehydrating metallic substance}
 - U H01M 8/0662 . . {Treatment of gaseous reactants or gaseous residues, e.g. cleaning (humidifying or dehumidifying of gaseous reactants [H01M 8/04119](#))}
 - H01M 8/0668 . . . {-Removal of carbon monoxide or carbon dioxide}
 - H01M 8/0675 . . . {-Removal of sulfur}
 - H01M 8/0681 . . . {-Reactant purification by the use of electrochemical cells}
 - H01M 8/0687 . . . {-Reactant purification by the use of membranes or filters}
 - U H01M 8/08 . Fuel cells with aqueous electrolytes
 - H01M 8/083 . . {-Alkaline fuel cells}
 - H01M 8/086 . . {-Phosphoric acid fuel cells (PAFC)}
 - U H01M 8/10 . Fuel cells with solid electrolytes
 - U H01M 8/1002 . . {with anode and cathode gas-diffusion electrodes or electrode layers, e.g. using gaseous or vaporised reactants ([H01M 8/12](#) takes precedence)}
 - H01M 8/1004 . . . {-characterised by the electrode/electrolyte combination}
 - H01M 8/1006 {-Undulated, corrugated, curved or wave-shaped membrane-electrode-assemblies (MEA)}
 - U H01M 8/1009 . . {with one of the reactants being liquid, solid or liquid-charged ([H01M 8/12](#) takes precedence)}
 - H01M 8/1011 . . . {-Direct methanol fuel cells (DMFC)}
 - H01M 8/1013 . . . {-Other direct alcohol fuel cells (DAFC)}
 - U H01M 8/1016 . . {characterised by the electrolyte material ([H01M 8/12](#) takes precedence)}
 - U H01M 8/1018 . . . {Polymeric electrolyte material}
 - H01M 8/102 {-characterised by the chemical structure of the main chain of the ion conducting polymer (membrane support [H01M 8/1058](#), semi-permeable membrane composition [B01D 71/00](#), ion-exchange membrane [C08J 5/22](#))}
- NOTE
Multiple classification is done when two or more heteroatoms from O, P, N, S, Si are present
- H01M 8/1023 {-having only carbon, e.g. Nafion, vinylsulfonic acid, polyarylenes, polystyrenes, polybutadiene-styrene}
 - H01M 8/1025 {-having only carbon and oxygen, e.g. polyethers, sulfonated-polyetheretherketones [s-PEEK}], sulfonated-polysaccharides, sulfonated-celluloses, sulfonated-polyesters]}
 - H01M 8/1027 {-having carbon, oxygen and other atoms, e.g. sulfonated-polyethersulfones [s-PES}], sulfonated-polyphenyl-quinoxaline [s-PPQ]}

- H01M 8/103 {-having nitrogen, e.g. sulfonated-polybenzimidazoles [s-PBI]}, polybenzimidazoles with phosphoric acid, sulfonated-polyamides [s-PA], sulfonated polyphosphazenes [s-PPh]}
- H01M 8/1032 {-having sulfur, e.g. sulfonated polyphosphazene [s-PPh]}
- H01M 8/1034 {-having phosphorous, e.g. sulfonated polyphosphazene [s-PPh]}
- H01M 8/1037 {-having silicon, e.g. sulfonated crosslinked polydimethylsiloxane}
- H01M 8/1039 {-being halogenated, e.g. Nafion, sulfonated polyvinylidene fluoride}
- H01M 8/1041 {-Polymer electrolyte composites, mixtures or blends other than copolymers or grafted polymers}
- H01M 8/1044 {-Mixtures of polymers with at least one polymer being ionically conductive}
- H01M 8/1046 {-Mixtures of polymer and additives}
- H01M 8/1048 {-Ion conductive additives, e.g. polybenzimidazole with phosphoric acid, ion conducting particles, heteropolyacids or metal phosphate}
- H01M 8/1051 {-Non ion conductive additives, e.g. stabilizers, SiO₂, ZrO₂}
- H01M 8/1053 {-Layers of polymers with at least one layer being ionically conductive}
- H01M 8/1055 {-Inorganic layers on the polymer electrolytes, e.g. inorganic coatings}
- H01M 8/1058 {-characterized by a porous support having no ionic conductive properties (membrane immobilizing electrolyte solutions or melts [H01M 8/0293](#), [H01M 8/0295](#))}
- H01M 8/106 {-Chemical composition of the porous support}
- H01M 8/1062 {-Physical properties of the porous support, e.g. porosity, thickness}
- H01M 8/1065 {-characterized by their form, e.g. perforated, undulated (semi-permeable membranes characterised by their form [B01D 69/00](#))}
- H01M 8/1067 {-characterized by their physical properties, e.g. porosity, ionic conductivity, thickness}
- H01M 8/1069 {-characterized by the manufacturing processes (semi-permeable membrane manufacturing processes [B01D 67/00](#); manufacture of ion-exchange membrane [C08J 5/22](#))}
- H01M 8/1072 {-Chemical reactions, e.g. in-situ polymerisation, in-situ crosslinking}
- H01M 8/1074 {-Sol-gel processes}
- H01M 8/1076 {-Micromachining techniques, e.g. masking, etching steps, photolithography}
- H01M 8/1079 {-Inducing porosity into non porous precursors membranes, e.g. leaching, pore stretching}
- H01M 8/1081 {-Starting from polymer solutions, dispersions, slurries other than monomer solutions, dispersions, slurries}
- H01M 8/1083 {-Starting from polymer melts other than monomer melts}
- H01M 8/1086 {-After-treatment of the membrane other than polymerisation}
- H01M 8/1088 {-chemical modification, e.g. sulfonation}
- H01M 8/109 {-thermal other than drying, e.g. sintering}
- H01M 8/1093 {-mechanical, e.g. pressing, puncturing}
- H01M 8/1097 {-Fuel cells applied on a support, e.g. miniature fuel cell deposited on a silica support}
- U H01M 8/12 operating at high temperature, e.g. with stabilised ZrO₂ electrolyte
- U H01M 8/1206 {with the anode and the cathode in the form of gas diffusion electrodes}
- U H01M 8/1213 {characterised by the electrodes, the electrode/electrolyte combination or the supporting material}

- H01M 8/122
 - • • • {Undulated, corrugated, curved or wave-shaped membrane electrode assemblies (MEA)}
- U H01M 8/124
 - • • {characterised by the process of manufacturing or by the material of the electrolyte}
- H01M 8/1246
 - • • • {the electrolyte consisting of oxides (solid oxides ion conductive electrolyte [H01M 2300/0074](#))}
- H01M 8/1253
 - • • • • {the electrolyte containing zirconium oxide (solid electrolyte based on zirconium oxide [H01M 2300/0077](#))}
- H01M 8/1273
 - • • • • {Fuel cells with solid halide electrolytes (solid halide electrolyte [H01M 2300/008](#))}
- H01M 8/1286
 - • • {Fuel cells applied on a support, e.g. miniature fuel cells deposited on a silica support}
- U H01M 8/14
 - Fuel cells with fused electrolytes
- H01M 8/146
 - • {Fuel cells with molten hydroxide (molten hydroxide electrolyte **T01M300/B6H**)}
- U H01M 8/24
 - Grouping of fuel cells into batteries
- U H01M 8/2465
 - • {Details of fuel cell stacks}
- H01M 8/247
 - • • {Arrangements for tightening a stack, for accommodation of a stack in a tank, for assembling different tanks}
- H01M 8/2475
 - • • • {Enclosures, casings or containers of fuel cells}
- H01M 8/248
 - • • • {Compression means of the fuel cell stack}
- U H01M 10/00**
 - Secondary cells; Manufacture thereof**
 - NOTE**
 - Secondary cells are accumulators receiving and supplying electrical energy by means of reversible electrochemical reactions.
- U H01M 10/04
 - Construction or manufacture in general ([H01M 10/12](#), [H01M 10/28](#), [H01M 10/38](#) take precedence)
- H01M 10/0404
 - • {Machines for assembling batteries}
- H01M 10/0409
 - • • {for cells with wound electrodes}
- H01M 10/0413
 - • {Large-sized flat cells or batteries for motive or stationary systems with plate-like electrodes}
- H01M 10/0422
 - • {Cells or battery with cylindrical casing }
- H01M 10/0431
 - • {Cells with wound or folded electrodes ([H01M 10/045](#) takes precedence)}
- H01M 10/0436
 - • {Small-sized flat cells or batteries portable equipment}
- H01M 10/0445
 - • {Multimode batteries, e.g. containing auxiliary cells or electrodes switchable in parallel or series connections}
- H01M 10/045
 - • {Cells or batteries with folded plate-like electrodes}
- H01M 10/0454
 - • • {Cells or batteries with electrodes of only one polarity folded}
- H01M 10/0459
 - • {Cells or batteries with folded separator between plate-like electrodes}
- H01M 10/0463
 - • {Cells or batteries with horizontal or inclined electrodes}
- H01M 10/0468
 - • {Compression means for stacks of electrodes and separators}
- H01M 10/0472
 - • {Vertically superposed cells with vertically disposed plates}
- H01M 10/0477
 - • {with circular plates}
- H01M 10/0481
 - • {Compression means other than compression means for stacks of electrodes and separators}
- H01M 10/0486
 - • {Frames for plates or membranes}
- U H01M 10/06
 - Lead-acid accumulators (semi-lead accumulators [H01M 10/20](#))

- U H01M 10/12
 - • Construction or manufacture
- H01M 10/121
 - • • ~~{Valve regulated lead acid batteries [VRLA]}~~
- H01M 10/123
 - • • ~~{Cells or batteries with cylindrical casing}~~
- U H01M 10/34
 - Gastight accumulators
- H01M 10/342
 - • ~~{Gastight lead accumulators (H01M 10/121 takes precedence)}~~
- H01M 10/345
 - • ~~{Gastight metal hydride accumulators}~~
- U H01M 10/36
 - Accumulators not provided for in groups [H01M 10/05-H01M 10/34](#)
- U H01M 10/39
 - • Working at high temperature
- H01M 10/3909
 - • • ~~{Sodium-sulfur cells}~~
- H01M 10/3918
 - • • • ~~{characterised by the electrolyte}~~
- H01M 10/3927
 - • • • • ~~{Several layers of electrolyte or coatings containing electrolyte}~~
- H01M 10/3936
 - • • • • ~~{Electrolyte with a shape other than plane or cylindrical}~~
- H01M 10/3945
 - • • • ~~{containing additives or special arrangements in the sodium compartment}~~
- H01M 10/3954
 - • • • ~~{containing additives or special arrangement in the sulfur compartment}~~
- H01M 10/3963
 - • • • ~~{Sealing means between the solid electrolyte and holders}~~
- H01M 10/3972
 - • • • ~~{Flexible parts}~~
- H01M 10/3981
 - • • • ~~{Flat cells}~~
- H01M 10/399
 - • • ~~{Cells with molten salts}~~
- U H01M 10/42
 - Methods or arrangements for servicing or maintenance of secondary cells or secondary half-cells
- H01M 10/4221
 - • ~~{with battery type recognition}~~
- H01M 10/4228
 - • ~~{Leak testing of cells or batteries}~~
- H01M 10/425
 - • ~~{Structural combination with electronic components, e.g. electronic circuits integrated to the outside of the casing (printed circuits [H05K 1/00](#))}~~
- H01M 10/4257
 - • • ~~{Smart batteries, e.g. electronic circuits inside the housing of the cells or batteries}~~
- H01M 10/4264
 - • • ~~{with capacitors}~~
- U H01M 10/44
 - • Methods for charging or discharging (circuits for charging [H02J 7/00](#))
- H01M 10/443
 - • • ~~{in response to temperature}~~
- H01M 10/445
 - • • ~~{in response to gas pressure}~~
- H01M 10/446
 - • • ~~{Initial charging measures}~~
- H01M 10/448
 - • • ~~{End of discharge regulating measures}~~
- U H01M 10/48
 - • Accumulators combined with arrangements for measuring, testing or indicating condition, e.g. level or density of the electrolyte ([H01M 10/44](#) takes precedence); indicating or measuring level of liquid in general [G01F 23/00](#); measuring density [G01N](#), e.g. [G01N 9/00](#); measuring electric variables [G01R](#))
- H01M 10/484
 - • • ~~{for measuring electrolyte level, electrolyte density or electrolyte conductivity}~~
- H01M 10/486
 - • • ~~{for measuring temperature}~~
- H01M 10/488
 - • • ~~{Cells or batteries combined with indicating means for externally visualisation of the condition, e.g. by change of colour or of light intensity}~~
- U H01M 10/50
 - • Heating or cooling or regulating temperature (control of temperature in general [G05D 23/00](#))

- H01M 10/5002 . . . {-Types of temperature regulation}
WARNING
 Groups [H01M 10/5002](#) to [H01M 10/5097](#) are not complete, pending reclassification. See also [H01M 10/50](#), **H01M10/50B**, [H01M 2200/10-H01M 2200/108](#)
- H01M 10/5004 {-Cooling or keeping cold}
- H01M 10/5006 {-Heating or keeping warm}
- H01M 10/5008 {-Uniformity or distribution of temperature in space}
- H01M 10/501 . . . {-specially adapted for a specific application}
- H01M 10/5012 {-Portable devices, e.g. mobiles, cameras, pacemakers}
- H01M 10/5014 {-Power tools}
- H01M 10/5016 {-Vehicles}
- H01M 10/5018 {-Stationary plants, e.g. power plant buffering, backup power supplies}
- H01M 10/502 . . . {-Control systems (measurement of temperature [H01M 10/486](#); charging and discharging in response to temperature [H01M 10/443](#))}
- H01M 10/5022 {-characterized by method steps, e.g. algorithms, flow charts, software details}
- H01M 10/5024 {-based on ambient temperature}
- H01M 10/5026 {-characterised by the use of reversible temperature sensitive devices, e.g. NTC, PTC, bimetal or by control of the internal current flowing through the battery, e.g. by switching ([H01M 2/34](#) takes precedence; Temperature sensitive safety devices for primary or secondary batteries [H01M 2200/10](#))}
- H01M 10/5028 . . . {-characterized by the shape of the cells}
- H01M 10/503 {-Cylindrical}
- H01M 10/5032 {-Prismatic or flat, e.g. pouch cells}
- H01M 10/5034 . . . {-Means for temperature regulation having parts combined with the battery}
- H01M 10/5036 {-characterized by values or quantitative relationships, e.g. ratios, sizes, formulas, concentrations}
- H01M 10/5038 {-characterized by gradients (temperature gradients [H01M 10/5008](#))}
- H01M 10/504 {-characterized by electrically insulating, thermally conductive materials}
- H01M 10/5042 {-inside the innermost case of the battery, e.g. mandrels, electrodes, electrolytes}
- H01M 10/5044 {-Solid structures for heat-exchange or conduction}
- H01M 10/5046 {-Surfaces specially adapted for heat dissipation or radiation, e.g. fins, coatings}
- H01M 10/5048 {-Closed pipes transferring heat by thermal conductivity and phase transition, e.g. heat pipes}
- H01M 10/5051 {-Terminals or leads}
- H01M 10/5053 {-Solid parts specially adapted for heat conduction other than terminals or leads, e.g. rods, plates}
- H01M 10/5055 {-arranged between the cells}
- H01M 10/5057 {-Solid parts with flow channels or tubes for heat exchange}
- H01M 10/5059 {-arranged between the cells}
- H01M 10/5061 {-Fluids for heat exchange}
- H01M 10/5063 {-Gases}
- H01M 10/5065 {-freely flowing by convection only}

- H01M 10/5067 {forcedly flowing, e.g. by blowers}
- H01M 10/5069 {-Compressed gases}
- H01M 10/5071 {-Recirculation or a U-turn in the flow path, i.e. back and forth
([H01M 10/5069](#) takes precedence)}
- H01M 10/5075 {-Liquids}
- H01M 10/5079 {-Fluids undergoing a liquid-gas phase change, e.g. evaporation,
condensation (heat pipes [H01M 10/5048](#))}
- H01M 10/5081 {-Electric or electromagnetic means ([H01M 2/34](#) takes precedence)}
- H01M 10/5083 {-Resistor heaters (arrangements for heating the battery by its
resistance to internal current [H01M 10/5026](#))}
- H01M 10/5085 {-Peltier elements or thermo-electric devices}
- H01M 10/5087 {-Thermal insulation or shielding}
- H01M 10/5089 {-Heat storage or buffering, e.g. heat capacity, liquid-solid phase changes}
- H01M 10/5091 {-Chemical reactions other than electrochemical reactions of the battery,
e.g. catalytic heaters, burners}
- H01M 10/5093 {-Heat exchange relationships between a battery and another system,
e.g. air-conditioners, central heating systems, vehicle engines, electronic
components, fuel cells, capacitors}
- H01M 10/5095 {-the system being an air-conditioner or an engine}
- H01M 10/5097 {-the system being an electronic component, e.g. CPU, inverter,
capacitor}
- U H01M 10/52 {-Removing gases inside the secondary cell, e.g. by absorption (vent plugs or
other mechanical arrangements for facilitating escape of gases [H01M 2/12](#))}
- H01M 10/523 {-by recombination on a catalytic material}
- H01M 10/526 {-by gas recombination on the electrode surface or by structuring the
electrode surface to improve gas recombination}

U H01M 12/00 Hybrid cells; Manufacture thereof

NOTE

Hybrid cells are electrochemical generators having two different types of half-cells, the half-cell being an electrode-electrolyte combination of either a primary, a secondary or a fuel cell.

- H01M 12/005 {-composed of a half-cell of the capacitor type and of a half-cell of the primary
or secondary battery type (hybrid capacitors [H01G 9/155](#))}

**U H01M 14/00 Electrochemical current or voltage generators not provided for in groups
[H01M 6/00](#) - [H01M 12/00](#); Manufacture thereof**

- H01M 14/005 {-Photoelectrochemical storage cells (light sensitive devices [H01G 9/20](#),
semiconductors sensitive to light [H01L31/00](#))}

U H01M 16/00 Structural combinations of different types of electrochemical generators

- H01M 16/003 {-of fuel cells with other electrochemical devices, e.g. capacitors, electrolyzers}
- H01M 16/006 {-of fuel cells with rechargeable batteries}

Project: N/A (H01P)

U H01P 1/00 Auxiliary devices (coupling devices of the waveguide type [H01P 5/00](#))

- U H01P 1/20 {-Frequency-selective devices, e.g. filters ({variable impedance transformers, e.g.
slug tuners or stub tuners [H01P 5/04](#)}; resonators [H01P 7/00](#))}
- H01P 1/2005 {-Electromagnetic photonic bandgaps [EPB]}, or photonic bandgaps [PBG]}

- H01P 1/201
 - · Filters for transverse electromagnetic waves ([H01P 1/212](#) ,[H01P 1/213](#) ,[H01P 1/215](#) ,[H01P 1/219](#) take precedence)
- U H01P 1/203
 - · · Strip line filters
- U H01P 1/20309
 - · · · {with dielectric resonator}
- H01P 1/20318
 - · · · · {-with dielectric resonators as non-metallised opposite openings in the metallised surfaces of a substrate}
- H01P 1/20327
 - · · · · {-Electromagnetic interstage coupling}
- U H01P 1/20336
 - · · · · {Comb or interdigital filters}
- H01P 1/20345
 - · · · · · {-Multilayer filters}
- H01P 1/20354
 - · · · · · {-Non-comb or non-interdigital filters}
- H01P 1/20363
 - · · · · · {-Linear resonators}
- H01P 1/20381
 - · · · · · {-Special shape resonators}
- H01P 1/2039
 - · · · · {-Galvanic coupling between Input/Output}
- U H01P 1/207
 - · Hollow waveguide filters ([H01P 1/212](#) , [H01P 1/213](#) , [H01P 1/215](#) , [H01P 1/219](#) take precedence)
- U H01P 1/208
 - · · Cascaded cavities; Cascaded resonators inside a hollow waveguide structure ([H01P 1/205](#) takes precedence)
- H01P 1/2088
 - · · · {-Integrated in a substrate}
- H01P 1/30
 - for compensation of, or protection against, temperature or moisture effects; {for improving power handling capability-[H01P 1/04](#) , [H01P 1/08](#) take precedence)}
- U H01P 3/00**
 - Waveguides; Transmission lines of the waveguide type**
- U H01P 3/003
 - {Coplanar lines}
- H01P 3/006
 - · {Conductor backed coplanar waveguides}
- U H01P 3/02
 - with two longitudinal conductors
- H01P 3/026
 - · {-Coplanar striplines (CPS)}
- U H01P 3/08
 - · Microstrips; Strip lines
- H01P 3/081
 - · · {-Micro-striplines}
- H01P 3/082
 - · · · {-Multilayer dielectric}
- H01P 3/084
 - · · · · {-Suspended micro-striplines}
- H01P 3/085
 - · · · {-Triplate lines}
- H01P 3/087
 - · · · · {-Suspended triplate lines}
- H01P 3/088
 - · · {-Stacked transmission lines}
- U H01P 3/12
 - Hollow waveguides ([H01P 3/20](#) takes precedence)
- H01P 3/121
 - · {-integrated in a substrate}
- H01P 3/122
 - · {-Dielectric loaded (not air)}
- U H01P 3/16
 - Dielectric waveguides, i.e. without a longitudinal conductor
- H01P 3/165
 - · {-Non-radiating dielectric waveguides}
- U H01P 5/00**
 - Coupling devices of the waveguide type (non-reciprocal devices [H01P 1/32](#); for introducing or removing wave energy to or from the discharge in transit-time tubes [H01J 23/36](#))**
- U H01P 5/12
 - Coupling devices having more than two ports ([H01P 5/04](#) takes precedence)
- U H01P 5/16
 - · Conjugate devices, i.e. devices having at least one port decoupled from one other port
- U H01P 5/18
 - · · consisting of two coupled guides, e.g. directional couplers
- U H01P 5/184
 - · · · {the guides being strip lines or microstrips}
- H01P 5/185
 - · · · · {-Edge coupled lines}

- H01P 5/186 {-Lange couplers}
- H01P 5/187 {-Broadside coupled lines}
- U H01P 5/19 of the junction type
- U H01P 5/22 Hybrid ring junctions
- H01P 5/222 {-180° rat race hybrid rings}
- H01P 5/225 {-180° reversed phase hybrid rings}
- H01P 5/227 {-90° branch line couplers}
- U H01P 7/00** **Resonators of the waveguide type ({ variable impedance transformers [H01P 5/04](#)}; structurally associated with transit-time tubes and interacting with the discharge therein [H01J 23/18](#); { generators of electronic oscillations using resonators of this type [H03B 5/18](#), [H03B 7/14](#), [H03B 9/14](#); electronic amplifiers using resonators of this type [H03F 3/54](#)}; microwave heating devices [H05B 6/64](#))**
- U H01P 7/08 Strip line resonators
- H01P 7/082 {-Microstripline resonators ([H01P 7/088](#) takes precedence)}
- H01P 7/084 {-Triplate line resonators ([H01P 7/088](#) takes precedence)}
- H01P 7/086 {-Coplanar waveguide resonators ([H01P 7/088](#) takes precedence)}
- H01P 7/088 {-Tunable resonators}
- U H01P 7/10 Dielectric resonators
- H01P 7/105 {-Multimode resonators}

Project: RP0112 (H01Q)

H01Q **AERIALS** (-microwave radiators for near-field therapeutic treatment [A61N 5/04](#) ; apparatus for testing aerials or for measuring aerial characteristics [G01R](#); waveguides [H01P](#); radiators or aerials for microwave heating [H05B 6/72](#)-)

NOTES

This subclass covers:

- in addition to the primary active radiating elements,
- a) secondary devices for absorbing or for modifying the direction or polarisation of waves radiated from aerials,
- and
- b) combinations with auxiliary devices such as earthing switches, lead-in devices, and lightning protectors;
- both transmitting and receiving aerials

This subclass does not cover devices of the waveguide type, such as resonators or lines, not designed as radiating elements, which are covered by subclass [H01P](#).

In this subclass, the following expression is used with the meaning indicated:

- "active radiating element" covers corresponding parts of a receiving aerial.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups :- H01Q 5/01

covered by H01Q 5/0003 to H01Q 5/0096 – H01Q 5/02 covered by H01Q 5/0003 to H01Q 5/0096 }

Project: N/A (H01Q)

H01Q 1/00

Details of, or arrangements associated with, aerials (-arrangements for varying orientation of directional pattern [H01Q 3/00](#)-)

NOTES

This group covers only:

- structural details or features of aerials not dependent on electric operation;
- structural details or features applicable to more than one type of aerial or aerial element.

Structural details or features described with reference to, or clearly applicable only to, aerials or aerial elements of a particular type are classified in the group appropriate to that type.

- H01Q 1/002
 - {Protection against seismic waves, thermal radiation or other disturbances, e.g. nuclear explosion; Arrangements for improving the power handling capability of an aerial (-cooling [H01Q 1/02](#)-)}
- H01Q 1/005
 - {Damping of vibrations; Means for reducing wind-induced forces (-damping of vibrations in general [F16F](#)-)}
- H01Q 1/02
 - Arrangements for de-icing; Arrangements for drying-out; {Arrangements for cooling; Arrangements for preventing corrosion (-radomes [H01Q 1/42](#)-)}
- H01Q 1/08
 - Means for collapsing aerials or parts thereof; {Collapsible aerials} ({ collapsible supports [H01Q 1/1235](#) } ; collapsible loop aerials [H01Q 7/02](#) ; { collapsible helical aerials [H01Q 11/086](#) ; collapsible reflecting surfaces [H01Q 15/161](#) , [H01Q 15/20](#) } ; collapsible H-aerials or Yagi aerials [H01Q 19/04](#)-)}
- U H01Q 1/081
 - • {Inflatable antennas}
- H01Q 1/082
 - • • {Balloon antennas (-balloon supported antennas [H01Q 1/1292](#)-)}
- H01Q 1/084
 - • {Pivotable antennas (-mechanical movement of aerial or aerial system for changing or varying the orientation or the shape of the directional pattern [H01Q 3/02](#) ; adjustment of angle between two radiating elements [H01Q 9/12](#)-)}
- H01Q 1/12
 - Supports; Mounting means ({ for the purpose of scanning [H01Q 3/00](#) ; mounting structure for reflecting surfaces [H01Q 15/14](#) ; Towers, masts, or poles [E04H 12/00](#) } ; supporting conductors in general [H02G 7/00](#)-)}
- U H01Q 1/1207
 - • {for fastening a rigid aerial element}
- H01Q 1/1228
 - • • {on a boom (-coupling of tubular pipes [F16B 7/04](#)-)}
- H01Q 1/125
 - • {Means for positioning (-stabilising [H01Q 1/18](#) ; remotely controlled positioning [H01Q 3/005](#)-)}
- H01Q 1/1257
 - • • {using the received signal strength (-direction finding [G01S 3/38](#) ; diversity [H04B 7/10](#)-)}
- H01Q 1/18
 - • Means for stabilising aerials on an unstable platform{(-reducing wind-induced forces [H01Q 1/005](#)-)}
- H01Q 1/185
 - • • {by electronic means (-electronic scanning [H01Q 3/26](#)-)}
- H01Q 1/22
 - • by structural association with other equipment or articles{(-portable transceivers [H04B 1/3827](#)-)}

- H01Q 1/2208
 - • • {associated with components used in interrogation type services, i.e. in systems for information exchange between an interrogator/reader and a tag/transponder, e.g. in Radio Frequency Identification (RFID) systems (-G06K 7/00 and G06K 19/00 take precedence-)}
- H01Q 1/2233
 - • • • {used in consumption-meter devices, e.g. electricity, gas or water meters (-remote reading of utility meters G01D 4/002 ; transmission of measured values using a radio link in general G08C 17/02-)}
- H01Q 1/2241
 - • • • {used in or for vehicle tyres (-tyres in general B60C 3/04-)}
- H01Q 1/225
 - • • {used in level-measurement devices, e.g. for level gauge measurement (-level measuring with electromagnetic waves in general G01F 23/284-)}
- H01Q 1/2283
 - • • {mounted in or on the surface of a semiconductor substrate as a chip-type antenna or integrated with other components into an IC package (-chip carriers for flat cards H01L 23/49855-)}
- H01Q 1/2291
 - • • {used in bluetooth or WI-FI devices of Wireless Local Area Networks (WLAN)(-H01Q 1/241 takes precedence; WLAN in general H04W-)}
- U H01Q 1/24
 - • • with receiving set
- H01Q 1/241
 - • • • {used in mobile communications, e.g. GSM (-H01Q 1/247 , H01Q 1/248 take precedence-)}
- H01Q 1/247
 - • • • {with frequency mixer, e.g. for direct satellite reception or Doppler radar (-active antennas H01Q 23/00-)}
- H01Q 1/27
 - Adaptation for use in or on movable bodies (-H01Q 1/08 , H01Q 1/12 , H01Q 1/18 take precedence; { portable transceivers H04B 1/3827 })
- U H01Q 1/28
 - • Adaptation for use in or on aircraft, missiles, satellites, or balloons
- H01Q 1/285
 - • • {Aircraft wire antennas (-means for trailing H01Q 1/30-)}
- H01Q 1/32
 - • Adaptation for use in or on road or rail vehicles (-telescopic elements H01Q 1/10 ; resilient mountings for aerials H01Q 1/20-)
- U H01Q 1/325
 - • • {characterised by the location of the antenna on the vehicle}
- H01Q 1/3283
 - • • • {side-mounted antennas, e.g. bumper-mounted, door-mounted (-mounted on windscreens H01Q 1/1271-)}
- H01Q 1/34
 - • Adaptation for use in or on ships, submarines, buoys, or torpedoes (-for subaqueous use H01Q 1/04 ; retractable loop aerials H01Q 7/02-)
- H01Q 1/36
 - Structural form of radiating elements, e.g. cone, spiral, umbrella; {Particular materials used therewith} (-H01Q 1/08 , H01Q 1/14 take precedence-)
- H01Q 1/38
 - • formed by a conductive layer on an insulating support ({ patch antennas H01Q 9/0407 ; microstrip dipole antennas H01Q 9/065 ; microstrip slot antennas H01Q 13/106 ; transmission line microstrip antennas H01Q 13/206 ; manufacturing reflecting surfaces using insulating material for supporting the reflecting surface H01Q 15/142 } ; conductors in general H01B 5/14-)
- U H01Q 1/42
 - Housings not intimately mechanically associated with radiating elements, e.g. radome
- H01Q 1/422
 - • {comprising two or more layers of dielectric material (-H01Q 1/425 takes precedence-)}
- H01Q 1/44
 - using equipment having another main function to serve additionally as an aerial; {Means for giving an aerial anaesthetic aspect} (-H01Q 1/28 to H01Q 1/34 take precedence-)
- H01Q 1/46
 - • Electric supply lines or communication lines{-circuits for signal transmission via power distribution lines H04B 3/56-}
- H01Q 1/48
 - Earthing means; Earth screens; Counterpoises (-earthing pins H01R 4/66-)

- H01Q 1/50
 - Structural association of aerials with earthing switches, lead-in devices or lightning protectors (-lead-in devices [H01B](#) ; lightning protectors, switches [H01H](#)-)
- H01Q 1/52
 - Means for reducing coupling between aerials; Means for reducing coupling between an aerial and another structure{{(-absorbing means [H01Q 17/00](#)-)}
- U H01Q 1/521
 - • {reducing the coupling between adjacent antennas}
- H01Q 1/525
 - • • {between emitting and receiving antennas (-feed-through nulling for radar [G01S 7/038](#)-)}
- H01Q 1/526
 - • {Electromagnetic shields (-anechoic chambers [G01R 29/105](#) ; shielding of instruments [G12B 17/00](#) , of CRT [H01J 29/867](#) , of electrical apparatus or components [H05K 9/00](#)-)}
- H01Q 1/528
 - • {reducing the reradiation of a support structure (-in a parabolic reflector antenna [H01Q 19/023](#)-)}
- H01Q 3/00**

Arrangements for changing or varying the orientation or the shape of the directional pattern of the waves radiated from an aerial or aerial system{{(-means for positioning [H01Q 1/125](#)-)}
- H01Q 3/005
 - {using remotely controlled aerial positioning or scanning (-remote control in general [G08C](#)-)}
- H01Q 3/12
 - using mechanical relative movement between primary active elements and secondary devices of aerials or aerial systems{{(-positioning [H01Q 1/1264](#)-)}
- H01Q 3/26
 - varying the relative phase or relative amplitude of energisation between two or more active radiating elements; varying the distribution of energy across a radiating aperture ({ [H01Q 3/12](#) } , [H01Q 3/22](#) , [H01Q 3/24](#) take precedence; { use of steered beams for mobile service area coverage [H04Q7/3615](#))}
- H01Q 3/2605
 - • {Array of radiating elements provided with a feedback control over the element weights, e.g. adaptive arrays (-tracking [G01S 3/42](#)-)}
- H01Q 3/2664
 - • {electrically moving the phase centre of a radiating element in the focal plane of a focussing device (-switching [H01Q 3/245](#) , phased-array feeds [H01Q 3/2658](#)-)}
- H01Q 3/267
 - • {Phased-array testing or checking devices (-measuring radiation diagrams of aerials [G01R 29/10](#)-)}
- H01Q 3/2676
 - • {Optically controlled phased array (-optical fibre networks [H03H 2/003](#)-)}
- U H01Q 3/2682
 - • {Time delay steered arrays}
- H01Q 3/2694
 - • • {using also variable phase-shifters (-[H01Q 3/2688](#) takes precedence-)}
- H01Q 3/30
 - • varying the {relative}phase {between the radiating elements of an array (-[H01Q 3/2605](#) , [H01Q 3/2658](#) , [H01Q 3/2682](#) , [H01Q 3/44](#) take precedence-)}
- H01Q 3/34
 - • • by electrical means (-active lenses or reflecting arrays [H01Q 3/46](#)-)
- H01Q 3/36
 - • • • with variable phase-shifters{{(-combined with time delay devices [H01Q 3/2682](#)-)}
- H01Q 3/42
 - • • • using frequency-mixing{{(-[H01Q 3/2676](#) takes precedence-)}
- U H01Q 3/44
 - varying the electric or magnetic characteristics of reflecting, refracting, or diffracting devices associated with the radiating element
- H01Q 3/443
 - • {varying the phase velocity along a leaky transmission line (-frequency scanning [H01Q 3/22](#) ; non-resonant leaky-waveguide or transmission-line aerials [H01Q 13/20](#)-)}

H01Q 5/00

Arrangements for simultaneous operation of aerials on two or more different wavebands, { e.g. dual-**band** or multi-band **like** arrangements **for broad wavebands** } (~~length of elements adjustable H01Q 9/14 ; combinations of separate active aerial units operating in different wavebands and connected to a common feeder system H01Q 21/30 ; { non-simultaneous operation of aerials with adjustable lengths or elements H01Q 9/14 ; broad/multi-band operation in general without specific features H01Q 5/00 }~~)

- D H01Q 5/0003 · {Single aerial units operating on two or more wavebands(H01Q 5/02 takes precedence)}
- WARNING
This group is no longer used for the classification of new documents as from September 1, 2011. The back log of this group is being continuously reclassified to subgroups H01Q 5/001, H01Q 5/0024 , H01Q 5/0072 and H01Q 5/0093
- D H01Q 5/0006 · {Imbricated structures(H01Q 5/02 takes precedence)}
- WARNING
This group and subgroups thereof are no longer used for the classification of new documents as from September 1, 2011. The back log of these groups is being continuously reclassified to subgroups H01Q 5/001, H01Q 5/0024 , H01Q 5/0072 and H01Q 5/0093
- D H01Q 5/001 · {Characterized by having two or more different wavebands}
- WARNING
Not complete, pending reclassification. See also H01Q 5/0003 and H01Q 5/0006
- D H01Q 5/0013 · {RF wavebands combined with non-RF wavebands, e.g. infrared or optical}
- D H01Q 5/0017 · {Ultra-wide-band or pulse systems, e.g. multiple resonances systems(H01Q 9/005 takes precedence)}
- D H01Q 5/002 · {Achieving other properties, e.g. polarisation or beam width over two or more different wavebands}
- D H01Q 5/0024 · {Arrangements or measures for achieving the different wavebands}
- WARNING
Not complete, pending reclassification. See also H01Q 5/0003 and H01Q 5/0006
- D H01Q 5/0027 · {Single fed radiating element, or connected radiating elements at least one of which is fed}
- D H01Q 5/0031 · . . {using frequency dependent circuits, e.g. capacitors, trap circuits}
- D H01Q 5/0034 · . . . {within a radiating element or between connected radiating elements}
- D H01Q 5/0037 · . . . {between a radiating element and ground}
- D H01Q 5/0041 · . . . {at the feed, e.g. for impedance matching}
- D H01Q 5/0044 · . . {using different modes(H01Q 5/0031 takes precedence)}
- D H01Q 5/0048 · . . . {using two or more simultaneous feed points on a same radiating element or on the connected radiating elements}
- D H01Q 5/0051 · . . . {using a single feed point}
- D H01Q 5/0055 · {Creating different current paths, e.g. of the same type}
- D H01Q 5/0058 · {Branching current paths of the same type}
- D H01Q 5/0062 · {Combination of a fed and one or more additional parasitic elements}

- D H01Q 5/0065 . . . {At least two additional elements}
- D H01Q 5/0068 . . . {the additional element itself having dual- or multi-band characteristics}
- D H01Q 5/0072 . {Imbricated or interleaved structures; Structures otherwise combined or electromagnetically coupled, e.g. comprising two or more non-connected fed radiating elements (same feed H01Q 21/30 ; independent non-interacting antennas H01Q 21/28)}
- WARNING
Not complete, pending reclassification. See also H01Q 5/0003 and H01Q 5/0006
- D H01Q 5/0075 . . {using two or more imbricated arrays (H01Q 5/0089 takes precedence)}
- D H01Q 5/0079 . . {using two or more feeds in association with a same reflecting, diffracting or refracting device}
- D H01Q 5/0082 . . . {with a coaxial arrangement of the feeds}
- D H01Q 5/0086 . . {Combinations of dipole type aerials}
- D H01Q 5/0089 . . . {with parasitic elements not for dual- or multi-band, e.g. imbricated Yagi aerials}
- D H01Q 5/0093 . {Arrangement for broad- or multi-band operation concerning feeding or matching (H01Q 5/0041 takes precedence)}
- WARNING
Not complete, pending reclassification. See also H01Q 5/0003 and H01Q 5/0006
- D H01Q 5/0096 . . {For horn or waveguide antennas}
- D H01Q 5/01 . Resonant aerials
- D H01Q 5/02 . . for operation of centre-fed aerials which comprise a single, or two or more collinear, substantially straight elongated active elements
- N H01Q 5/10 . Resonant aerials
- N H01Q 5/15 . . for operation of centre-fed aerials comprising one or more collinear, substantially straight or elongated active elements
- N H01Q 5/20 . characterised by the operating wavebands
- N H01Q 5/22 . . RF wavebands combined with non-RF wavebands, e.g. infrared or optical
- N H01Q 5/25 . . Ultra-wideband [UWB] systems, e.g. multiple resonance systems; Pulse systems
- N H01Q 5/28 . . Arrangements for establishing polarisation or beam width over two or more different wavebands
- N H01Q 5/30 . Arrangements for providing operation on different wavebands
- N H01Q 5/307 . . Individual or coupled radiating elements, each element being fed in an unspecified way
- N H01Q 5/314 . . . using frequency dependent circuits or components, e.g. trap circuits or capacitors
- N H01Q 5/321 within a radiating element or between connected radiating elements
- N H01Q 5/328 between a radiating element and ground
- N H01Q 5/335 at the feed, e.g. for impedance matching
- N H01Q 5/342 . . . for different propagation modes (H01Q 5/314 takes precedence)
- N H01Q 5/35 using two or more simultaneously fed points
- N H01Q 5/357 using a single feed point
- N H01Q 5/364 Creating multiple current paths
- N H01Q 5/371 Branching current paths

- N H01Q 5/378
- • Combination of fed elements with parasitic elements
- N H01Q 5/385
- • • Two or more parasitic elements
- N H01Q 5/392
- • • the parasitic elements having dual-band or multi-band characteristics
- N H01Q 5/40
- Imbricated or interleaved structures; Combined or electromagnetically coupled arrangements, e.g. comprising two or more non-connected fed radiating elements
- N H01Q 5/42
- • using two or more imbricated arrays ([H01Q 5/49](#) takes precedence)
- N H01Q 5/45
- • using two or more feeds in association with a common reflecting, diffracting or refracting device
- N H01Q 5/47
- • • with a coaxial arrangement of the feeds
- N H01Q 5/48
- • Combinations of two or more dipole type aerials
- N H01Q 5/49
- • • with parasitic elements used for purposes other than for dual-band or multi-band, e.g. imbricated Yagi aerials
- N H01Q 5/50
- Feeding or matching arrangements for broad-band or multi-band operation
- N H01Q 5/55
- • for horn or waveguide aerials
- U H01Q 7/00**
- Loop aerials with a substantially uniform current distribution around the loop and having a directional radiation pattern in a plane perpendicular to the plane of the loop**
- H01Q 7/005
- {with variable reactance for tuning the antenna (-tuning resonant circuits [H03J](#)-)}
- H01Q 7/04
- Screened aerials (-[H01Q 7/02](#) , [H01Q 7/06](#) take precedence-)
- H01Q 7/06
- with core of ferromagnetic material (-[H01Q 7/02](#) takes precedence-)
- H01Q 9/00**
- Electrically-short aerials having dimensions not more than twice the operating wavelength and consisting of conductive active radiating elements (-loop aerials [H01Q 7/00](#) ; waveguide horns or mouths [H01Q 13/00](#) ; slot aerials [H01Q 13/00](#) ; combinations of active elements with secondary devices to give desired directional characteristic [H01Q 19/00](#) ; combinations of two or more active elements [H01Q 21/00](#)-)**
- U H01Q 9/04
- Resonant aerials
- H01Q 9/0407
- • {Substantially flat resonant element parallel to ground plane, e.g. patch antenna (-dipole [H01Q 9/285](#) ; monopole [H01Q 9/40](#)-)}
- H01Q 9/0421
- • • {with a shorting wall or a shorting pin at one end of the element (-[H01Q 9/0414](#) takes precedence-)}
- H01Q 9/045
- • • {with particular feeding means (-for circular polarisation [H01Q 9/0428](#)-)}
- U H01Q 9/06
- • Details
- H01Q 9/065
- • • {Microstrip dipole antennas (-patch antenna [H01Q 9/0407](#)-)}
- H01Q 9/14
- • • Length of element or elements adjustable (-telescopic elements [H01Q 1/10](#)-)
- H01Q 9/16
- • with feed intermediate between the extremities of the aerial, e.g. centre-fed dipole (-[H01Q 9/44](#) takes precedence-)
- H01Q 9/20
- • • Two collinear substantially straight active elements; Substantially straight single active elements (-[H01Q 9/28](#) takes precedence-)
- H01Q 9/26
- • • with folded element or elements, the folded parts being spaced apart a small fraction of operating wavelength (-resonant loop aerials [H01Q 7/00](#)-)
- H01Q 9/28
- • • Conical, cylindrical, cage, strip, gauze, or like elements having an extended radiating surface; Elements comprising two conical surfaces having collinear axes and adjacent apices and fed by two-conductor transmission lines (-biconical horns [H01Q 13/04](#)-)

- H01Q 9/285
- • • {Planar dipole (~~H01Q 9/065~~ takes precedence; patch antenna [H01Q 9/0407](#)-)}
- H01Q 9/30
- • with feed to end of elongated active element, e.g. unipole (~~H01Q 9/44~~ takes precedence-)
- H01Q 9/32
- • • Vertical arrangement of element (~~H01Q 9/40~~ takes precedence-)
- H01Q 9/38
- • • with counterpoise (-with counterpoise comprising elongated elements coplanar with the active element [H01Q 9/44](#)-)
- H01Q 9/44
- • with plurality of divergent straight elements, e.g. V-dipole, X-aerial; with plurality of elements having mutually inclined substantially straight portions (~~turnstile aerials [H01Q 21/26](#)~~-)
- H01Q 11/00**
- Electrically-long aerials having dimensions more than twice the shortest operating wavelength and consisting of conductive active radiating elements (-leaky waveguide aerials, slot aerials [H01Q 13/00](#) ; combinations of active elements with secondary devices to give desired directional characteristic [H01Q 19/00](#) ; aerial arrays or systems [H01Q 21/00](#)-)**
- U H01Q 11/02
- Non-resonant aerials, e.g. travelling-wave aerial
- H01Q 11/04
- • with parts bent, folded, shaped, screened, or electrically loaded to obtain desired phase relation of radiation from selected sections of the aerial (~~rhombic aerials, V-aerials [H01Q 11/06](#)~~-)
- H01Q 11/10
- • Log-periodic aerials {periodic aerials, e.g. length or spacing of elements according to a given law}(~~H01Q 11/08~~ takes precedence-)
- H01Q 13/00**
- Waveguide horns or mouths; Slot aerials; Leaky-waveguide aerials; Equivalent structures causing radiation along the transmission path of a guided wave{ multimode aerials [H01Q 25/04](#)-}**
- U H01Q 13/02
- Waveguide horns
- H01Q 13/0208
- • {Corrugated horns (~~waveguide mouth antenna with corrugated flange [H01Q 13/065](#) ; manufacturing details [H01Q 13/0283](#)~~-)}
- H01Q 13/0225
- • • {of non-circular cross-section (~~H01Q 13/0216~~ takes precedence-)}
- H01Q 13/0233
- • {Horns fed by a slotted waveguide array (~~biconical horns [H01Q 13/06](#)~~-)}
- H01Q 13/0241
- • {radiating a circularly polarised wave (~~H01Q 13/0258~~ takes precedence; polarisation converters [H01Q 15/244](#) , in a waveguide [H01P 1/17](#)-)}
- H01Q 13/025
- • {Multimode horn antennas; Horns using higher mode of propagation (~~H01Q 13/0241~~ takes precedence; multiple beam [H01Q 25/04](#)-)}
- H01Q 13/0258
- • • {Orthomode horns (~~Orthomode transducers [H01P 1/161](#)~~-)}
- H01Q 13/0275
- • {Ridged horns (~~slot-line radiating ends [H01Q 13/085](#)~~-)}
- H01Q 13/04
- • Biconical horns (~~biconical dipoles comprising two conical surfaces having collinear axes and adjacent apices and fed by a two-conductor transmission line [H01Q 9/28](#)~~-)
- H01Q 13/06
- Waveguide mouths (~~horns [H01Q 13/02](#)~~-)
- U H01Q 13/10
- Resonant slot aerials
- H01Q 13/103
- • {with variable reactance for tuning the antenna (~~tuning resonant circuits [H03J](#)~~-)}
- H01Q 13/106
- • {Microstrip slot antennas (~~patch antenna elements [H01Q 9/0407](#)~~-)}
- H01Q 13/18
- • the slot being backed by, or formed in boundary wall of, a resonant cavity (~~longitudinally slotted cylinder [H01Q 13/12](#)~~-); {Open cavity antennas}
- H01Q 13/20
- Non-resonant leaky-waveguide or transmission-line aerials; Equivalent structures causing radiation along the transmission path of a guided wave{ varying the phase velocity [H01Q 3/443](#) ; near-field transmission systems using leaky cable [H04B 5/0018](#)-}

- H01Q 13/22
- Longitudinal slot in boundary wall of waveguide or transmission line (~~H01Q 13/203~~ takes precedence-)
- H01Q 13/24
- constituted by a dielectric or ferromagnetic rod or pipe (~~H01Q 13/28~~ takes precedence-)
- H01Q 13/28
- comprising elements constituting electric discontinuities and spaced in direction of wave propagation, e.g. dielectric elements, conductive elements forming artificial dielectric (~~Yagi aeriels H01Q 19/30~~ *Yagi aeriels H01Q 19/30*)
- H01Q 15/00**
- Devices for reflection, refraction, diffraction, or polarisation of waves radiated from an aerial, e.g. quasi-optical devices (-variable for purpose of altering directivity H01Q 3/00 ; arrangements of such devices for guiding waves H01P 3/20 ; variable for purpose of modulation H03C 7/02-)**
- H01Q 15/0006
- {Devices acting selectively as reflecting surface, as diffracting or as refracting device, e.g. frequency filtering or angular spatial filtering devices (~~H01Q 15/12~~ , ~~H01Q 15/22~~ , ~~H01Q 15/24~~ take precedence-)}
- U H01Q 15/0013
- {said selective devices working as frequency-selective reflecting surfaces, e.g. FSS, dichroic plates, surfaces being partly transmissive and reflective}
- H01Q 15/0033
- • {used for beam splitting or combining, e.g. acting as a quasi-optical multiplexer (~~H01Q 19/191~~ and ~~H01Q 19/195~~ take precedence-)}
- U H01Q 15/02
- Refracting or diffracting devices, e.g. lens, prism
- H01Q 15/10
- comprising three-dimensional array of impedance discontinuities, e.g. holes in conductive surfaces or conductive discs forming artificial dielectric (-leaky-waveguide aeriels ~~H01Q 13/28-~~)
- H01Q 15/12
- functioning also as polarisation filter (~~-polarisation converters H01Q 15/242-~~)
- H01Q 15/14
- Reflecting surfaces; Equivalent structures (~~-electromagnetic shields H01Q 1/526 ; radar-reflecting targets in general F41J 2/00-~~)
- H01Q 15/145
- {comprising a plurality of reflecting particles, e.g. radar chaff (-missiles of the signal type provided with means for disseminating radar-reflecting chaff ~~F42B 12/70-~~)}
- H01Q 15/147
- {provided with means for controlling or monitoring the shape of the reflecting surface (-for scanning ~~H01Q 3/01 ; aeriels or aerial systems providing multiple beamwidths H01Q 25/002-~~)}
- H01Q 15/148
- {with means for varying the reflecting properties (~~H01Q 15/147~~ takes precedence-)}
- U H01Q 15/16
- Curved in two dimensions, e.g. paraboloidal
- H01Q 15/165
- • {composed of a plurality of rigid panels (~~-collapsible H01Q 15/161-~~)}
- H01Q 15/18
- comprising plurality of mutually inclined plane surfaces, e.g. corner reflector (~~-H01Q 15/16~~ takes precedence-)
- H01Q 15/22
- functioning also as polarisation filter (~~-in combination with polarising devices H01Q 15/24-~~)
- H01Q 15/24
- Polarising devices; Polarisation filters (-devices functioning simultaneously both as polarisation filters and as refracting or diffracting devices or as reflectors ~~H01Q 15/12 , H01Q 15/22-~~)
- U H01Q 15/242
- {Polarisation converters}
- H01Q 15/244
- • {converting a linear polarised wave into a circular polarised wave (-guided wave ~~H01P 1/17-~~)}
- H01Q 15/246
- • {rotating the plane of polarisation of a linear polarised wave (-guided wave ~~H01P 1/165-~~)}
- H01Q 15/248
- • • {using a reflecting surface, e.g. twist reflector (-combination with a polarisation filter in dual reflector antennas ~~H01Q 19/195-~~)}

- H01Q 17/00** **Devices for absorbing waves radiated from an aerial; Combinations of such devices with active aerial elements or systems**~~{(-anechoic chambers [G01R 29/105](#)-)}~~
- H01Q 17/004 · {using non-directional dissipative particles, e.g. ferrite powders (~~H01Q 17/005~~ takes precedence; flake-like [H01Q 17/002](#)-)}
- H01Q 17/008 · {with a particular shape (~~H01Q 17/007~~ takes precedence-)}
- H01Q 19/00** **Combinations of primary active aerial elements and units with secondary devices, e.g. with quasi-optical devices, for giving the aerial a desired directional characteristic**~~{(-combination of horns with slotted waveguide array [H01Q 13/0233](#)-)}~~
- H01Q 19/02 · Details~~{(-fastening of an element on a boom [H01Q 1/1228](#)-)}~~
- U H01Q 19/021 · · {Means for reducing undesirable effects}
- H01Q 19/027 · · · {for compensating or reducing aperture blockage (~~offset feeding [H01Q 19/132](#) , [H01Q 19/192](#)~~-)}
- H01Q 19/06 · using refracting or diffracting devices, e.g. lens~~{(-radome [H01Q 1/42](#)-)}~~
- H01Q 19/08 · · for modifying the radiation pattern of a radiating horn in which it is located~~{(-corrugated horns [H01Q 13/0208](#) ; producing a circular polarisation [H01Q 13/0241](#)-)}~~
- H01Q 19/09 · · wherein the primary active element is coated with or embedded in a dielectric or magnetic material (~~protective material [H01Q 1/40](#) ; with variable characteristics [H01Q 3/44](#)-)}~~
- U H01Q 19/10 · using reflecting surfaces
- H01Q 19/102 · · {wherein the surfaces are of convex toroidal shape (~~biconical horns [H01Q 13/04](#)-)}~~}
- H01Q 19/104 · · {using a substantially flat reflector for deflecting the radiated beam, e.g. periscopic antennas (~~periscopic fed Cassegrain antennas [H01Q 19/191](#) ; passive relays [H04B 7/145](#)-)}~~}
- H01Q 19/108 · · {Combination of a dipole with a plane reflecting surface (~~H01Q 19/106~~ takes precedence; strip line [H01Q 9/065](#)-)}
- H01Q 19/12 · · wherein the surfaces are concave (~~H01Q 19/18~~ takes precedence-)
- H01Q 19/13 · · · the primary radiating source being a single radiating element, e.g. a dipole, a slot, a waveguide termination (~~H01Q 19/15~~ takes precedence-)
- H01Q 19/17 · · · the primary radiating source comprising two or more radiating elements (~~H01Q 19/15~~ , [H01Q 25/00](#) take precedence-)
- H01Q 19/18 · · having two or more spaced reflecting surfaces (~~{ surfaces of convex toroidal shape [H01Q 19/102](#) ; using a deflecting plane mirror [H01Q 19/104](#) ; splash plate feeds [H01Q 19/134](#) } ; producing pencil beam by two cylindrical reflectors with their focal lines orthogonally disposed [H01Q 19/20](#)-}~~)
- U H01Q 19/19 · · · comprising one main concave reflecting surface associated with an auxiliary reflecting surface
- H01Q 19/193 · · · · {with feed supported subreflector (~~splash plate feeds [H01Q 19/134](#)-)}~~}
- H01Q 19/28 · using a secondary device in the form of two or more substantially straight conductive elements (~~log-periodic aerials [H01Q 11/10](#) ; constituting a reflecting surface [H01Q 19/10](#)-}~~)
- H01Q 21/00** **Aerial arrays or systems** (~~producing a beam the orientation or the shape of the directional pattern of which can be changed or varied [H01Q 3/00](#) ; {combination of imbricated aerials or arrays operating on different wavebands [H01Q 5/0006](#) } [H01Q 5/40](#) ;} electrically-long aerials [H01Q 11/00](#)-)~~

NOTE

This group includes:

- arrays comprising two or more individually energised similar active aerial units spaced apart;
- combinations of different types of active aerials or arrays;
- combinations of substantially independent non-interacting active aerials or arrays.

- U H01Q 21/0006
 - {Particular feeding systems}
- H01Q 21/0031
 - • {Parallel-plate fed arrays; Lens-fed arrays (-multibeam arrays [H01Q 25/008](#)-)}
- U H01Q 21/0037
 - • {linear waveguide fed arrays}
- H01Q 21/0043
 - • • {Slotted waveguides (-combination with horns [H01Q 13/0233](#)-)}
- H01Q 21/0075
 - • {Stripline fed arrays (-[H01Q 21/065](#) takes precedence-)}
- H01Q 21/0087
 - {Apparatus or processes specially adapted for manufacturing antenna arrays (-manufacturing waveguides [H01P 11/00](#)-)}
- U H01Q 21/06
 - Arrays of individually energised active aerial units similarly polarised and spaced apart
- U H01Q 21/061
 - • {Two dimensional planar arrays}
- H01Q 21/062
 - • • {using dipole aerials; (-[H01Q 21/067](#) , [H01Q 21/068](#) take precedence-)}
- H01Q 21/064
 - • • {using horn or slot aerials (-slotted waveguides arrays [H01Q 21/005](#)-)}
- H01Q 21/068
 - • • {using parallel coplanar travelling wave or leaky wave aerial units (-[H01Q 21/065](#) takes precedence-)}
- H01Q 21/08
 - • the units being spaced along or adjacent to a rectilinear path{(-waveguide fed [H01Q 21/0037](#)-)}
- H01Q 21/12
 - • • Parallel arrangements of substantially straight elongated conductive units (-travelling-wave aerials comprising transmission line loaded with transverse elements, e.g. "fishbone" aerial [H01Q 11/04](#)-)}
- H01Q 21/20
 - • the units being spaced along or adjacent to a curvilinear path{ slotted waveguide arrays [H01Q 21/005](#) ; circularly or helically slotted waveguides [H01Q 21/0062](#)-}
- H01Q 21/205
 - • • {providing an omnidirectional coverage (-turnstile aerials [H01Q 21/26](#)-)}
- H01Q 21/24
 - Combinations of aerial elements or aerial units polarised in different directions for transmitting or receiving circularly and elliptically polarised waves or waves linearly polarised in any direction{(-circularly polarised patch antennas [H01Q 9/0428](#) ; circularly polarised horns [H01Q 13/0241](#) ; cross-polarised horns [H01Q 13/0258](#) ; polarisation converters [H01Q 15/242](#) ; cross-polarised rear feeds [H01Q 19/136](#) ; crossed polarisation dual antenna [H01Q 25/001](#)-)}
- H01Q 21/245
 - • {provided with means for varying the polarisation (-polarising devices [H01Q 15/24](#) ; tracking by comparing linear polarisation compounds [G01S 3/146](#) ; reducing depolarisation effects [H04B 7/00](#) polarisation diversity [H04B 7/10](#)-)}
- H01Q 21/28
 - Combinations of substantially independent non-interacting aerial units or systems{(-multiple beam [H01Q 25/00](#)-)}
- H01Q 21/29
 - Combinations of different interacting aerial units for giving a desired directional characteristic (-[H01Q 25/00](#) takes precedence-)
- H01Q 21/293
 - • {one unit or more being an array of identical aerial elements (-adaptive arrays [H01Q 3/2605](#)-)}
- H01Q 25/00**
 - Aerials or aerial systems providing at least two radiating patterns (-arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#)-)**

- H01Q 25/001 · {Crossed polarisation dual antennas (-orthomode horns [H01Q 13/0258](#) ; cross-polarised rear feeds [H01Q 19/136](#) ; orthomode transducers [H01P 1/161](#)-)}
- H01Q 25/005 · {providing two patterns of opposite direction; back to back antennas (-[H01Q 25/004](#) takes precedence)}
- H01Q 25/007 · {using two or more primary active elements in the focal region of a focusing device (-for operation on different wavebands ~~H01Q 5/0079~~ [H01Q 5/22](#))}
- H01Q 25/02 · providing sum and difference patterns (-multimode aerials [H01Q 25/04](#)-)
- H01Q 25/04 · Multimode aerials{(-corrugated horns [H01Q 13/0208](#)-)}

Project: N/A (H01R)

- U H01R 4/00** **Electrically-conductive connections between two or more conductive members in direct contact and means for effecting or maintaining such contact (details of disengageable contacts of two-part coupling devices [H01R 13/00](#); two-part coupling devices [H01R 12/70](#), [H01R 24/00](#) - [H01R 33/00](#); flexible or turnable line connectors [H01R 35/00](#); non rotary current collectors [H01R 41/00](#))**
- U H01R 4/10 · effected solely by twisting, wrapping, bending, crimping, or other permanent deformation
- U H01R 4/18 · · by crimping {([H01R 4/01](#), [H01R 4/2495](#) take precedence; for coaxial cables [H01R 9/0518](#))}
- H01R 4/182 · · · {-for flat conductive elements, e.g. flat cables ([H01R 4/01](#) takes precedence)}
- H01R 4/183 · · · {-for cylindrical elongated bodies, e.g. cables having circular cross-section ([H01R 4/01](#) takes precedence)}
- U H01R 4/28 · Clamped connections, spring connections (made by means of terminals specially adapted for contact with, or insertion into, printed circuits [H01R 12/00](#))
- U H01R 4/30 · · utilising a screw or nut clamping member ([H01R 4/50](#) takes precedence; utilising a clamping member acted on by screw or nut [H01R 4/38](#); {for coaxial cables [H01R 9/0521](#)})
- U H01R 4/36 · · · Conductive members located under tip of screw
- U H01R 4/363 · · · · {with intermediate part between tip and conductive member}
- H01R 4/366 · · · · · {-intermediate part attached to the tip of the screw}
- H01R 4/54 · Bayonet or keyhole
- U H01R 9/00** **Connectors and connecting arrangements providing a plurality of mutually insulated connections; Terminals or binding posts mounted upon a base or in a case; Terminal strips; Terminal blocks (details of direct connections or connections using contact members penetrating insulation [H01R 4/00](#); { individual connecting parts [H01R 11/00](#);} specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures [H01R 12/00](#); coupling devices [H01R 12/70](#), [H01R 24/00](#)-[H01R 33/00](#); flexible or turnable line connectors [H01R 35/00](#))**
- U H01R 9/03 · Connectors arranged to contact a plurality of the conductors of a multiconductor cable, {e.g. tapping connections}
- H01R 9/032 · · {-for shielded multiconductor cable (coaxial cables with one conductor surrounded by shield [H01R 9/05](#); flat shielded cables [H01R 12/594](#))}

WARNING

This group and its subgroups are no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and its subgroups is being continuously reclassified to [H01R 13/658](#) and its subgroups

- H01R 9/034 · · · {-connection of the shield to an additional grounding conductor}
- H01R 9/035 · · · {-twisted pair surrounded by shield}
- H01R 9/037 · · · {-connection to shield by action of a resilient member}
- H01R 9/038 · · · {-each conductor being individually surrounded by shield}
- U H01R 9/07 · · for flat or ribbon cables { or flexible printed circuits}
- WARNING
- This group and its subgroups is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and its subgroups is being continuously reclassified to [H01R 12/00](#), [H01R 12/50](#) and their respective subgroups.
- H01R 9/0778 · · · {-for shielded flat cable}
- H01R 9/0785 · · · · {-connection of the shield to an additional grounding conductor}
- H01R 9/0792 · · · · {-each conductor being individually surrounded by shield, e.g. multiple coaxial cables in flat structure}
- H01R 9/22 · Bases, e.g. strip, block, panel {(for printed circuits [H01R 12/50](#)-)}
- H01R 11/00** **Connectors providing two or more spaced connecting locations for conductive members which are thereby interconnected; End pieces for wires or cables, supported by the wire or cable and for facilitating electrical connection to some other wire, terminal, or conductive member (connections between members in direct contact [H01R 4/00](#) ; structural associations of a plurality of mutually-insulated electrical connecting elements [H01R 9/00](#) ; coupling devices [H01R 12/70](#), [H01R 24/00](#)-[H01R 29/00](#), [H01R 33/00](#) ; flexible or turnable line connectors [H01R 35/00](#)-)**
- U H01R 12/00 **Structural associations of a plurality of mutually-insulated electrical connecting elements, specially adapted for printed circuits, e.g. printed circuit boards [PCBs], flat or ribbon cables, or like generally planar structures, e.g. terminal strips, terminal blocks; Coupling devices specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures; Terminals specially adapted for contact with, or insertion into, printed circuits, flat or ribbon cables, or like generally planar structures (printed connections to, or between, printed circuits [H05K 1/11](#))**
- WARNING
- Not complete pending completion of a reclassification; see also groups [H01R 9/07](#), [H01R 9/09](#), [H01R 23/66](#), [H01R 23/68](#), [H01R 23/70](#), [H01R 23/72](#) and their respective subgroups
- U H01R 12/50 · Fixed connections
- WARNING
- This group and its subgroups are not complete pending completion of a reclassification; see also groups [H01R 9/07](#), [H01R 9/09](#) and their respective subgroups
- U H01R 12/51 · · for rigid printed circuits or like structures
- H01R 12/515 · · · {-Terminal blocks providing connections to wires or cables}
- U H01R 12/52 · · · connecting to other rigid printed circuits or like structures
- H01R 12/523 · · · · {-by an interconnection through aligned holes in the boards or multilayer board}
- H01R 12/526 · · · · {-the printed circuits being on the same board (with plated through holes [H05K 3/42](#))}
- U H01R 12/55 · · · characterized by the terminals

- U H01R 12/58
 - • • terminals for insertion into holes
- H01R 12/585
 - • • • {-Terminals having a press fit or a compliant portion and a shank passing through a hole in the printed circuit board}
- U H01R 12/59
 - • for flexible printed circuits, flat or ribbon cables or like structures
- H01R 12/592
 - • • {-connections to contact elements}
- H01R 12/594
 - • • {-for shielded flat cable}
- H01R 12/596
 - • • • {-Connection of the shield to an additional grounding conductor, e.g. drain wire}
- H01R 12/598
 - • • • {-Each conductor being individually surrounded by shield, e.g. multiple coaxial cables in flat structure}
- U H01R 12/61
 - • • connecting to flexible printed circuits, flat or ribbon cables or like structures
- H01R 12/613
 - • • • {-by means of interconnecting elements}
- H01R 12/616
 - • • • • {-having contacts penetrating insulation for making contact with conductors, e.g. needle points (in general [H01R 4/24](#))}
- U H01R 12/65
 - • • characterized by the terminal
- U H01R 12/67
 - • • • insulation penetrating terminals
- H01R 12/675
 - • • • • {-with contacts having at least a slotted plate for penetration of cable insulation, e.g. insulation displacement contacts for round conductor flat cables (in general [H01R 4/2416](#))}
- U H01R 12/70
 - Coupling devices

WARNING

This group and its subgroups are not complete pending completion of a reclassification; see also groups [H01R 23/66](#), [H01R 23/68](#), [H01R 23/70](#), [H01R 23/72](#) and their respective subgroups
- H01R 12/7005
 - • {-Guiding, mounting, polarizing or locking means; Extractors (for printed circuit boards [H05K](#))}
- H01R 12/7011
 - • • {-Locking or fixing a connector to a PCB}
- H01R 12/7017
 - • • • {-Snap means}
- H01R 12/7023
 - • • • • {-integral with the coupling device}
- H01R 12/7029
 - • • • • {-not integral with the coupling device}
- H01R 12/7035
 - • • • • {-involving non-elastic deformation, e.g. plastic deformation, melting ([H01R 12/7064](#) takes precedence)}
- H01R 12/7041
 - • • • • {-Gluing or taping}
- H01R 12/7047
 - • • • • {-with a fastener through a screw hole in the coupling device}
- H01R 12/7052
 - • • • • {-characterised by the locating members}
- H01R 12/7058
 - • • • • {-characterised by the movement, e.g. pivoting, camming or translating parallel to the PCB}
- H01R 12/7064
 - • • • • {-Press fitting}
- H01R 12/707
 - • • • • {-Soldering or welding}
- H01R 12/7076
 - • {-for connection between PCB and component, e.g. display (plugging components in general [H05K 7/10](#))}
- H01R 12/7082
 - • {-Coupling device supported only by cooperation with PCB}
- H01R 12/7088
 - • {-Arrangements for power supply}
- H01R 12/7094
 - • {-with switch operated by engagement of PCB}
- U H01R 12/71
 - • for rigid printing circuits or like structures

- H01R 12/712
 - • • {-co-operating with the surface of the printed circuit or with a coupling device exclusively provided on the surface of the printed circuit ([H01R 12/72](#) takes precedence)}
- H01R 12/714
 - • • • {-with contacts abutting directly the printed circuit; Button contacts therefore provided on the printed circuit}
- H01R 12/716
 - • • • {-Coupling device provided on the PCB}
- H01R 12/718
 - • • • • {-Contact members provided on the PCB without an insulating housing (contacts for abutting [H01R 12/714](#))}
- U H01R 12/72
 - • • coupling with the edge of the rigid printed circuits or like structures
- H01R 12/721
 - • • • {-cooperating directly with the edge of the rigid printed circuits}
- H01R 12/722
 - • • • {-coupling devices mounted on the edge of the printed circuits}
- H01R 12/724
 - • • • • {-containing contact members forming a right angle}
- H01R 12/725
 - • • • • {-containing contact members presenting a contact carrying strip, e.g. edge-like strip}
- H01R 12/727
 - • • • • {-Coupling devices presenting arrays of contacts}
- H01R 12/728
 - • • • • {-Coupling devices without an insulating housing provided on the edge of the PCB}
- U H01R 12/73
 - • • • connecting to other rigid printed circuits or like structures
- H01R 12/732
 - • • • • {-Printed circuits being in the same plane}
- H01R 12/735
 - • • • • {-Printed circuits including an angle between each other}
- H01R 12/737
 - • • • • • {-Printed circuits being substantially perpendicular to each other (for printed connections [H05K 3/366](#) takes precedence)}
- U H01R 12/77
 - • for flexible printed circuits, flat or ribbon cables or like structures
- H01R 12/771
 - • • {-Details}
- H01R 12/772
 - • • • {-Strain relieving means}
- H01R 12/774
 - • • • {-Retainers}
- H01R 12/775
 - • • • • {-Ground or shield arrangements (in general [H01R 13/658](#))}
- H01R 12/777
 - • • {-Coupling parts carrying pins, blades or analogous contacts ([H01R 12/78](#), [H01R 12/79](#) take precedence)}
- H01R 12/778
 - • • {-Coupling parts carrying sockets, clips or analogous counter-contacts ([H01R 12/78](#), [H01R 12/79](#) take precedence)}
- U H01R 12/82
 - • connected with low or zero insertion force
- U H01R 12/85
 - • • contact pressure producing means, contacts activated after insertion of printed circuits or like structures
- H01R 12/853
 - • • • {-Fluid activated}
- H01R 12/856
 - • • • • {-activated by shape memory material}
- H01R 13/00**
 - Details of coupling devices of the kinds covered by groups [H01R 12/70](#) or [H01R 24/00-H01R 33/00](#) {(electro-optical connectors [G02B 6/24](#)-)}**
- U H01R 13/02
 - Contact members
- U H01R 13/10
 - • Sockets for co-operation with pins or blades
- U H01R 13/11
 - • • Resilient sockets (carrying separate resilient parts [H01R 13/15](#))
- H01R 13/111
 - • • • {-co-operating with pins having a circular transverse section}
- H01R 13/112
 - • • • {-forked sockets having two legs}
- H01R 13/113
 - • • • • {-co-operating with pins or blades having a rectangular transverse section}
- H01R 13/114
 - • • • • {-co-operating with pins or blades having a square transverse section}

- H01R 13/193
 - • Means for increasing contact pressure at the end of engagement of coupling part, { e.g. zero insertion force or no friction (combined with printed circuit boards [H01R 23/6813](#))}
- U H01R 13/22
 - • Contacts for co-operating by abutting
- U H01R 13/24
 - • • resilient; resiliently-mounted
- H01R 13/2407
 - • • • {-characterized by the resilient means}
- H01R 13/2414
 - • • • • {-conductive elastomers}
- H01R 13/2421
 - • • • • {-using coil springs}
- H01R 13/2428
 - • • • • {-using meander springs}
- H01R 13/2435
 - • • • • {-with opposite contact points, e.g. C beam}
- H01R 13/2442
 - • • • • {-with a single cantilevered beam}
- H01R 13/245
 - • • • • {-by stamped-out resilient contact arm}
- H01R 13/2457
 - • • • • {-consisting of at least two resilient arms contacting the same counterpart}
- H01R 13/2464
 - • • • • {-characterized by the contact point}
- H01R 13/2471
 - • • • • {-pin shaped}
- H01R 13/2478
 - • • • • {-spherical}
- H01R 13/2485
 - • • • • {-for contacting a ball}
- H01R 13/2492
 - • • • • {-multiple contact points}
- H01R 13/26
 - • Pin or blade contacts for sliding co-operation on one side only {(for modular jack type connectors [H01R 24/62](#))}
- H01R 13/58
 - Means for relieving strain on wire connection, e.g. cord grip, { for avoiding loosening of connections between wires and terminals within a coupling device terminating a cable-(for flat or ribbon cables [H01R 12/771](#); for distribution boxes [H02G 3/0616](#))}
- U H01R 13/62
 - Means for facilitating engagement or disengagement of coupling parts or for holding them in engagement
- H01R 13/629
 - • Additional means for facilitating engagement or disengagement of coupling parts, e.g. aligning or guiding means, levers, gas pressure { electrical locking indicators, manufacturing tolerances-(separate tools or apparatus [H01R 43/26](#))}
- H01R 13/62905
 - • • {-comprising a camming member ([H01R 13/62933](#) and [H01R 13/641](#) take precedence)}
- H01R 13/62911
 - • • • {-U-shaped sliding element}
- H01R 13/62916
 - • • • • {-Single camming plate}
- H01R 13/62922
 - • • • • {-Pair of camming plates}
- H01R 13/62927
 - • • • • {-Comprising supplementary or additional locking means}
- H01R 13/62933
 - • • • • {-Comprising exclusively pivoting lever}
- H01R 13/62938
 - • • • • {-Pivoting lever comprising own camming means}
- H01R 13/62944
 - • • • • {-Pivoting lever comprising gear teeth}
- H01R 13/6295
 - • • • • {-Pivoting lever comprising means indicating incorrect coupling of mating connectors}
- H01R 13/62955
 - • • • • {-Pivoting lever comprising supplementary/additional locking means}
- H01R 13/62961
 - • • • • {-Pivoting lever having extendable handle}
- H01R 13/62966
 - • • • • {-Comprising two pivoting levers}
- H01R 13/62972
 - • • • • • {-Wherein the pivoting levers are two lever plates}
- H01R 13/62977
 - • • • • {-Pivoting levers actuating linearly camming means}

- H01R 13/62983
 - • • {-Linear camming means or pivoting lever for connectors for flexible or rigid printed circuit boards, flat or ribbon cables}
- H01R 13/62988
 - • • • {-Lever acting directly on flexible or rigid printed circuit boards, flat or ribbon cables, e.g. recess provided to this purpose on the surface or edge of the flexible or rigid printed circuit boards, flat or ribbon cables}
- H01R 13/62994
 - • • • {-Lever acting on a connector mounted onto the flexible or rigid printed circuit boards, flat or ribbon cables}
- U H01R 13/631
 - • • for engagement only
- H01R 13/6315
 - • • • {-allowing relative movement between coupling parts, e.g. floating connection (for coupling devices specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures, [H01R 12/91](#) takes precedence)}
- U H01R 13/648
 - Protective earth or shield arrangements on coupling devices (coaxially arranged shields [H01R 24/38](#)){ e.g. anti-static shielding}
- U H01R 13/658
 - • High frequency shielding arrangements, e.g. against EMI [Electro-Magnetic Interference] or EMP [Electro-Magnetic Pulse] {(coaxial coupling devices specially adapted for high frequency [H01R 24/40](#); for flat or ribbon cable connectors [H01R 12/774](#); for coaxial cable [H01R 9/05](#))}

WARNING
This group is not complete pending reclassification, see also [H01R 9/032](#), [H01R 13/658](#), [H01R 23/6873](#) and their respective subgroups
- H01R 13/65802
 - • • {-with resilient grounding means}

WARNING
This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 13/6582](#) and [H01R 13/6583](#)
- H01R 13/65805
 - • • {-using dielectric material made conductive, e.g. plastics material coated with metal}

WARNING
This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 13/6599](#)
- H01R 13/65807
 - • • {-and comprising shielding between neighboring signal paths}

WARNING
This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 13/6585](#) and [H01R 13/6586](#)
- U H01R 13/66
 - Structural association with built-in electrical component (Coupling devices having concentrically or coaxially-arranged contacts [H01R 24/38](#)-[H01R 24/56](#))
- U H01R 13/6608
 - • {-with built-in single component ([H01R 13/68](#), [H01R 13/70](#) take precedence)}
- H01R 13/6641
 - • • {-with diode (with LED [H01R 13/7175](#))}
- U H01R 13/665
 - • {-with built-in electronic circuit ([H01R 13/70](#), [H01R 13/719](#) take precedence)}
- H01R 13/6658
 - • • {-on printed circuit board ([H01R 13/6666](#) to [H01R 13/6691](#) take precedence)}

WARNING
This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 13/6466](#) and [H01R 13/6469](#)

- U H01R 13/70 · · with built-in switch
- U H01R 13/703 · · · operated by engagement or disengagement of coupling parts, {e.g. dual-continuity coupling part}(H01R 13/71 takes precedence)
- U H01R 13/7031 · · · · {Shorting, shunting or bussing of different terminals interrupted or effected on engagement of coupling part, e.g. for ESD protection, line continuity}
- H01R 13/7034 · · · · · {-the terminals being in direct electric contact separated by double sided connecting element (for printed circuit boards [H01R 12/7094](#)-)}
- U H01R 13/717 · · with built-in light source
- H01R 13/7172 · · · {-Conduits for light transmission}
- H01R 13/7175 · · · {-Light emitting diodes (LEDs)}
- H01R 13/7177 · · · {-filament or neon bulb}
- U H01R 23/00 Two-part coupling devices having four or more poles, with or without additional protective earth connection; Separate parts thereof**
- WARNING
This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 24/00](#) and its subgroups. See also **H01R107/00** as part of the indexing scheme associated with group [H01R 24/00](#) and its subgroups, relating to the number of poles in a two-part coupling device.
- H01R 23/005 · {-comprising means for reducing cross-talk, e.g. special layout of conductors between input and output pins (by shielding of neighboring signal paths [H01R 13/65807](#), [H01R 23/688](#); twisted pair cables [H01B 11/02](#); in line transmission systems [H04B 3/32](#); ground circuit layout on printed circuit boards [H05K 9/0039](#))}
- WARNING
This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 13/6461](#), [H01R 13/6473](#) and their respective subgroups
- H01R 23/02 · having parallelly-arranged contacts for sliding engagement with their counter-contacts
- WARNING
This group and it subgroups is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and it subgroups is being continuously reclassified to [H01R 24/00](#) and its subgroups. See also **H01R107/00** as part of the indexing scheme associated with group [H01R 24/00](#) and its subgroups, relating to the number of poles in a two-part coupling device.
- H01R 23/68 · for connection to or between printed circuits; { Non printed connecting arrangements of printed circuit boards (PCB's)-(H01R 23/668 takes precedence)}
- WARNING
This group and it subgroups is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and it subgroups is being continuously reclassified to [H01R 12/00](#), [H01R 12/70](#) and their respective subgroups.
- U H01R 23/6813 · · {with low or zero insertion force}
- H01R 23/6826 · · · {-Contact pressure producing means activated after insertion of PCB}
- H01R 23/6846 · · · · {-acting automatically by insertion of PCB}

- H01R 23/6873
- • {-adapted for high frequency}
- WARNING
This group and its subgroups are no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and its subgroups is being continuously reclassified to [H01R 13/646](#), [H01R 13/658](#) and their respective subgroups
- U H01R 23/70
- • co-operating with the edge of the printed circuit or with a counterpart provided on the edge of the printed circuit {([H01R 23/6813](#) takes precedence); Counterparts therefor; Special features of the edge of the board}
- U H01R 23/7005
- • • {Guiding, mounting, polarizing or locking means; Extractors (for printed circuit boards [H05K](#))}
- H01R 23/701
- • • • {-locking or fixing a connector to a PCB}
- H01R 23/7036
- • • • • {-Gluing or taping}
- H01R 23/7052
- • • • • {-characterised by the movement, e.g. pivoting, camming or translating parallel to the PCB}
- H01R 23/7094
- • • {-with switch operated by engagement of PCB}
- H01R 23/72
- • co-operating with the surface of the printed circuit or with a counterpart provided on the surface of the printed circuit ({ [H01R 23/6813](#), [H01R 23/70](#) take precedence)
- H01R 23/722
- • • {-with contacts abutting directly the printed circuit; Button contacts therefor provided on the printed circuit}
- H01R 23/725
- • • {-Counterparts provided on the PCB}
- H01R 23/727
- • • • {-Contact members provided on the PCB without an insulating housing (contacts for abutting [H01R 23/722](#))}
- U H01R 24/00**
- Two-part coupling devices, or either of their cooperating parts, characterised by their overall structure (specially adapted for printed circuits, flat or ribbon cables, or like structures [H01R 12/00](#); specially adapted for supporting apparatus [H01R 33/00](#))**
- NOTE
In this group, it is desirable to add the indexing codes of groups **H01R101/00** to **H01R107/00**
- WARNING
This group and its subgroups are not complete pending reclassification; see also groups [H01R 2201/16](#), [H01R 2201/16](#) and their respective subgroups, and [H01R 23/00](#), [H01R 23/26](#), [H01R 23/27](#)
- H01R 24/005
- {-requiring successive relative motions to complete the coupling, e.g. bayonet type}
- U H01R 24/38
- having concentrically or coaxially arranged contacts
- U H01R 24/40
- • specially adapted for high frequency
- U H01R 24/52
- • • mounted in or to a panel or structure
- H01R 24/525
- • • • {-Outlets}
- U H01R 24/54
- • • Intermediate parts, e.g. adapters, splitters or elbows
- H01R 24/542
- • • • {-Adapters}
- H01R 24/545
- • • • {-Elbows}
- H01R 24/547
- • • • {-Splitters}
- U H01R 24/56
- • • specially adapted to a specific shape of cables, e.g. corrugated cables, twisted pair cables, cables with two screens or hollow cables
- H01R 24/562
- • • • {-Cables with two screens}

- H01R 24/564 {-Corrugated cables}
- H01R 24/566 {-Hollow cables}
- H01R 24/568 {-Twisted pair cables}
- U H01R 25/00** **Coupling parts adapted for simultaneous co-operation with two or more identical counterparts, e.g. for distributing energy to two or more circuits (supported only by co-operation with a counterpart [H01R 31/00](#); with a holder adapted for supporting apparatus to which its counterpart is attached [H01R 33/88](#))**
- U H01R 25/14 . Rails or bus-bars constructed so that the counterparts can be connected thereto at any point along their length, {e.g. track lighting systems}{installation of bus bars [H02G 5/00](#)}
- H01R 25/145 . . {-Details, e.g. end pieces or joints ([H01R 25/147](#) takes precedence)}
- U H01R 39/00** **Rotary current collectors, distributors, or interrupters (cam-operated switches [H01H 19/00](#); structural association with dynamo-electric machine [H02K 13/00](#))**
- H01R 39/02 . Details { for dynamo electric machines-{for current collectors not particularly for dynamo electric machines [H01R 39/60](#), [H01R 39/64](#)}

Project: N/A (H01S)

- U H01S 1/00** **Lasers, i.e. devices for generation, amplification, modulation, demodulation, or frequency-changing, using stimulated emission, of electromagnetic waves of wavelength longer than that of infra-red waves**
- H01S 1/06 . gaseous,{i.e. beam masers(-atomic clocks [G04F 5/14](#) ; circuits using beam masers as a reference frequency for regulating frequency of oscillators [H03L 7/26](#) ; molecular or atomic beam generation [H05H 3/02](#)-)}
- H01S 3/00** **Lasers, i.e. devices for generation, amplification, modulation, demodulation, or frequency-changing, using stimulated emission, of infra-red, visible, or ultra-violet waves ({ stimulated Brillouin or Raman effects [H01S 3/30](#) } ; semiconductor lasers [H01S 5/00](#))**
- H01S 3/0007 . {Applications not otherwise provided for (-working metals or other materials by laser beam [B23K 26/00](#) ; using photons to produce a reactive propulsive thrust [F03H 3/00](#) ; optical recording of measured values in general [G01D 15/14](#) ; optics in general [G02B](#) ; holographic processes or apparatus [G03H](#) ; optical marking or sensing of data record carriers [G06K 7/10](#) to [G06K 7/14](#) , [G06K 15/12](#) ; injection heating of plasma by laser [H05H 1/22](#) ; acceleration of neutral particles by electromagnetic wave pressure [H05H 3/04](#)-)}
- H01S 3/0014 . {Monitoring arrangements not otherwise provided for (-photometry [G01J 1/00](#) , e.g. [G01J 1/4257](#) ; radiation pyrometry [G01J 5/00](#) ; measuring coherence of light [G01J 9/00](#) ; measuring wavelength of light [G01J 9/00](#) , e.g. [G01J 9/0246](#) ; measuring optical pulses [G01J 11/00](#) ; calorimetrically measuring power of laser beams [G01K 17/003](#)-)}
- H01S 3/005 . {Optical devices external to the laser cavity, specially adapted for lasers, e.g. for homogenisation of the beam or for manipulating laser pulses, e.g. pulse shaping (-shaping laser beam for working metal or other materials [B23K 26/06](#) ; optical elements, systems or apparatus in general [G02B](#)-)}
- H01S 3/0057 . {-Temporal shaping, e.g. pulse compression, frequency chirping (-soliton generation and propagation [G02F 1/3513](#) , [H01S 3/063](#) and [H01S 3/108](#)-)}
- H01S 3/0064 . {-Anti-reflection devices, e.g. optical isolators (-absorbing layers for marking or protecting purposes in laser working [B23K 26/0054](#) ; magneto-optical non-reciprocal devices [G02F 1/093](#) , [G02F 1/0955](#)-)}

- H01S 3/0092
 - • {Nonlinear frequency conversion, e.g. second harmonic generation [SHG]} or sum- or difference-frequency generation outside the laser cavity {-nonlinear frequency conversion per se [G02F 1/35](#)-}}
- H01S 3/02
 - Constructional details{- housings or packages of fibre lasers [H01S 3/06704](#)-}
- H01S 3/03
 - • of gas laser discharge tubes{- gas discharge tubes in general [H01J 17/00](#) , [H01J 61/00](#)-}
- H01S 3/034
 - • • Optical devices within, or forming part of, the tube, e.g. windows, mirrors {- reflectors having variable properties or position for initial adjustment of the resonator [H01S 3/086](#)-}
- H01S 3/0346
 - • • • {Protection of windows or mirrors against deleterious effects {- cooling arrangements [H01S 3/0401](#)-}}
- H01S 3/036
 - • • Means for obtaining or maintaining the desired gas pressure within the tube, e.g. by gettering, replenishing; Means for circulating the gas, e.g. for equalising the pressure within the tube ({ [H01S 3/031](#) takes precedence; cooling arrangements for gas lasers [H01S 3/041](#) ; gas dynamic lasers [H01S 3/0979](#) ; in general [H01J 17/22](#) , [H01J 61/24](#))}
- U H01S 3/04
 - • Cooling arrangements
- H01S 3/041
 - • • for gas lasers{-[H01S 3/0401](#) takes precedence-}
- H01S 3/042
 - • • for solid state lasers{-[H01S 3/0401](#) takes precedence-}
- U H01S 3/05
 - Construction or shape of optical resonators; Accomodation of active medium therein; Shape of active medium
- U H01S 3/06
 - • Construction or shape of active medium
- H01S 3/0602
 - • • {Crystal lasers or glass lasers {-[H01S 3/063](#) takes precedence-}}
- H01S 3/0606
 - • • • {with polygonal cross-section, e.g. slab, prism {-[H01S 3/0604](#) takes precedence-}}
- H01S 3/0612
 - • • • {Non-homogeneous structure {-[H01S 3/07](#) takes precedence-}}
- H01S 3/063
 - • • Waveguide lasers, {i.e. whereby the dimensions of the waveguide are of the order of the light wavelength{-waveguide gas lasers [H01S 3/0315](#)-}}
- U H01S 3/0632
 - • • • {Thin film lasers in which light propagates in the plane of the thin film}
- H01S 3/0635
 - • • • • {provided with a periodic structure, e.g. using distributed feed-back, grating couplers {-controlling, e.g. modulating distributed feed-back lasers [H01S 3/102](#)-}}
- H01S 3/067
 - • • • Fibre lasers{-optical pumping thereof [H01S 3/094003](#) ; controlling the output parameters [H01S 3/10](#) ; stabilisation of the output parameters [H01S 3/13](#) ; characterised by scattering effects, i.e. stimulated Brillouin or Raman effects, [H01S 3/302](#)-}
- H01S 3/06708
 - • • • • {Constructional details of the fibre, e.g. compositions, cross-section, shape or tapering {-optical fibres as passive waveguides [G02B 6/02](#)-}}
- H01S 3/06716
 - • • • • • {Fibre compositions {-per se [C03C 13/04](#)-} or doping with active elements{-lasing materials in general [H01S 3/14](#)-}}
- H01S 3/06725
 - • • • • • {Fibre characterized by a specific dispersion, e.g. for pulse shaping in soliton lasers or for dispersion compensating [DCF]}
- H01S 3/06754
 - • • • • • {Fibre amplifiers {-[H01S 3/06708](#) takes precedence-}}
- H01S 3/06791
 - • • • • • {Fibre ring lasers {-fibre laser gyrometers [G01C 19/72](#)-}}
- H01S 3/06795
 - • • • • • {with superfluorescent emission, e.g. amplified spontaneous emission sources for fibre laser gyrometers {-fibre laser gyrometers per se [G01C 19/72](#)-}}
- H01S 3/07
 - • • consisting of a plurality of parts, e.g. segments {-[H01S 3/067](#) takes precedence-}

- H01S 3/073 . . . {Gas lasers comprising separate discharge sections in one cavity, e.g. hybrid lasers (-tandem arrangements of separate gas lasers [H01S 3/2366](#)-)}
- H01S 3/08 . . Construction or shape of optical resonators or components thereof{{(-waveguide lasers [H01S 3/063](#) ; controlling the laser output [H01S 3/10](#) ; stabilising [H01S 3/13](#)-)}
- H01S 3/08004 . . . {incorporating a dispersive element, e.g. a prism for wavelength selection ([H01S 3/0811](#) , [H01S 3/08022](#) take precedence-)}
- H01S 3/08013 . . . {Resonator comprising a fibre, e.g. for modifying dispersion or repetition rate} (-the active medium being a fibre [H01S 3/067](#)-)}
- H01S 3/08054 . . . {Passive cavity elements acting on the polarization, e.g. a polarizer for branching or walk-off compensation (-quarter-wave plates in a Q-switch laser [H01S 3/1124](#) , [H01S 3/115](#)-)}
- H01S 3/08059 . . . {Constructional details of the reflector, e.g. shape (-mirrors in general [G02B 5/08](#) ; mountings for mirrors [G02B 7/18](#)-)}
- H01S 3/081 . . . comprising more than two reflectors{{(-folded-path gas lasers [H01S 3/076](#)-)}
- H01S 3/082 defining a plurality of resonators, e.g. for mode selection{{(-single longitudinal mode control [H01S 3/08022](#)-)}
- H01S 3/083 Ring lasers (-ring laser gyrometers [G01C 19/66](#) ; { fibre ring lasers [H01S 3/06791](#) })
- H01S 3/086 . . . One or more reflectors having variable properties or positions for initial adjustment of the resonator (-varying a parameter of the laser output during operation [H01S 3/10](#) ; stabilisation of the laser output [H01S 3/13](#)-)}
- U H01S 3/09 . . Processes or apparatus for excitation, e.g. pumping
- U H01S 3/091 . . using optical pumping
- H01S 3/0912 . . . {Electronics or drivers for the pump source, i.e. details of drivers or circuitry specific for laser pumping (-laser diode drivers [H01S 5/042](#)-)}
- U H01S 3/0915 . . . by incoherent light
- H01S 3/092 of flash lamp (-[H01S 3/0937](#) takes precedence; ~~{(-flash lamps per se [H01J 61/80](#) ; {flash lamps per se [H01J 61/80](#) ; circuit arrangements for operating flash lamps in general [H05B 41/30](#)-)}~~
- U H01S 3/094 . . . by coherent light
- NOTE**
Groups [H01S 3/094003](#) to [H01S 3/094088](#) take precedence over groups [H01S 3/0941](#) to [H01S 3/0947](#)
- H01S 3/094076 {Pulsed or modulated pumping (-[H01S 3/1024](#) takes precedence-)}
- H01S 3/095 . . using chemical or thermal pumping{{(-generating plasma, e.g. by combustion [H02K 44/00](#) , [H05H 1/24](#)-)}
- H01S 3/09505 . . . {involving photochemical reactions, e.g. photodissociation (-Iodine lasers [H01S 3/2215](#)-)}
- H01S 3/0955 . . using pumping by high energy particles{{(-[H01S 3/0903](#) , [H01S 3/0906](#) , [H01S 3/09707](#) take precedence-)}
- U H01S 3/097 . . by gas discharge of a gas laser
- H01S 3/09707 . . . {using an electron or ion beam (-free-electron laser [H01S 3/0903](#)-)}
- H01S 3/0971 . . . transversely excited (-[H01S 3/0975](#) takes precedence-)
- H01S 3/0977 . . . having auxiliary ionisation means{{(-[H01S 3/09713](#) takes precedence-)}

- H01S 3/10
- Controlling the intensity, frequency, phase, polarisation or direction of the emitted radiation, e.g. switching, gating, modulating or demodulating (mode locking{ [H01S 3/1106](#) }; controlling of light beams, frequency-changing, non-linear optics, optical logic elements, in general [G02F](#))
- NOTE
Group [H01S 3/10007](#) takes precedence over groups [H01S 3/102](#) to [H01S 3/104](#)
- U H01S 3/10038
- {Amplitude control}
- H01S 3/10046
- {Pulse repetition rate control (-[H01S 3/11](#) takes precedence)}
- H01S 3/10069
- {Memorized or pre-programmed characteristics, e.g. look-up table [LUT]}
- H01S 3/101
- Lasers provided with means to change the location from which, or the direction in which, laser radiation is emitted (-optical-mechanical scanning systems in general [G02B 26/10](#) ; electro-, magneto- or acousto-optical deflection [G02F 1/29](#) ; { control of position or direction of light beam generating device in general [G05D 3/00](#) }
- H01S 3/102
- by controlling the active medium, e.g. by controlling the processes or apparatus for excitation (-[H01S 3/13](#) takes precedence)
- H01S 3/105
- by controlling the mutual position or the reflecting properties of the reflectors of the cavity {e.g. by controlling the cavity length}{ [H01S 3/10076](#) , [H01S 3/13](#) take precedence}
- H01S 3/106
- by controlling a device placed within the cavity ({ [H01S 3/10076](#) } , [H01S 3/13](#) take precedence)
- H01S 3/107
- using an electro-optical device, e.g. exhibiting Pockels- or Kerr-effect(-[H01S 3/1061](#) , [H01S 3/1063](#) , [H01S 3/1065](#) take precedence)}
- H01S 3/108
- using a non-linear optical device, e.g. exhibiting Brillouin- or Raman-scattering(-mode locking using a non-linear element [H01S 3/1112](#)-)}
- U H01S 3/11
- {Pulse generation, e.g. Q-switching, mode locking}
- U H01S 3/1106
- {Mode locking}
- U H01S 3/1112
- {Passive mode locking}
- H01S 3/1115
- {using a saturable absorber (-Q-switching by saturable absorbers [H01S 3/113](#)-)}
- U H01S 3/13
- Stabilisation of laser output parameters, e.g. frequency, amplitude
- NOTE
Group [H01S 3/1301](#) takes precedence over groups [H01S 3/131](#) to [H01S 3/134](#)
- H01S 3/1303
- {by using a passive reference, e.g. absorption cell (-[H01S 3/139](#) takes precedence)}
- H01S 3/1304
- {by using an active reference, e.g. second laser, klystron or other standard frequency source (-[H01S 3/139](#) takes precedence; automatic control of electronic generators [H03L 7/00](#)-)}
- H01S 3/139
- by controlling the mutual position or the reflecting properties of the reflectors of the cavity {e.g. by controlling the cavity length}
- H01S 3/1392
- {by using a passive reference, e.g. absorption cell (-[H01S 3/1396](#) , [H01S 3/1398](#) take precedence)}
- H01S 3/1396
- {by using two modes present, e.g. Zeeman splitting (-[H01S 3/1398](#) takes precedence)}
- U H01S 3/14
- characterised by the material used as the active medium
- U H01S 3/16
- Solid materials
- U H01S 3/163
- {characterised by a crystal matrix}

- U H01S 3/1631 {aluminate}
- H01S 3/1635 {LaMgAl₁₁O₁₉ (*LNA, Lanthanum Magnesium Hexaluminate*)}(*LNA, Lanthanum Magnesium Hexaluminate*)
- H01S 3/1638 {YAlO₃ (*YALO or YAP, Yttrium Aluminium Perovskite*)}(*YALO or YAP, Yttrium Aluminium Perovskite*)
- U H01S 3/1645 {halide}
- H01S 3/1648 {with the formula XYZF₆ (*Colquiriite structure*)}(*with the formula XYZF₆ (Colquiriite structure)*), wherein X is Li, Na, K or Rb, Y is Mg, Ca, Sr, Cd or Ba and Z is Al, Sc or Ga}
- H01S 3/1653 {YLiF₄ (*YLF, LYF*)}(*YLF, LYF*)
- H01S 3/17 amorphous, e.g. glass{(–glass manufacture, shaping or supplementary processes [C03B](#); compositions for laserable glass [C03C 4/0071](#)–)}
- H01S 3/173 {fluoride glass, e.g. fluorozirconate or ZBLAN [ZrF₄-BaF₂-LaF₃-AlF₃-NaF]}}
- U H01S 3/20 . . . Liquids
- H01S 3/207 . . . including a chelate {e.g. including atoms or ions, e.g. Nd}
- U H01S 3/22 . . . Gases
- H01S 3/223 . . . the active gas being polyatomic, i.e. containing more than one atom (~~H01S 3/227 takes precedence~~)
- H01S 3/23 . . . Arrangements of two or more lasers not provided for in groups [H01S 3/02](#) to [H01S 3/22](#) , e.g. tandem arrangements of separate active media
- H01S 3/2366 . . . {comprising a gas as the active medium (~~H01S 3/10092 , H01S 3/2383 take precedence~~)}
- H01S 3/2375 . . . {Hybrid lasers (~~H01S 3/07 takes precedence~~)}
- H01S 4/00** **Devices using stimulated emission or wave energy other than those covered by groups [H01S 1/00](#) or [H01S 3/00](#) , e.g. phonon maser, gamma maser**
- H01S 5/00** **Semiconductor lasers{(–superluminescent diodes [H01L 33/0045](#)–)}**
- H01S 5/0014 . . . {Measuring characteristics or properties thereof (measuring techniques per se [G01J](#), [G01K](#), [G01N](#), [G01R](#))}
- H01S 5/005 . . . {Optical devices external to the laser cavity, specially adapted therefor, e.g. for homogenisation or merging of the beams or for manipulating laser pulses, e.g. pulse shaping (~~H01S 5/026 , H01S 5/18388 take precedence~~)}
- H01S 5/0092 . . . {Nonlinear frequency conversion, e.g. second harmonic generation [SHG]} or sum- or difference-frequency generation outside the laser cavity (–nonlinear frequency conversion per se [G02F 1/35](#)–)}
- U H01S 5/02 . . . Structural details or components not essential to laser action
- H01S 5/0206 . . . {Substrates, e.g. growth, shape, material, removal or bonding; (–specific crystal orientation [H01S 5/3202](#)–)}
- H01S 5/022 . . . {Mountings; Housings (packaging and electrical lead-through per se [H01L 23/00](#))}
- H01S 5/02232 . . . {filled with a liquid (~~H01S 5/0243 takes precedence~~)}
- H01S 5/02236 . . . {Mounts or sub-mounts (~~H01S 5/02476 takes precedence~~)}
- H01S 5/024 . . . Cooling arrangements{(–cooling solid state junction devices [H01L 23/34](#) ; Heating arrangements (~~H01S 5/0261 takes precedence~~)}
- U H01S 5/02407 . . . {Active cooling, e.g. the laser temperature is controlled by a thermo-electric cooler or water cooling}
- H01S 5/02415 {by using a thermo-electric cooler [TEC]}, e.g. Peltier element}

- H01S 5/02453
 - • {Heating, e.g. the laser is heated for stabilisation against temperature fluctuations of the environment (~~H01S 5/0612~~ takes precedence, for monolithically integrated heaters see also ~~H01S 5/0261~~-)}
- H01S 5/026
 - • Monolithically integrated components, e.g. waveguides, monitoring photo-detectors, drivers (~~stabilisation of output H01S 5/06~~ ; coupling light guides with opto-electronic elements ~~G02B 6/42~~ ; devices consisting of a plurality of semiconductor or other solid state components formed in or on a common substrate, adapted for light emission ~~H01L 27/15~~-)}
- H01S 5/0261
 - • {Non-optical elements, e.g. laser driver components, heaters (~~H01S 5/0265~~ takes precedence-)}
- H01S 5/0262
 - • {Photo-diodes, e.g. transceiver devices, bidirectional devices (~~H01S 5/0265~~ takes precedence-)}
- H01S 5/0265
 - • {Intensity modulators (~~intracavity modulators H01S 5/0625~~-)}
- H01S 5/0267
 - • {Integrated focusing lens (~~H01S 5/18388~~ takes precedence-)}
- H01S 5/04
 - Processes or apparatus for excitation, e.g. pumping, {e.g. by electron beams} (~~H01S 5/06~~ takes precedence-)
- H01S 5/042
 - • Electrical excitation; {Circuits therefor (~~discrete or monolithically integrated laser drive components on mountings H01S 5/0261~~-)}
- H01S 5/0421
 - • {characterised by the semiconducting contacting layers (~~electrodes H01S 5/0425~~-)}
- H01S 5/06
 - Arrangements for controlling the laser output parameters, e.g. by operating on the active medium (~~transmission systems employing light H04B 10/00~~-)
- H01S 5/0601
 - • {comprising an absorbing region (~~H01S 5/0604~~ , ~~H01S 5/0607~~ , ~~H01S 5/0615~~ and ~~H01S 5/065~~ take precedence; bistable laser devices in general ~~G02F 3/026~~-)}
- H01S 5/062
 - • by varying the potential of the electrodes (~~H01S 5/065~~ takes precedence-)
- H01S 5/06203
 - • {Transistor-type lasers (~~H01S 5/0608~~ takes precedence-)}
- H01S 5/06209
 - • {in single-section lasers (~~H01S 5/0608~~ takes precedence-)}
- U H01S 5/065
 - • Mode locking; Mode suppression; Mode selection; {Self pulsating}
- H01S 5/0656
 - • {Seeding, i.e. an additional light input is provided for controlling the laser modes, for example by back-reflecting light from an external optical component (~~H01S 5/14~~ , ~~H01S 5/4062~~ and ~~H01S 5/4006~~ take precedence-)}
- H01S 5/068
 - • Stabilisation of laser output parameters (~~H01S 5/0625~~ takes precedence-)
- H01S 5/10
 - Construction or shape of the optical resonator, {e.g. extended or external cavity, coupled cavities, bent-guide, varying width, thickness or composition of the active region (~~H01S 5/20~~ takes precedence-)}
- U H01S 5/1003
 - • {Waveguide having a modified shape along the axis, e.g. branched, curved, tapered, voids}
- H01S 5/101
 - • {Curved waveguide (~~H01S 5/1243~~ takes precedence-)}
- H01S 5/1014
 - • {Tapered waveguide, e.g. spotsize converter (~~H01S 5/1064~~ takes precedence-)}
- H01S 5/1021
 - • {Coupled cavities (~~H01S 5/14~~ takes precedence-)}
- H01S 5/12
 - • the resonator having a periodic structure, e.g. in distributed feed-back lasers (DFB-lasers) (~~H01S 5/18~~ takes precedence-) {forward coupled structures, i.e. DFC lasers, ~~H01S 5/1028~~-}

- H01S 5/14
- External cavity lasers{(-external cavity elements, their control or stabilisation [H01S 3/08](#) , [H01S 3/10](#) and [H01S 3/13](#)-)}
- NOTE
in this group external cavity elements correspond to elements inside the laser cavity but outside the monolithic semiconductor body. These elements correspond to intra cavity elements in [H01S 3/00](#)
- H01S 5/141
- • {using a wavelength selective device, e.g. a grating or etalon (-[H01S 5/146](#) takes precedence-)}
- U H01S 5/18
- • Surface-emitting lasers (SE-lasers)
- U H01S 5/183
- • • having a vertical cavity (VCSE-lasers)
- U H01S 5/18308
- • • • {having a special structure for lateral current or light confinement}
- H01S 5/18319
- • • • • {comprising a periodical structure in lateral directions (-photonic crystals in semiconductor laser structures per se [H01S 5/105](#)-)}
- U H01S 5/18322
- • • • • {Position of the structure}
- H01S 5/18327
- • • • • • {Structure being part of a DBR (-[H01S 5/18391](#) takes precedence-)}
- U H01S 5/20
- Structure or shape of the semi-conductor body to guide the optical wave; {Confining structures perpendicular to the optical axis, e.g. index- or gain-guiding, stripe geometry, broad area lasers, gain tailoring, transverse or lateral reflectors, special cladding structures, MQW barrier reflection layers}
- U H01S 5/22
- • having a ridge or stripe structure
- H01S 5/223
- • • Buried stripe structure{(-[H01S 5/227](#) takes precedence-)}
- U H01S 5/30
- Structure or shape of the active region; Materials used for the active region
- U H01S 5/305
- • {characterised by the doping materials used in the laser structure}
- U H01S 5/3086
- • • {doping of the active layer}
- H01S 5/309
- • • • {doping of barrier layers that confine charge carriers in the laser structure, e.g. the barriers in a quantum well structure (-**Barriers in quantum wells per se H01S 5/3407** *Barriers in quantum wells per se H01S 5/3407*-)}
- H01S 5/32
- • comprising PN junctions, e.g. hetero- or double- heterostructures (-[H01S 5/34](#) , [H01S 5/36](#) take precedence-)
- H01S 5/34
- • comprising quantum well, ~~quantum wire, quantum box~~ or superlattice structures, e.g. single quantum well lasers (*SQW lasers*), *multiple quantum well lasers (MQW lasers)*, *graded index separate confinement hetrostructure lasers (GRINSCH lasers)*(*SQW lasers*), *multiple quantum well lasers (MQW lasers)*, *graded index separate confinement hetrostructure lasers (GRINSCH lasers)*(-[H01S 5/36](#) takes precedence-)
- H01S 5/36
- • comprising organic materials (-dye lasers [H01S 3/213](#)-)
- H01S 5/40
- Arrangement of two or more semiconductor lasers, not provided for in groups [H01S 5/02](#) to [H01S 5/30](#) (-[H01S 5/50](#) takes precedence-)
- H01S 5/4025
- • {Array arrangements, e.g. constituted by discrete laser diodes or laser bar (-[H01S 5/42](#) takes precedence-)}
- U H01S 5/4087
- • • {emitting more than one wavelength}
- H01S 5/4093
- • • • {Red, green and blue [RGB]} generated directly by laser action or by a combination of laser action with nonlinear frequency conversion}}
- H01S 5/50
- Amplifier structures not provided for in groups [H01S 5/02](#) to [H01S 5/30](#) (-as repeaters in transmission systems **H04B10/17**-)
- U H01S 2301/00** **Functional characteristics**
- H01S 2301/02
- ~~ASE(amplified spontaneous emission)~~*ASE (amplified spontaneous emission)*, noise; Reduction thereof

Project: N/A (H02B)

- U H02B 1/00 Frameworks, boards, panels, desks, casings; Details of substations or switching arrangements**
- U H02B 1/01 · Frameworks
 - H02B 1/011 · · {-Open support bases}
 - H02B 1/012 · · {-Details of mechanical connections}
 - H02B 1/013 · · {-Profiles for cabinet frames}
 - H02B 1/014 · · {-Corner connections for frameworks}
 - U H02B 1/015 · Boards, panels, desks; Parts thereof or accessories therefor
 - U H02B 1/04 · · Mounting thereon of switches or of other devices in general, the switch or device having, or being without, casing
 - H02B 1/041 · · · {-Mechanical coupling for side-by-side mounted apparatus}
 - U H02B 1/052 · · · Mounting on rails
 - H02B 1/0523 · · · · {-locked into position by a sliding member}
 - H02B 1/0526 · · · · {-locking or releasing devices actuated from the front face of the apparatus}
- U H02B 13/00 Arrangements of switchgear in which switches are enclosed in, or structurally associated with, a casing, e.g. cubicle (in association with main transformer [H02B 5/00](#), [H02B 7/00](#); switchgear having carriage withdrawable for isolation [H02B 11/00](#))**
- U H02B 13/02 · with metal casing
 - U H02B 13/035 · · Gas-insulated switchgear
 - U H02B 13/065 · · · Means for detecting or reacting to mechanical or electrical defects (for switches [H01H 9/50](#), [H01H 33/26](#), [H01H 33/53](#))
 - H02B 13/0655 · · · · {-through monitoring changes of gas properties}

Project: N/A (H02G)**H02G**

INSTALLATION OF ELECTRIC CABLES OR LINES, OR OF COMBINED OPTICAL AND ELECTRIC CABLES OR LINES (-distribution points incorporating switches [H02B](#); guiding telephone cords [H04M 1/15](#); cable ducts or mountings for telephone or telegraph exchange installations [H04Q 1/06](#)-)

NOTES

1. This subclass covers installation of communication cables or lines, including those comprising a combination of optical and electrical conductors, or of lightning conductors as well as installation of power cables or lines.

2. This subclass does not cover installation of purely optical cables, which is covered by groups { [G02B 6/4401](#) }, [G02B 6/46](#) .

3. In this subclass, the following expression is used with the meaning indicated:

- "electric cable" includes cables comprising optical conductors, e.g. fibres, in combination with electrical conductors.

In this subclass it is desirable to add indexing codes of group [H02G 2200/00](#) whenever appropriate

- U H02G 1/00 Methods or apparatus specially adapted for installing, maintaining, repairing or dismantling electric cables or lines**
- U H02G 1/02 · for overhead lines or cables
 - H02G 1/04 · · for mounting or stretching (-wire stretchers in general [B25B 25/00-](#))
 - H02G 1/06 · for laying cables, e.g. laying apparatus on vehicle (-combined with trench digging or back-filling machines or dredgers [E02F 5/00-](#))
 - H02G 1/08 · · through tubing or conduit, e.g. rod or draw wire for pushing or pulling{(-inserting electrical cables into tubes using wallbores [E21B 17/206](#) ; for optical cables [G02B 6/4401-](#))}
 - H02G 1/12 · for removing insulation or armouring from cables, e.g. from the end thereof (-pliers in general [B25B](#) ; cutters in general [B26B-](#))
 - U H02G 1/1202 · · {by cutting and withdrawing insulation}
 - U H02G 1/1204 · · · {Hand-held tools}
 - H02G 1/1207 · · · · {the cutting element not rotating about the wire or cable (-making longitudinal and transverse or helical cut [H02G 1/1229-](#))}
 - H02G 1/1221 · · · · {the cutting element rotating about the wire or cable (-making longitudinal and transverse or helical cut [H02G 1/1229-](#))}
 - U H02G 1/1248 · · · {Machines}
 - H02G 1/1251 · · · · {the cutting element not rotating about the wire or cable (-making longitudinal and transverse or helical cut [H02G 1/1268-](#))}
 - H02G 1/1265 · · · · {the cutting element rotating about the wire or cable (-making longitudinal and transverse or helical cut [H02G 1/1268-](#))}
 - H02G 1/14 · for joining or terminating cables (-joining electric conductors [H01R 43/00-](#))
- H02G 3/00 Installations of electric cables or lines in or on buildings, equivalent structures or vehicles (-installations of bus-bars [H02G 5/00](#) ; overhead installations [H02G 7/00](#) ; installations in or on the ground [H02G 9/00](#) ; channels or vertical ducts for receiving utility lines [E04F 17/08](#) ; wiring of electric apparatus in general [H05K](#))**
- U H02G 3/02 · Details
 - H02G 3/04 · · Protective tubings or conduits {or channels or other supports}(-pipes or tubings in general [F16L-](#))
 - H02G 3/0406 · · · {Details thereof (-installation or suspension of conduit channels and other supports [H02G 3/263-](#))}
 - H02G 3/0412 · · · · {Heat or fire protective means (-for fire in electric circuits [A62C 3/16-](#))}
 - H02G 3/0425 · · · · {Plinths (-borders for use between floor or ceiling and wall [E04F 19/04-](#))}
 - U H02G 3/0462 · · · {Tubings, i.e. having a closed section}
 - H02G 3/0481 · · · · {with a circular cross-section (-[H02G 3/0468](#) , [H02G 3/0475](#) take precedence-)}
 - H02G 3/0487 · · · · {with a non-circular cross-section (-[H02G 3/0468](#) , [H02G 3/0475](#) take precedence-)}
 - H02G 3/06 · · Joints for connecting lengths of protective tubing {or channels}, to each other or to casings, e.g. to distribution boxes; Ensuring electrical continuity in the joint
 - U H02G 3/0616 · · · {Joints for connecting tubing to casing}
 - U H02G 3/0625 · · · · {with means for preventing disengagement of conductors}
 - H02G 3/065 · · · · · {with means biting into the conductor-insulation, e.g. teeth-like elements or gripping fingers (-[H02G 3/0675](#) , [H02G 3/0683](#) take precedence-)}
 - H02G 3/0658 · · · · · {with means constricting the conductor-insulation (-[H02G 3/065](#) , [H02G 3/0675](#) , [H02G 3/0683](#) take precedence-)}

- H02G 3/0666
 - • • • {with means clamping the armour of the conductor (~~H02G 3/0675~~ , ~~H02G 3/0683~~ take precedence)}
- H02G 3/08
 - • Distribution boxes; Connection or junction boxes (~~cable terminations H02G 15/02~~)
- H02G 3/16
 - • • structurally associated with support for line-connecting terminals within the box (~~terminals H01R 9/00~~)
- U H02G 3/18
 - • • providing line outlets
- H02G 3/20
 - • • • Ceiling roses {or other lighting sets}
- H02G 3/22
 - Arrangements for leading cables or lines through walls, floors, or ceilings, e.g. into building (~~devices for use where pipes, cables or protective tubing pass through walls or partitions F16L 5/00~~ ; lead-in or lead-through insulators ~~H01B 17/26~~ ; insulating tubes or sleeves ~~H01B 17/58~~)
- H02G 3/24
 - Installation of lines or cables on walls, ceilings or floors by means of insulators (~~insulators H01B 17/00~~)
- H02G 3/26
 - Installations of cables, lines, or separate protective tubing therefor directly on or in walls, ceilings, or floors (~~by means of insulators H02G 3/24~~ ; supports for pipes, cables or protective tubing ~~F16L 3/00~~ ; hose-clips ~~F16L 33/02~~)
- H02G 3/30
 - Installations of cables or lines on walls, floors or ceilings (~~support for pipes, cables or protective tubing F16L 3/00~~ ; hose clips ~~F16L 33/02~~)
- H02G 3/36
 - Installation of cables or lines in walls, floors or ceilings (~~H02G 3/22~~ takes precedence)
- U **H02G 5/00**
 - Installations of bus-bars**
- H02G 5/007
 - {Butt joining of bus-bars by means of a common bolt, e.g. splice joint (~~electrically conductive connections characterised by contacting members H01R 4/58~~)}
- H02G 5/04
 - Partially-enclosed installations, e.g. in ducts and adapted for sliding or rolling current collection (~~non-rotary current collectors H01R 41/00~~)
- U H02G 5/06
 - Totally-enclosed installations, e.g. in metal casings
- H02G 5/061
 - • {Tubular casings (~~H02G 5/063~~ takes precedence)}
- U H02G 5/063
 - • {filled with oil or gas}
- H02G 5/065
 - • • {Particle traps (~~gettering in vacuum switches H01H33/66E1~~; in discharge or vacuum tubes ~~H01J 7/18~~ , ~~H01J 19/70~~)}
- H02G 7/00**
 - Overhead installations of electric lines or cables (~~installations of bus-bars H02G 5/00~~ ; trolley wires or contact lines for electric railways ~~B60M~~ ; fastening conductors to insulators ~~H01B 17/00~~ , e.g. ~~H01B 17/06~~ , ~~H01B 17/16~~ , ~~H01B 17/22~~ ; protection against abnormal electric conditions ~~H01H~~ ; hook contacts for temporary connections to overhead lines ~~H01R 11/14~~)**
- H02G 7/14
 - Arrangements or devices for damping mechanical oscillations of lines, e.g. for reducing production of sound{{~~damping spacers H02G 7/125~~}
- H02G 7/16
 - Devices for removing snow or ice from lines or cables (~~from insulators H01B 17/52~~)
- H02G 7/20
 - Spatial arrangements or dispositions of lines or cables on poles, posts, or towers (~~construction of poles, posts or towers E04H 12/22~~)
- H02G 9/00**
 - Installations of electric cables or lines in or on the ground or water (~~cathodic protection C23F 13/02~~ ; detection of buried cables ~~G01V~~)**
- H02G 9/10
 - in cable chambers, e.g. in manhole, in handhole (~~building aspects of cable chambers Section E, e.g. E04H 5/06~~)
- H02G 9/12
 - supported on or from floats, e.g. in water (~~floating cables H01B 7/12~~)

H02G 11/00	Arrangements of electric cables or lines between relatively-movable parts ({ storing means for coiled material specially adapted for repeatedly paying-out and re-storing length of material for particular purposes B65H 75/34 } ; current collectors H01R ; { winding-up telephone cord H04M 1/15 })
H02G 11/006	· {using extensible carrier for the cable, e.g. self-coiling spring ((-extensible conductors or cables H01B 7/06 -)}
H02G 13/00	Installations of lightning conductors; Fastening thereof to supporting structure (indicating, counting or recording lightning strokes G01 ; lightning arrestors H01C 7/12 , H01C 8/04 , H01G 9/18 , H01T ; earth plates, pins or other contacts H01R -)
	WARNING
	Groups H02G 13/20 to H02G 13/80 do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - H02G 13/20 - H02G 13/80 : H02G 13/00
U	H02G 15/00
H02G 15/013	· Sealing means for cable inlets ((-inlets for cables filled with, or surrounded by, gas or oil H02G 15/32 -)
H02G 15/02	· Cable terminations ((-for gas- or oil-filled cables H02G 15/22 -)
H02G 15/025	· · {for coaxial cables or hollow conductors ((-connections between HF conductors H01P 1/04 ; plug and socket connections per se H01R 24/38 -)}
H02G 15/06	· · Cable terminating boxes, frames, or other structures ((-terminal blocks H01R 9/00 -)
U	H02G 15/064
H02G 15/068	· · · with devices for relieving electrical stress
H02G 15/08	· · · · connected to the cable shield only ((- H02G 15/072 takes precedence-)
H02G 15/085	· Cable junctions ((-for gas- or oil-filled cables H02G 15/24 ; disconnectible junctions, electrical connections H01R -)
H02G 15/10	· · {for coaxial cables or hollow conductors ((-plug and socket connections between HF conductors H01P 1/04 ; plug and socket connections per se H01R 24/38 -)}
U	H02G 15/103
H02G 15/105	· · · protected by boxes, e.g. by distribution, connection or junction boxes ((-terminal blocks H01R 9/00 ; { distribution boxes per se H02G 3/08 })
H02G 15/18	· · · with devices for relieving electrical stress
H02G 15/1806	· · · · connected to the cable shield only ((- H02G 15/107 takes precedence-)
H02G 15/20	· · protected by sleeves, e.g. for communication cable ((-two-part covers H02G 15/10 ; { preforms having internal stresses B29C 61/00 })
H02G 15/28	· · · {Heat shrinkable sleeves ((-insulation of electrical connections using a heat shrinking insulating sleeve H01R 4/72 -)}
H02G 15/34	· Cable fittings for cables filled with or surrounded by gas or oil ((- H02G 15/34 takes precedence-)
	· · structurally associated with devices for indicating the presence or location of non-electric faults ((-combined with electric protective means H02H -)
	· Cable fittings for cryogenic cables ((-superconductive cables per se H01B 12/00 -)}

Project: N/A (H02H)

- H02H 3/00** **Emergency protective circuit arrangements for automatic disconnection directly responsive to an undesired change from normal electric working condition with or without subsequent reconnection (specially adapted for specific types of electric machines or apparatus or for sectionalised protection of cable of line systems [H02H 7/00](#); systems for change-over to standby supply [H02J 9/00](#)){integrated protection-(for motors [H02H 7/0822](#))}**
- U H02H 3/20 · responsive to excess voltage
- H02H 3/202 · · {-for dc systems}
- U H02H 5/00** **Emergency protective circuit arrangements for automatic disconnection directly responsive to an undesired change from normal non-electric working conditions with or without subsequent reconnection (using simulators of the apparatus being protected [H02H 6/00](#); specially adapted for specific types of electric machines or apparatus or for sectionalised protection of cable or line systems [H02H 7/00](#))}**
- U H02H 5/04 · responsive to abnormal temperature {specially adapted for electric machines [H02H 7/0852](#)}
- H02H 5/047 · · {-using a temperature responsive switch}

Project: N/A (H02J)

- U H02J 3/00** **Circuit arrangements for ac mains or ac distribution networks**
- U H02J 3/18 · Arrangements for adjusting, eliminating, or compensating reactive power in networks (for adjustment of voltage [H02J 3/12](#); use of Petersen coils [H02H 9/08](#))
- U H02J 3/1821 · · {using shunt compensators ([H02J 3/1807](#), [H02J 3/1878](#) take precedence)}
- U H02J 3/1835 · · · {with stepless control}
- U H02J 3/1842 · · · · {wherein at least one reactive element is actively controlled by a bridge converter, e.g. active filters}
- H02J 3/185 · · · · · {-wherein such reactive element is purely inductive, e.g. superconductive magnetic energy storage systems (SMES)}
- U H02J 3/38 · Arrangements for parallelly feeding a single network by two or more generators, converters or transformers
- H02J 3/381 · · {-Dispersed generators}
- H02J 3/382 · · · {-the generators exploiting renewable energy}
- H02J 3/383 · · · · {-Solar energy, e.g. photovoltaic energy (generation of electric power by conversion of light [H02S](#))}
- H02J 3/385 · · · · · {-Maximum power point tracking control for photovoltaic sources }
- H02J 3/386 · · · · · {-Wind energy (wind motors [F03D](#))}
- H02J 3/387 · · · {-using fuel cells (fuel cells per se [H01M 8/00](#))}
- U H02J 7/00** **Circuit arrangements for charging or depolarising batteries or for supplying loads from batteries**
- U H02J 7/0003 · {with provision for charging different types of batteries}
- H02J 7/0004 · · {-with data exchange between battery and charger ([H02J 7/0011](#) takes precedence)}

- U H02J 13/00** **Circuit arrangements for providing remote indication of network conditions, e.g. an instantaneous record of the open or closed condition of each circuit-breaker in the network; Circuit arrangements for providing remote control of switching means in a power distribution network, e.g. switching in and out of current consumers by using a pulse code signal carried by the network** **{(circuits for indication of single switches [H01H 9/167](#); circuits specially adapted for remote switching of lighting via the power line [H05B 37/0263](#))}**
- U H02J 13/0006 · {for single frequency AC networks}
- U H02J 13/0013 · · {characterised by transmission structure between the control or monitoring unit and the controlled or monitored unit}
- U H02J 13/0017 · · · {with direct transmission between the control or monitoring unit and the controlled or monitored unit}
- H02J 13/0075 · · · · {-using radio means}

Project: N/A (H02K)

- U H02K 1/00** **Details of the magnetic circuit (magnetic circuits or magnets in general, magnetic circuits for transformers for power supply [H01F](#); magnetic circuits for relays [H01H 50/16](#))**
- U H02K 1/06 · characterised by the shape, form, or construction
- U H02K 1/22 · · Rotating parts of magnetic circuit
- H02K 1/223 · · · {-Rotor cores with windings and permanent magnets (for additional excitation in synchronous motors or generators [H02K 21/042](#); in synchronous motors having additional short-circuited winding for starting as an asynchronous motor [H02K 21/46](#))}
- U H02K 1/24 · · · Rotor cores with salient poles; { Variable reluctance rotors}
- H02K 1/246 · · · · {-Variable reluctance rotors}
- U H02K 1/27 · · · Rotor cores with permanent magnets {(rotor cores for synchronous machines with means for mechanical adjustment of the excitation flux [H02K 21/021](#))}
- U H02K 1/2706 · · · · {Inner rotor}
- U H02K 1/272 · · · · · {where the magnetisation axis of the magnets is radial or tangential}
- H02K 1/274 · · · · · · {-consisting of a plurality of circumferentially positioned magnets}
- H02K 1/2746 · · · · · · · {-consisting of magnets arranged with the same polarity}
- H02K 1/2753 · · · · · · · · {-consisting of magnets or groups of magnets arranged with alternating polarity}
- H02K 1/276 · · · · · · · · · {-Magnets embedded in the magnetic core}
- H02K 1/2766 · · · · · · · · · · {-having a flux concentration effect}
- H02K 1/2773 · · · · · · · · · · · {-consisting of tangentially magnetized radial magnets}
- H02K 1/278 · · · · · · · · · · · · {-Surface mounted magnets; Inset magnets}
- U H02K 3/00** **Details of windings (coils in general [H01F 5/00](#))**
- U H02K 3/46 · Fastening of windings on stator or rotor structure
- U H02K 3/50 · · Fastening of winding heads, equalising connectors, or connections thereto **{([H02K 3/52](#) takes precedence)}**
- H02K 3/505 · · · {-for large machine windings, e.g. bar windings ([H02K 3/51](#) takes precedence)}
- U H02K 5/00** **Casings; Enclosures; Supports (casings for electric apparatus in general [H05K 5/00](#))**

- U H02K 5/04 · Casings or enclosures characterised by the shape, form or construction thereof
- U H02K 5/14 · · Means for supporting or protecting brushes or brush holders
- U H02K 5/143 · · · {for cooperation with commutators}
- H02K 5/146 · · · · {Pivotally supported brushes or brush holders}
- U H02K 5/22 · · Other additional parts of casings, e.g. shaped to form connection or terminal box
- H02K 5/225 · · · {Terminal boxes or connection arrangements (specially adapted for submersible motors [H02K 5/132](#))}

- U H02K 7/00** **Arrangements for handling mechanical energy structurally associated with the machine, e.g. structural association with mechanical driving motor or auxiliary dynamo-electric machine**
- U H02K 7/10 · Structural association with clutches, brakes, gears, pulleys, mechanical starters
- NOTE
Group [H02K 7/12](#) takes precedence over groups [H02K 7/102](#) to [H02K 7/118](#)
- U H02K 7/116 · · with gears
- U H02K 7/1163 · · · {where at least two gears have non-parallel axes without having orbital motion}
- H02K 7/1166 · · · · {comprising worm and worm-wheel (structural association with bearings specially adapted for worm gear drives [H02K 7/081](#))}
- U H02K 7/118 · · with starting device
- H02K 7/1185 · · · {with a mechanical one-way direction control, i.e. with means for reversing the direction of rotation of the rotor}
- U H02K 7/18 · Structural association of electric generator with mechanical driving motor, e.g. turbine (if the driving-motor aspect predominates, see the relevant subclass of section F, e.g. [F03B 13/00](#))
- U H02K 7/1807 · · {Rotary generators ([H02K 7/006](#) takes precedence)}
- U H02K 7/1823 · · · {structurally associated with turbines or similar engines}
- H02K 7/183 · · · · {wherein the turbine is a wind turbine (adaptation of a wind turbine to an electric generator [F03D 9/002](#))}
- H02K 7/1838 · · · · · {Generators mounted in a nacelle or similar structure of a horizontal axis wind turbine}
- H02K 7/1861 · · · {driven by animals or vehicles ([H02K 7/1853](#) takes precedence)}
- H02K 7/1869 · · {Linear generators; sectional generators}

- U H02K 9/00** **Systems for cooling or ventilating (channels or ducts in parts of the magnetic circuit [H02K 1/20](#), [H02K 1/32](#); channels or ducts in or between conductors [H02K 3/22](#), [H02K 3/24](#))**
- H02K 9/005 · {Details of cooling systems with unspecified cooling medium flowing through channels in or between the conductors}

- U H02K 11/00** **Structural association with measuring or protective devices or electric components, e.g. with resistor, with switch, with suppressor for radio interference {(heating or drying of machines in operational state, e.g. standstill heating [H02K 15/125](#); structural association with auxiliary electric devices influencing the characteristic of, or controlling: asynchronous induction motors [H02K 17/30](#); synchronous generators without permanent magnets [H02K 19/36](#); dc commutator machines or universal ac/dc commutator motors [H02K 23/66](#); ac commutator machines [H02K 27/28](#))}**

- H02K 11/0005 · {-Electric or magnetic shielding arrangements, i.e. for shielding the electrical machine, the machine components or external devices against electric or magnetic fields generated inside or outside the machine ([H02K 11/02](#) takes precedence)}
- H02K 11/001 · {-Structural association with devices for measuring, monitoring, protecting, switching}
- H02K 11/0015 · · {-actuated by or sensing speed or position (specially adapted for machines having non-mechanical commutating devices [H02K 29/06](#), [H02K 29/14](#))}
- H02K 11/0031 · · · {-using detecting coils; using the machine windings as detecting coil}
- H02K 11/0042 · · {-actuated by or sensing torque}
- H02K 11/0047 · · {-actuated by or sensing temperature (overcurrent protection sensitive to other parameters than temperature [H02K 11/0057](#))}
- H02K 11/0052 · · {-actuated by or sensing over-voltage, e.g. over-voltage protection}
- H02K 11/0057 · · {-actuated by or sensing overcurrent}
- H02K 11/0063 · · {-Manual switches}
- H02K 11/0068 · {-Structural association with control circuits, drive circuits}
- H02K 11/0073 · · {-Drive circuits, e.g. power electronics ([H02K 11/0084](#) and [H02K 11/048](#) take precedence)}
- H02K 11/0078 · · {-with devices for recording or transmitting machine parameters, e.g. memory chips for diagnostic; radio-transmitters}
- H02K 11/0084 · · {-associated with gear motors of the worm-and-wheel type}
- H02K 11/0089 · {-Structural association with grounding devices}
- H02K 11/0094 · {-Structural association with other electrical or electronic devices}
- U H02K 11/04 · for rectification
- U H02K 11/046 · · {in generators ([H02K 11/042](#) takes precedence)}
- H02K 11/048 · · · {-Rectifiers combined with drive circuits in starter-generators}
- U H02K 15/00** **Methods or apparatus specially adapted for manufacturing, assembling, maintaining or repairing dynamo-electric machines (manufacture of current collectors in general [H01R 43/00](#))**
- H02K 15/0006 · {-Disassembling, repairing or modifying dynamo-electric machines (repairing of cooling fluid boxes [H02K 15/0093](#))}
- H02K 15/0025 · {-Shaping or compacting conductors or winding heads after the installation of the winding in the core or machine (methods or apparatus for simultaneously twisting a plurality of hairpins prior to mounting [H02K 15/0428](#)); Applying fastening means on winding heads}
- H02K 15/0031 · · {-Shaping or compacting conductors in slots or around salient poles ([H02K 15/005](#) takes precedence)}
- H02K 15/0037 · · {-Shaping or compacting winding heads ([H02K 15/005](#), [H02K 15/0087](#) and [H02K 15/0428](#) take precedence)}
- H02K 15/0043 · · · {-Applying fastening means on winding headS (fastening by applying resin, glue, varnish and similar means [H02K 15/12](#))}
- H02K 15/005 · · {-by means of electrodynamic forces}
- H02K 15/0056 · {-Manufacturing winding connections (manufacturing connectors in general [H01R 43/00](#))}
- H02K 15/0062 · · {-Manufacturing the terminal arrangement per se; Connecting the terminals to an external circuit}
- H02K 15/0068 · · {-Connecting winding sections; Forming leads; Connecting leads to terminals}

- H02K 15/0075
 - • • {-for random-wound windings}
 - NOTE
 - Windings consisting of cables are classified in [H02K 15/0068](#)
- H02K 15/0081
 - • • {-for form-wound windings}
- H02K 15/0087
 - • • • {-characterised by the method or apparatus for simultaneously twisting a plurality of hairpins open ends after insertion into the machine (for simultaneously twisting a plurality of hairpins prior to mounting into the machine [H02K 15/0428](#))}
- H02K 15/0093
 - • • • {-Manufacturing or repairing cooling fluid boxes, i.e. terminals of fluid cooled windings ensuring both electrical and fluid connection}-†
- U H02K 15/02
 - of stator or rotor bodies
- U H02K 15/024
 - • {-with slots}
- H02K 15/026
 - • • {-Wound cores}
- U H02K 15/04
 - of windings, prior to mounting into the machine (insulating windings [H02K 15/10](#), [H02K 15/12](#); coil manufacture in general [H01F 41/02](#))
- H02K 15/0407
 - • {-Windings manufactured by etching, printing or stamping the complete coil}
- H02K 15/0414
 - • {-Windings consisting of separate elements, e.g. bars, hairpins, segments, half coils}
- H02K 15/0421
 - • • {-consisting of single conductors, e.g. hairpins}
- H02K 15/0428
 - • • • {-characterised by the method or apparatus for simultaneously twisting a plurality of hairpins (for simultaneously twisting a plurality of hairpins open ends after insertion into the machine [H02K 15/0087](#))}
- H02K 15/0435
 - • {-Wound windings}
- H02K 15/0442
 - • • {-Loop windings (manufacturing of windings consisting of overlapped loops [H02K 15/0464](#))}
- H02K 15/0457
 - • • • {-Random wound coils}
- H02K 15/0464
 - • • {-Lap windings (when on diagonally wound hollow coils [H02K 15/0492](#))}
- H02K 15/0471
 - • • • {-manufactured by flattening a spiral winding}
- H02K 15/0478
 - • • {-Wave windings, undulated windings (when on diagonally wound hollow coils [H02K 15/0492](#))}
- H02K 15/0485
 - • • • {-manufactured by shaping an annular winding}
- H02K 15/0492
 - • • {-Diagonally wound hollow coils}
- U H02K 15/06
 - Embedding prefabricated windings in the machine
- H02K 15/061
 - • {-Air-gap windings}
- H02K 15/062
 - • {-Windings in slots; salient pole windings}
- H02K 15/063
 - • • {-Windings for large electric machines, e.g. bar windings (windings consisting of cables [H02K 15/065](#))}
- H02K 15/064
 - • • {-Windings consisting of separate segments, e.g. hairpin windings ([H02K 15/063](#) takes precedence)}
- H02K 15/065
 - • • {-Windings consisting of complete sections, e.g. coils, waves (windings for large electric machines other than those consisting of cables [H02K 15/063](#))}
- H02K 15/066
 - • • • {-inserted perpendicularly to the axis of the slots or inter-polar channels}
- H02K 15/067
 - • • • {-inserted in parallel to the axis of the slots or inter-polar channels}
- H02K 15/068
 - • • • • {-Strippers}

- U H02K 16/00** **Machines with more than one rotor or stator {(machines for transmitting mechanical power from a driving shaft to a driven shaft and comprising structurally interrelated motor and generator parts [H02K 51/00](#); permanent magnet machines with multiple rotors or stators relatively rotated for vectorially combining the excitation fields or the armature voltages [H02K 21/029](#))}**
- U H02K 16/02 · Machines with one stator and two {or more} rotors
- H02K 16/025 · · {-with rotors and moving stators connected in a cascade (cascade arrangement of an asynchronous motor with another dynamo-electric motor or converter [H02K 17/34](#))}
- U H02K 19/00** **Synchronous motors or generators (having permanent magnet [H02K 21/00](#))**
- U H02K 19/16 · Synchronous generators
- U H02K 19/36 · · Structural association with auxiliary electric devices influencing the characteristic of, or controlling, the generator, e.g. with impedance, with switch (control arrangements external to the generator [H02P](#))
- H02K 19/365 · · · {-with a voltage regulator}
- U H02K 21/00** **Synchronous motors having permanent magnet; Synchronous generators having permanent magnet (stator cores with permanent magnets [H02K 1/17](#); rotor cores with permanent magnets [H02K 1/27](#))**
- U H02K 21/02 · Details
- H02K 21/021 · · {-Means for mechanical adjustment of the excitation flux}
- H02K 21/022 · · · {-by modifying the relative position between field and armature, e.g. between rotor and stator (vectorial combination of field or armature sections [H02K 21/029](#))}
- H02K 21/023 · · · · {-by varying the amount of superposition, i.e. the overlap, of field and armature}
- H02K 21/024 · · · · · {-Radial air gap machines}
- H02K 21/025 · · · · {-by varying the thickness of the air gap between field and armature}
- H02K 21/026 · · · · · {-Axial air gap machines}
- H02K 21/027 · · · · · {-Conical air gap machines}
- H02K 21/028 · · · {-by modifying the magnetic circuit within the field or the armature, e.g. by using shunts, by adjusting the magnets position, by vectorial combination of field or armature sections}
- H02K 21/029 · · · · {-Vectorial combination of the fluxes generated by a plurality of field sections or of the voltages induced in a plurality of armature sections}
- U H02K 21/04 · · Windings on magnet for additional excitation { ; windings and magnets for additional excitation}
- H02K 21/042 · · · {-with permanent magnets and field winding both rotating}
- H02K 21/044 · · · · {-Rotor of the claw pole type}
- H02K 21/046 · · · {-with rotating permanent magnets and stationary field winding}
- H02K 21/048 · · · · {-Rotor of the claw pole type}
- U H02K 41/00** **Propulsion systems in which a rigid body is moved along a path due to dynamo-electric interaction between the body and a magnetic field travelling along the path {(electromagnetic launchers [F41B 6/00](#))}**
- U H02K 41/02 · Linear motors; Sectional motors
- U H02K 41/03 · · Synchronous motors; Motors moving step by step; Reluctance motors ([H02K 41/035](#) takes precedence)
- H02K 41/031 · · · {-of the permanent magnet type}

- H02K 41/033
 - . . . {-with armature and magnets on one member, the other member being a flux distributor}
- U H02K 41/06
 - . Rolling motors, i.e. having the rotor axis parallel to the stator axis and following a circular path as the rotor rolls around the inside or outside of the stator; { Nutating motors, i.e. having the rotor axis inclined with respect to the stator axis and performing a nutational movement as the rotor rolls on the stator}
- H02K 41/065
 - . {-Nutating motors}
- U **H02K 49/00**

Dynamo-electric clutches; Dynamo-electric brakes (electrically or magnetically actuated clutches or brakes [F16D 27/00](#), [F16D 29/00](#), [F16D 65/28](#); magnetic-particle clutches [F16D 37/02](#); adapted for use as dynamometers [G01L](#))
- U H02K 49/02
 - . of the asynchronous induction type
- U H02K 49/04
 - . . of the eddy-current hysteresis type {(eddy current brakes cooperating with a rail [B61H 7/083](#))}
- H02K 49/043
 - . . . {-with a radial airgap}
- H02K 49/046
 - . . . {-with an axial airgap}
- U H02K 49/10
 - . of the permanent-magnet type
- H02K 49/102
 - . . {-Magnetic gearings, i.e. assembly of gears, linear or rotary, by which motion is magnetically transferred without physical contact (magnetized gearings with physical contact [F16H 13/12](#), [F16H 49/005](#))}
- H02K 49/104
 - . {-Magnetic couplings consisting of only two coaxial rotary elements, i.e. the driving element and the driven element}
- H02K 49/106
 - . . . {-with a radial air gap}
- H02K 49/108
 - . . . {-with an axial air gap}

Project: N/A (H02M)

- U **H02M 1/00**

Details of apparatus for conversion
- U H02M 2001/0003
 - . {Details of control, feedback and regulation circuits }
- H02M 2001/0029
 - . . {Circuits or arrangements for limiting the slope ("*slew rate*") of switching signals}{"*slew rate*") of switching signals}
- U H02M 1/02
 - . Circuits specially adapted for the generation of grid-control or igniter-control voltages for discharge tubes incorporated in static converters
- U H02M 1/04
 - . . for tubes with grid control
- H02M 1/042
 - . . . {-wherein the phase of the control voltage is adjustable with reference to the AC voltage}
- U H02M 1/08
 - . Circuits specially adapted for the generation of control voltages for semiconductor devices incorporated in static converters
- U H02M 1/084
 - . . using a control circuit common to several phases of a multi-phase system
- H02M 1/0845
 - . . . {digitally controlled (*or with digital control*)}{~~or with digital control~~}
- U H02M 1/42
 - . Circuits or arrangements for compensating for or adjusting power factor in converters or inverters

WARNINGS

Group [H02M 1/42](#) is not complete, see provisionally also [H02M 1/32](#) and subgroups
- H02M 1/4208
 - . {-Arrangements for improving power factor of AC input}
- H02M 1/4216
 - . . . {-operating from a three-phase input voltage ([H02M 1/4233](#) takes precedence)}
- H02M 1/4225
 - . . . {-using a non-isolated boost converter}

- H02M 1/4233 . . . {-using a bridge converter consisting of active switches}
- H02M 1/4241 . . . {-using a resonant converter}
- H02M 1/425 . . . {-using a single converter stage both for correction of AC input power factor and generation of a high frequency AC output voltage}
- H02M 1/4258 . . . {-using a single converter stage both for correction of AC input power factor and generation of a regulated and galvanically isolated DC output voltage ([H02M 1/4241](#) takes precedence)}
- H02M 1/4266 . . . {-using passive elements}
- U H02M 3/00 Conversion of dc power input into dc power output {(converters specially adapted for use in combination with a battery [H02J 7/0065](#))}**
- U H02M 3/02 . without intermediate conversion into ac
- U H02M 3/04 . by static converters
- U H02M 3/06 . . using resistors or capacitors, e.g. potential divider
- H02M 3/07 using capacitors charged and discharged alternately by semiconductor devices with control electrode, { e.g. charge pumps-(for substrate bias voltage generators [G05F 3/205](#); for static stores [G11C 5/145](#), [G11C 16/06](#); charge pumping structures for internal polarisation [H01L 27/0222](#))}
- U H02M 7/00 Conversion of ac power input into dc power output; Conversion of dc power input into ac power output**
- U H02M 7/02 . Conversion of ac power input into dc power output without possibility of reversal
- U H02M 7/04 . by static converters
- U H02M 7/06 . . using discharge tubes without control electrode or semiconductor devices without control electrode
- U H02M 7/10 arranged for operation in series, e.g. for multiplication of voltage
- H02M 7/103 {~~Containing passive elements (capacitively coupled)~~{*Containing passive elements (capacitively coupled)* which are ordered in cascade on one source}
- U H02M 7/42 . Conversion of dc power input into ac power output without possibility of reversal
- U H02M 7/44 . by static converters
- U H02M 7/48 . . using discharge tubes with control electrode or semiconductor devices with control electrode
- U H02M 7/53 using devices of a triode or transistor type requiring continuous application of a control signal {([H02M 7/4807](#), [H02M 7/493](#) and [H02M 7/4826](#) take precedence)}
- U H02M 7/537 using semiconductor devices only, e.g. single switched pulse inverters
- U H02M 7/5383 in a self-oscillating arrangement ([H02M 7/538](#) takes precedence)
- U H02M 7/53846 Control circuits
- WARNING
- Group [H02M 7/53846](#) and subgroups is not complete, see provisionally also [H02M 7/5383](#) and subgroups
- H02M 7/538463 {-for thyristor type converters}
- H02M 7/538466 {-for transistor type converters}

Project: N/A (H02N)

- U H02N 2/00** **Electric machines in general using piezo-electric effect, electrostriction or magnetostriction (generating mechanical vibrations in general [B06B](#); piezo-electric, electrostrictive or magnetostrictive devices in general [H01L 41/00](#))**
- WARNING**
This group is not complete pending reorganisation; see provisionally also [H01L 41/00](#)
- H02N 2/0005 · {-producing non-specific motion; Details common to machines covered by [H02N 2/02](#) to [H02N 2/16](#)}
 - H02N 2/001 · · {-Driving devices, e.g. vibrators}
 - H02N 2/0015 · · · {-using only bending modes}
 - H02N 2/002 · · · {-using only longitudinal or radial modes}
 - H02N 2/0025 · · · · {-using combined longitudinal modes}
 - H02N 2/003 · · · {-using longitudinal or radial modes combined with bending modes}
 - H02N 2/0035 · · · · {-Cylindrical vibrators}
 - H02N 2/004 · · · · {-Rectangular vibrators}
 - H02N 2/0045 · · · {-using longitudinal or radial modes combined with torsion or shear modes}
 - H02N 2/005 · · {-Mechanical details, e.g. housings (casings for dynamo-electric machines [H02K 5/00](#))}
 - H02N 2/0055 · · · {-Supports for driving or driven bodies; Means for pressing driving body against driven body}
 - H02N 2/006 · · · · {-Elastic elements, e.g. springs (in general [F16F 1/00](#))}
 - H02N 2/0065 · · · {-Friction interface (friction linings [F16D 69/00](#))}
 - H02N 2/007 · · · · {-Materials}
 - H02N 2/0075 · · {-Electrical details, e.g. drive or control circuits or methods}
 - H02N 2/008 · · · {-Means for controlling vibration frequency or phase, e.g. for resonance tracking}
 - H02N 2/0085 · · · {-Leads; Wiring arrangements}
 - H02N 2/009 · · {-Thermal details, e.g. cooling means}
 - H02N 2/0095 · {-producing combined linear and rotary motion, e.g. multi-direction positioners}
 - U H02N 2/02 · producing linear motion, e.g. actuators; Linear positioners; { Linear motors}
 - U H02N 2/021 · · {-using intermittent driving, e.g. step motors, piezoleg motors }
 - H02N 2/023 · · · {-Inchworm motors}
 - H02N 2/025 · · · {-Inertial sliding motors}
 - H02N 2/026 · · {-by pressing one or more vibrators against the driven body}
 - H02N 2/028 · · {-along multiple or arbitrary translation directions, e.g. XYZ stages}
 - U H02N 2/04 · · Constructional details
 - H02N 2/043 · · · {-Mechanical transmission means, e.g. for stroke amplification}
 - H02N 2/046 · · · · {-for conversion into rotary motion}
 - U H02N 2/06 · · Drive circuits; Control arrangements { or methods}
 - H02N 2/062 · · · {-Small signal circuits; Means for controlling position or derived quantities, e.g. for removing hysteresis}
 - H02N 2/065 · · · {-Large signal circuits, e.g. final stages}
 - H02N 2/067 · · · · {-generating drive pulses}
 - U H02N 2/10 · producing rotary motion, e.g. rotary motors
 - H02N 2/101 · · {-using intermittent driving, e.g. step motors}

- H02N 2/103
 - H02N 2/105
 - H02N 2/106
 - H02N 2/108
 - U H02N 2/12
 - H02N 2/123
 - H02N 2/126
 - U H02N 2/14
 - H02N 2/142
 - H02N 2/145
 - H02N 2/147
 - U H02N 2/16
 - H02N 2/163
 - H02N 2/166
 - U H02N 2/18
 - H02N 2/181
 - H02N 2/183
 - H02N 2/185
 - H02N 2/186
 - H02N 2/188
 - H02N 2/22
- • {-by pressing one or more vibrators against the rotor}
 - • {-Cycloid or wobble motors; Harmonic traction motors}
 - • {-Langevin motors}
 - • {-around multiple axes of rotation, e.g. spherical rotor motors}
 - • Constructional details
 - • • {-Mechanical transmission means, e.g. for gearing}
 - • • • {-for conversion into linear motion}
 - • Drive circuits; Control arrangements { or methods}
 - • • {-Small signal circuits; Means for controlling position or derived quantities, e.g. speed, torque, starting, stopping, reversing}
 - • • {-Large signal circuits, e.g. final stages}
 - • • • {-Multi-phase circuits}
 - • using travelling waves { i.e. Rayleigh surface waves}
 - • • {-Motors with ring stator}
 - • • {-Motors with disc stator}
 - producing electrical output from mechanical input, e.g. generators (for measurement devices [G01](#))
 - • {-Circuits; Control arrangements or methods}
 - • {-using impacting bodies (high voltage generators in spark lighters [F23Q](#))}
 - • {-using fluid streams}
 - • {-Vibration harvesters}
 - • • {-adapted for resonant operation}
 - {-Methods relating to manufacturing, e.g. assembling, calibration}

Project: RP0111 (H02P)

H02P

CONTROL OR REGULATION OF ELECTRIC MOTORS, **ELECTRIC** GENERATORS, OR DYNAMO-ELECTRIC CONVERTERS; ~~CONTROLLING TRANSFORMERS, REACTORS OR CHOKE COILS~~ (~~{ specially adapted for electrically propelled vehicles B60L}; structure of the starter, brake, or other control devices, see the relevant subclasses, e.g. mechanical brake F16D, mechanical speed regulator G05D, variable resistor H01C, starter switch H01H; systems for regulating electric or magnetic variables using transformers, reactors or choke coils G05F; arrangements structurally associated with motors, generators, dynamo-electric converters, transformers, reactors or choke coils, see the relevant subclasses, e.g. H01F, H02K; connection or control of one generator, transformer, reactor, choke coil, or dynamo-electric converter with regard to conjoint operation with similar or other source of supply H02J; control or regulation of static converters H02M)~~

NOTES

This subclass ~~covers~~**covers** arrangements for starting, regulating, electronically commutating, braking, or otherwise controlling motors, generators, dynamo-electric converters, clutches, brakes, gears, transformers, reactors or choke coils, of the types classified in the relevant subclasses, e.g. [H01F](#), [H02K](#).

This subclass ~~does not cover~~**does not cover** similar arrangements for the apparatus of the types classified in subclass [H02N](#), which arrangements are covered by that subclass.

In this subclass, the following terms or expressions are used with the meanings indicated:

- **"control"** means influencing a variable in any way, e.g. changing its direction or its value (including changing it to or

from zero), maintaining it constant, ~~or~~ limiting its range of variation;
- "regulation" means maintaining a variable at a desired value, or within a desired range of values, by comparison of the actual value with the desired value.

In this subclass, it is desirable to add the indexing codes of groups H02P 2101/00 and H02P 2103/00

Project: N/A (H02P)

- U H02P 1/00** Arrangements for starting electric motors or dynamo-electric converters (starting of synchronous motors with electronic commutators except reluctance motors, [H02P 6/20](#), [H02P 6/22](#); starting dynamo-electric motors rotating step by step [H02P 8/04](#); vector control [H02P 21/00](#))
- U H02P 1/02
H02P 1/028
- Details
 - {wherein the motor voltage is increased at low speed, to start or restart high inertia loads}
- U H02P 1/16
- for starting dynamo-electric motors or dynamo-electric converters
- U H02P 1/42
- for starting an individual single-phase induction motor ({[H02P 27/04](#) takes precedence})
- H02P 1/423
- • {by using means to limit the current in the main winding }
- U H02P 3/00** Arrangements for stopping or slowing electric motors, generators, or dynamo-electric converters (stopping of synchronous motors with electronic commutators except reluctance motors, [H02P 6/24](#); stopping dynamo-electric motors rotating step by step [H02P 8/24](#); vector control [H02P 21/00](#))
- U H02P 3/02
H02P 3/025
- Details
 - {holding the rotor in a fixed position after deceleration}
- U H02P 5/00** Arrangements specially adapted for regulating or controlling the speed or torque of two or more electric motors (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); { synchronous motors or other dynamo-electric motors with electronic commutators in dependence on the rotor position [H02P 6/00](#); motors rotating step by step [H02P 8/00](#);} vector control [H02P 21/00](#))
- U H02P 2005/28
- {for speed regulation of an individual ac motor by varying stator or rotor current }
- U H02P 2005/36
- • {using discharge tubes or semiconductor devices }
- U H02P 2005/40
- • • {using semiconductor devices }
- H02P 2005/4015
- • • • {by methods not covered by groups [H02P 2005/4016](#) to [H02P 2005/415](#)}
- U H02P 6/00** Arrangements for controlling synchronous motors or other dynamo-electric motors with electronic commutators in dependence on the rotor position; Electronic commutators therefor (stepping motors [H02P 8/00](#); vector control [H02P 21/00](#); reluctance motors [H02P 25/08](#))
- NOTE
Groups [H02P 6/006](#) and [H02P 6/008](#) take precedence over groups [H02P 6/001](#) to [H02P 6/005](#) and [H02P 6/04](#) to [H02P 6/24](#)
- H02P 6/007
- {wherein the position is detected using the ripple of the current caused by the commutation}
- U H02P 6/14
- Electronic commutators
- U H02P 6/142
- • {Changing commutation time}

- H02P 6/145
 - • • {wherein the commutation is advanced from position signals phase in function of the speed}
- H02P 6/147
 - • • {wherein the commutation is function of electro magnetic force [EMF]}
- U H02P 6/16
 - • Circuit arrangements for detecting position (structural arrangement of position sensors [H02K 29/06](#))
- U H02P 6/18
 - • • without separate position detecting elements, e.g. using back-emf in windings {([H02P 6/165](#) takes precedence)}
- H02P 6/181
 - • • • {using different methods depending on the speed}
- H02P 6/183
 - • • • {using an injected high frequency signal}
- H02P 6/186
 - • • • {using difference of inductance or reluctance between the phases}
- H02P 6/187
 - • • • {using the star point voltage}
- H02P 6/188
 - • • • {using the voltage difference between the windings ([H02P 6/182](#) takes precedence)}
- U H02P 7/00**

Arrangements for regulating or controlling the speed or torque of electric DC motors (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); { synchronous motors or other dynamo-electric motors with electronic commutators in dependence on the rotor position [H02P 6/00](#); motors rotating step by step [H02P 8/00](#);} vector control [H02P 21/00](#))
- H02P 7/0094
 - {wherein the position is detected using the ripple of the current caused by the commutator}
- U H02P 7/06
 - for regulating or controlling an individual dc dynamo-electric motor by varying field or armature current
- U H02P 7/18
 - • by master control with auxiliary power
- H02P 7/348
 - • • for changing between series and parallel connections of motors
- U H02P 2007/36
 - {for controlling an individual ac dynamo-electric motor by varying stator or rotor current }
- U H02P 2007/52
 - • {by master control with auxiliary power }
- U H02P 2007/58
 - • • {using discharge tubes or semiconductor devices }
- U H02P 2007/62
 - • • • {using semiconductor devices }
- H02P 2007/6211
 - • • • • {by methods not covered by [H02P 2007/6213](#) to [H02P 2007/635](#)}
- U H02P 9/00**

Arrangements for controlling electric generators for the purpose of obtaining a desired output (Ward-Leonard arrangements [H02P 7/34](#); vector control [H02P 21/00](#); feeding a network by two or more generators [H02J](#); for charging batteries [H02J 7/14](#))
- D H02P 2009/001
 - {Controlling arrangements characterised by their applications }
- D H02P 2009/002
 - • {Control of generators for motor vehicles e.g. car alternators }
- D H02P 2009/003
 - • {Control of generators for water driven turbines }
- D H02P 2009/004
 - • {Control of generators for wind turbines }
- D H02P 2009/005
 - • {Control of generators for aircrafts }
- H02P 9/008
 - {wherein the generator is controlled by the requirements of the prime mover}
- U H02P 21/00**

Arrangements or methods for the control of electric machines by vector control, e.g. by control of field orientation

NOTES

1. Groups [H02P 21/06](#) to [H02P 21/12](#) cover vector control arrangements or methods involving the use of rotor position or speed sensors.

2. Vector control arrangements or methods not involving the use of rotor position or speed sensors are classified in groups [H02P 21/0039](#) and subgroups

When classifying in this group, it is desirable to also classify in groups [H02P 25/00](#) to [H02P 27/00](#) if the kind of AC motor, structural details, or the kind of supply voltage are of interest.

- H02P 21/0003
 - {-Control strategies in general, e.g. linear type e.g. P, PI, PID, using robust control}
- H02P 21/0007
 - • {-using sliding mode control}
- H02P 21/001
 - • {-using fuzzy control}
- H02P 21/0014
 - • {-using neural networks}
- H02P 21/0017
 - • {-Model reference adaptation, e.g. MRAS or MRAC, useful for control or parameter estimation}
- H02P 21/0021
 - • {-using different modes of control depending on a parameter, e.g. the speed }
- H02P 21/0025
 - • {-implementing a off line learning phase to determine and store useful data for on-line control}
- H02P 21/0039
 - {-not involving the use of rotor position or speed sensors}
- H02P 21/0042
 - • {-Rotor flux based control}
- H02P 21/0046
 - • {-Stator flux based control}
- H02P 21/005
 - • • {-Direct torque control (DTC) or field acceleration method (FAM)}
- H02P 21/0053
 - • {-Determining the initial rotor position (arrangements for starting [H02P 21/0032](#); position detection in general [H02P 6/16-H02P 6/185](#))}
- H02P 21/0085
 - {-specially adapted for high speeds, e.g. above nominal speed}
- H02P 21/0089
 - • {-using field weakening}
- H02P 21/0096
 - {-Vector control arrangements or methods not otherwise provided for in [H02P 21/00-H02P 21/148](#)}
- U H02P 21/14
 - Estimation or adaptation of machine parameters, e.g. rotor time constant, flux, speed, current or voltage
- H02P 21/141
 - • {-Flux estimation}
- H02P 21/143
 - • {-Inertia or moment of inertia estimation}
- H02P 21/146
 - • {-Position or speed estimation}
- H02P 21/148
 - • {-Torque estimation}

- U **H02P 23/00** **Arrangements or methods for the control of AC motors characterised by a control method other than vector control (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); of two or more motors [H02P 5/00](#); of synchronous motors with electronic commutators [H02P 6/00](#); of DC motors [H02P 7/00](#); of stepping motors [H02P 8/00](#))**

NOTE

When classifying in this group, it is desirable to also classify in groups [H02P 25/00](#) to [H02P 27/00](#) if the kind of AC motor, structural details, or the kind of supply voltage are of interest.

- H02P 23/0004
 - {-Control strategies in general, e.g. linear type e.g. P, PI, PID, using robust control (control strategies related to the motor [H02P 23/0036](#))}
- H02P 23/0009
 - • {-using sliding mode control}
- H02P 23/0013
 - • {-using fuzzy control}
- H02P 23/0018
 - • {-using neural networks}
- H02P 23/0022
 - • {-Model reference adaptation, e.g. MRAS or MRAC, useful for control or parameter estimation}

- H02P 23/0027 · · {using different modes of control depending on a parameter, e.g. the speed }
- H02P 23/0031 · · {implementing a off line learning phase to determine and store useful data for on-line control}
- H02P 23/0036 · {Control strategies related to the functioning of the motor}
- H02P 23/0086 · {specially adapted for high speeds, e.g. above nominal speed}
- H02P 23/009 · · {using field weakening}
- U H02P 25/00** **Arrangements or methods for the control of AC motors characterised by the kind of AC motor or by structural details (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); of two or more motors [H02P 5/00](#); of synchronous motors with electronic commutators [H02P 6/00](#); of DC motors [H02P 7/00](#); of stepping motors [H02P 8/00](#))**
- NOTE
- When classifying in this group, it is desirable to also classify in groups [H02P 21/00](#), [H02P 23/00](#) or [H02P 27/00](#) if the control method or the kind of supply voltage are of interest.
- U H02P 25/02 · characterised by the kind of motor
- U H02P 25/08 · · Reluctance motors
- U H02P 25/085 · · · {Converters specially adapted for controlling reluctance motors}
- H02P 25/086 · · · · {wherein the converter comprises only one switch per phase}
- U H02P 25/16 · characterised by the circuit arrangement or by the kind of wiring
- U H02P 25/18 · · with arrangements for switching the windings, e.g. with mechanical switches or relays
- H02P 25/188 · · · {wherein the motor windings are switched from series to parallel or vice-versa to control speed or torque}
- U H02P 27/00** **Arrangements or methods for the control of AC motors characterised by the kind of supply voltage (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); of two or more motors [H02P 5/00](#); of synchronous motors with electronic commutators [H02P 6/00](#); of DC motors [H02P 7/00](#); of stepping motors [H02P 8/00](#))**
- NOTE
- When classifying in this group, it is desirable to also classify in groups [H02P 21/00](#), [H02P 23/00](#) or [H02P 25/00](#) if the control method, the kind of AC motor or structural details are of interest.
- U H02P 27/04 · using variable-frequency supply voltage, e.g. inverter or converter supply voltage
- H02P 27/047 · · {V/F converter, wherein the voltage is controlled proportionally with the frequency}
- U H02P 27/06 · · using dc to ac converters or inverters ([H02P 27/05](#) takes precedence)
- U H02P 27/08 · · · with pulse width modulation
- H02P 27/085 · · · · {wherein the PWM mode is adapted on the running conditions of the motor, e.g. the switching frequency}
- U H02P 29/00** **Arrangements for regulating or controlling electric motors, appropriate for both ac- and DC motors (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); control of motors that can be connected to two or more different voltage or current supplies [H02P 4/00](#); vector control [H02P 21/00](#))**

- H02P 29/0044
 - {-Controlling or determining the motor or drive temperature (AC motor parameter estimation [H02P 23/14](#); motor parameter estimation for vector control [H02P 21/14](#); protection against overload [H02P 29/02](#); protection against faults of stepper motores [H02P 8/36](#))}
- H02P 29/005
 - · {-for raising the temperature of the motor}
- H02P 29/0055
 - · {-controlling or determining the winding temperature ([H02P 29/0072](#) takes precedence)}
- H02P 29/0061
 - · {-controlling or determining the rotor temperature}
- H02P 29/0066
 - · · {-the rotor having permanent magnets ([H02P 29/0083](#) takes precedence)}
- H02P 29/0072
 - · · {-the rotor having windings}
- H02P 29/0077
 - · · · {-by rotor current detection}
- H02P 29/0083
 - · {-by back-emf evaluation to obtain the motor temperature (back-emf based rotor position determination [H02P 6/182](#))}
- H02P 29/0088
 - · {-based on the temperature of a drive component or a semiconductor component}
- H02P 29/0094
 - · · {-compensating for Hall sensor temperature non-linearity}
- U H02P 29/02
 - Providing protection against overload without automatic interruption of supply, e.g. monitoring {(protection during start [H02P 1/022](#); protection for stepper motors [H02P 8/36](#); generator overload and transient protection [H02P 9/10](#); protection with automatic interruption [H02H 7/0833](#))}

NOTE

Informative note

References listed below indicate places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:

Emergency protective circuit arrangements with automatic interruption if supply, in general [H02H 7/08](#);

Emergency protective circuit arrangements for limiting excess current or voltage without disconnection in general [H02H 7/08](#)

- H02P 29/021
 - · {-Detecting a fault condition, e.g. short circuit, locked rotor, open circuit or loss of load}
 - H02P 29/022
 - · · {-the motor continuing operation despite a fault condition, e.g. eliminating, compensating or remediating for the fault}
 - H02P 29/023
 - · · · {-the fault being a broken phase}
 - H02P 29/024
 - · · · {-the fault being an overvoltage}
 - H02P 29/025
 - · · · {-the fault being a power interruption}
 - H02P 29/026
 - · · · {-the fault being a power fluctuations}
 - H02P 29/027
 - · · · {-the fault being an over-current}
 - H02P 29/028
 - · {-Preventing damage to the motor, e.g. setting individual current limits for different drive conditions}
- N H02P 2101/00 - H02P 2103/00** **Indexing scheme associated with groups relating to the arrangements for controlling electric generators**
- N H02P 2101/00** **Special adaptation of control arrangements for generators**
- N H02P 2101/10 · for water-driven turbines
 - N H02P 2101/15 · for wind-driven turbines
 - N H02P 2101/20 · for steam-driven turbines
 - N H02P 2101/25 · for combustion engines
 - N H02P 2101/30 · for aircraft

- N H02P 2101/35 · for ships
- N H02P 2101/40 · for railway vehicles
- N H02P 2101/45 · for motor vehicles, e.g. car alternators

N H02P 2103/00 Controlling arrangements characterised by the type of generator

- N H02P 2103/10 · of the asynchronous type
- N H02P 2103/20 · of the synchronous type

Project: N/A (H02S)

U H02S 40/00 Components or accessories specially adapted for PV modules, not provided for in groups [H02S 10/00](#)-[H02S 30/00](#)

WARNING

Groups [H02S 40/10](#) - [H02S 40/44](#) are incomplete pending reclassification of documents from groups [H02S 40/00](#), [F24J 2/00](#), [H01L 31/0232](#), [H01L 31/05](#) - [H01L 31/055](#).

Until reclassification is complete, groups [H02S 40/00](#), [F24J 2/00](#), [H01L 31/0232](#) and [H01L 31/05](#) - [H01L 31/055](#) should be considered in order to perform a complete search.

- U H02S 40/30 · Electrical components
- H02S 40/345 · · {with cooling means associated with the electrical connection means, e.g. cooling means associated with or applied to the junction box (cooling means for PV cells [H01L 31/052](#), for PV modules [H02S 40/42](#)-)}

Project: N/A (H03B)

H03B

GENERATION OF OSCILLATIONS, DIRECTLY OR BY FREQUENCY-CHANGING, BY CIRCUITS EMPLOYING ACTIVE ELEMENTS WHICH OPERATE IN A NON-SWITCHING MANNER; GENERATION OF NOISE BY SUCH CIRCUITS (-measuring, testing [G01R](#) ; generators adapted for electrophonic musical instruments [G10H](#) ; Speech synthesis [G10L](#) ; masers, lasers [H01S](#) ; dynamo-electric machines [H02K](#) ; power inverter circuits [H02M](#) ; by using pulse techniques [H03K](#) ; automatic control of generators [H03L](#) ; starting, synchronisation or stabilisation of generators where the type of generator is irrelevant or unspecified [H03L](#) ; generation of oscillations in plasma [H05H](#)-)

U H03B 1/00

Details

H03B 1/02

- Structural details of power oscillators, e.g. for heating{(-construction of transmitters [H04B](#) ; features of generators for heating by electromagnetic fields [H05B 6/00](#))}

H03B 5/00

Generation of oscillations using amplifier with regenerative feedback from output to input (-[H03B 9/00](#) , [H03B 15/00](#) take precedence-)

U H03B 5/08

- with frequency-determining element comprising lumped inductance and capacitance

H03B 5/10

- · active element in amplifier being vacuum tube (-[H03B 5/14](#) takes precedence-)

H03B 5/12

- · active element in amplifier being semiconductor device (-[H03B 5/14](#) takes precedence-)

WARNING

Subgroups [H03B 5/1203](#) to [H03B 5/1296](#) are incomplete pending reclassification; see also the other subgroups of [H03B 5/12](#)

- U H03B 5/1206
 - • • {using multiple transistors for amplification}
- H03B 5/1209
 - • • • {the amplifier having two current paths operating in a differential manner and a current source or degeneration circuit in common to both paths e.g. a long-tailed pair.(-H03B 5/1215 takes precedence-)}
- H03B 5/1234
 - • • {and comprising means for varying the output amplitude of the generator}(-H03B 5/1278 takes precedence-)}
- U H03B 5/18
 - with frequency-determining element comprising distributed inductance and capacitance
- U H03B 5/1805
 - • {the frequency-determining element being a coaxial resonator}
- H03B 5/1811
 - • • {the active element in the amplifier being a vacuum tube (-see provisionally also H03B 5/1835-)}
- H03B 5/1841
 - • {the frequency-determining element being a strip line resonator (-H03B 5/1805 , H03B 5/1817 , H03B 5/1864 and H03B 5/1882 take precedence-)}
- H03B 5/1858
 - • • {the active element in the amplifier being a vacuum tube (-see provisionally also H03B 5/1835-)}
- U H03B 5/20
 - with frequency-determining element comprising resistance and either capacitance or inductance, e.g. phase-shift oscillator
- H03B 5/22
 - • active element in amplifier being vacuum tube (-H03B 5/26 takes precedence-)
- H03B 5/24
 - • active element in amplifier being semiconductor device (-H03B 5/26 takes precedence-)
- U H03B 5/30
 - with frequency-determining element being electromechanical resonator
- H03B 5/32
 - • being a piezo-electric resonator (-selection of piezo-electric material H01L 41/00-)
- H03B 5/323
 - • • {the resonator having more than two terminals}(-H03B 5/326 takes precedence-)}
- H03B 5/34
 - • • active element in amplifier being vacuum tube (-H03B 5/38 takes precedence-)
- H03B 5/36
 - • • active element in amplifier being semiconductor device ({ H03B 5/323 , H03B 5/326 } , H03B 5/38 take precedence-)
- H03B 5/362
 - • • • {the amplifier being a single transistor}(-H03B 5/364 to H03B 5/368 take precedence-)}
- H03B 5/364
 - • • • {the amplifier comprising field effect transistors}(-H03B 5/366 takes precedence-)}
- H03B 5/40
 - • being a magnetostrictive resonator (-H03B 5/42 takes precedence; selection of magneto-strictive material { H01F 1/00 } ; H01L 41/00-)
- H03B 7/00**
 - Generation of oscillations using active element having a negative resistance between two of its electrodes}(-H03B 9/00 takes precedence-)**
- H03B 9/00**
 - Generation of oscillations using transit-time effects}(-construction of tube and circuit arrangements not adapted to a particular application H01J ; construction of the semiconductor devices H01L-)}**
- U H03B 9/01
 - using discharge tubes
- H03B 9/02
 - • using a retarding-field tube (-using klystrons H03B 9/04-)
- U H03B 9/12
 - using solid state devices, e.g. Gunn-effect devices
- U H03B 9/14
 - • and elements comprising distributed inductance and capacitance
- H03B 9/145
 - • • {the frequency being determined by a cavity resonator, e.g. a hollow waveguide cavity or a coaxial cavity (-H03B 9/141 to H03B 9/143 , H03B 9/147 , H03B 9/148 take precedence-)}

- H03B 9/147 · · · {the frequency being determined by a stripline resonator (~~H03B 9/141~~ to ~~H03B 9/143~~ , ~~H03B 9/148~~ take precedence)}
- H03B 9/148 · · · {the frequency being determined by a dielectric resonator (~~H03B 9/141~~ to ~~H03B 9/143~~ take precedence)}
- H03B 11/00 Generation of oscillations using a shock-excited tuned circuit (~~with feedback H03B 5/00~~)**
- H03B 11/02 · excited by spark (~~spark gaps therefor H01T 9/00~~)
- H03B 15/00 Generation of oscillations using galvano-magnetic devices, e.g. Hall-effect devices, or using super-conductivity effects (~~galvano-magnetic devices per se H01L 43/00~~)**
- H03B 15/003 · {using superconductivity effects (~~devices using superconductivity H01L 39/00~~)}
- H03B 19/00 Generation of oscillations by non-regenerative frequency multiplication or division of a signal from a separate source (~~transference of modulation from one carrier to another H03D 7/00~~)**
- H03B 21/00 Generation of oscillations by combining unmodulated signals of different frequencies (~~H03B 19/00~~ takes precedence; frequency changing circuits in general H03D)**
- U H03B 21/01 · by beating unmodulated signals of different frequencies
- H03B 21/02 · · by plural beating, i.e. for frequency synthesis; {Beating in combination with multiplication or division of frequency (~~digital frequency synthesis using a ROM G06F 1/02~~ ; digital frequency synthesis in general H03K ; indirect frequency synthesis using a PLL H03L 7/16)}
- H03B 23/00 Generation of oscillations periodically swept over a predetermined frequency range (~~angle-modulating circuits in general H03C 3/00~~)**
- H03B 28/00 Generation of oscillations by methods not covered by groups H03B 5/00 to H03B 27/00 , including modification of the waveform to produce sinusoidal oscillations (~~analogue function generators for performing computing operations G06G 7/26~~ ; use of transformers for conversion of waveform in ac-ac converters H02M 5/18)**
- H03B 29/00 Generation of noise currents and voltages(~~gasfilled discharge tubes with solid cathode specially adapted as noise generators H01J 17/05~~)**

Project: N/A (H03C)

- U H03C 3/00 **Angle modulation (H03C 5/00, H03C 7/00 take precedence)**
- U H03C 3/02 · Details
- U H03C 3/09 · · Modifications of modulator for regulating the mean frequency
- H03C 3/0908 · · · {using a phase locked loop}
- H03C 3/0916 · · · · {with frequency divider or counter in the loop}
- H03C 3/0925 · · · · · {applying frequency modulation at the divider in the feedback loop}
- H03C 3/0933 · · · · · {using fractional frequency division in the feedback loop of the phase locked loop}
- H03C 3/0941 · · · · {applying frequency modulation at more than one point in the loop}
- H03C 3/095 · · · · {applying frequency modulation to the loop in front of the voltage controlled oscillator}
- H03C 3/0958 · · · · {applying frequency modulation by varying the characteristics of the voltage controlled oscillator}
- H03C 3/0966 · · · · {modulating the reference clock}

- H03C 3/0975 {applying frequency modulation in the phase locked loop at components other than the divider, the voltage controlled oscillator or the reference clock}
- H03C 3/0983 {containing in the loop a mixer other than for phase detection}
- H03C 3/0991 {including calibration means or calibration methods}

Project: N/A (H03D)**U H03D 7/00**

Transference of modulation from one carrier to another, e.g. frequency-changing (H03D 9/00, H03D 11/00 take precedence; dielectric amplifiers, magnetic amplifiers, parametric amplifiers used as a frequency-changers H03F)

U H03D 7/14

- Balanced arrangements

H03D 7/1425

- . {with transistors}

WARNING

Subgroups [H03D 7/1433](#) to [H03D 7/1491](#) are incomplete pending reclassification; see also this group and its other subgroups

H03D 7/1433

- . . {using bipolar transistors ([H03D 7/145](#) takes precedence)}

H03D 7/1441

- . . {using field-effect transistors ([H03D 7/145](#) takes precedence)}

H03D 7/145

- . . {using a combination of bipolar transistors and field-effect transistors}

H03D 7/1458

- . . {Double balanced arrangements, i.e. where both input signals are differential}

H03D 7/1466

- . . {Passive mixer arrangements}

H03D 7/1475

- . . {Subharmonic mixer arrangements}

H03D 7/1483

- . . {comprising components for selecting a particular frequency component of the output}

H03D 7/1491

- . . {Arrangements to linearise a transconductance stage of a mixer arrangement}

Project: N/A (H03F)**U H03F 1/00**

Details of amplifiers with only discharge tubes, only semiconductor devices or only unspecified devices as amplifying elements

U H03F 1/08

- Modification of amplifiers to reduce detrimental influences of internal impedances of amplifying elements (wide-band amplifiers with inter-stage coupling networks incorporating these impedances [H03F 1/42](#); eliminating transit-time effects in vacuum tubes [H01J 21/34](#))

H03F 1/18

- . by use of distributed coupling {i.e. distributed amplifiers-(distributed amplifiers using coupling networks with distributed constants [H03F 3/605](#))}

H03F 1/30

- Modifications of amplifiers to reduce influence of variations of temperature or supply voltage { or other physical parameters-(in differential amplifiers [H03F 3/45479](#))}

U H03F 3/00

Amplifiers with only discharge tubes or only semiconductor devices as amplifying elements

- H03F 3/005
- {-using switched capacitors, e.g. dynamic amplifiers; using switched capacitors as resistors in differential amplifiers ([H03F 3/45](#) takes precedence)}

NOTE

Groups [H03F 3/20](#) to [H03F 3/72](#) take precedence over groups [H03F 3/02](#) to [H03F 3/195](#)

WARNING

Not complete, see also [H03F 1/02](#), [H03F 3/70](#), [H03F 3/72](#)

H03F 21/00 {Amplifiers not covered by groups [H03F 3/00](#) to [H03F 19/00](#)-(dynamo-electric amplifiers [H02K](#))}

U H03F 2203/00 Indexing scheme relating to amplifiers with only discharge tubes or only semiconductor devices as amplifying elements covered by [H03F 3/00](#)

- U H03F 2203/45
- Indexing scheme relating to differential amplifiers
- H03F 2203/45698
- · the LC comprising one or more resistors coupled to the LC by feedback (*active or passive*)(*active or passive*)

Project: N/A (H03G)

H03G **CONTROL OF AMPLIFICATION** (-impedance networks, e.g. attenuators, [H03H](#); control of transmission in lines [H04B 3/04](#)-)

NOTES

This subclass covers:

- control of gain of amplifiers or frequency-changers,
- control of frequency range of amplifiers,
- limiting amplitude or rate of change of amplitude

Attention is drawn to the Note following the title of subclass [H03F](#).

H03G 1/00 **Details of arrangements for controlling amplification**{ for arrangements combined with means for generating a controlling signal, or these means per se, see the other main groups of [H03G](#) }

- U H03G 1/0005
- {Circuits characterised by the type of controlling devices operated by a controlling current or voltage signal}
- U H03G 1/0017
- · {the device being at least one of the amplifying solid state elements of the amplifier}
- H03G 1/0023
- · · {in emitter-coupled or cascode amplifiers ([H03GB4F](#) takes precedence)}
- H03G 1/02
- Remote control of amplification, tone, or bandwidth (-remote control in general [G05](#) , [G08](#) ; combined with remote tuning or selection of resonant circuits [H03J](#)-)
- H03G 1/04
- Modifications of control circuit to reduce distortion caused by control (-modifications to reduce influence of variations of internal impedance of amplifying elements caused by control [H03F 1/08](#)-)

H03G 3/00 **Gain control in amplifiers or frequency changers** {without distortion of the input signal}(-gated amplifiers [H03F 3/72](#) ; peculiar to television receivers [H04N](#)-)

- H03G 3/002
- {Control of digital or coded signals (-[H03G 3/3089](#) take precedence-)}
- H03G 3/005
- {Control by a pilot signal (-[H03G 3/001](#) takes precedence-)}
- H03G 3/02
- Manually-operated control{ [H03G 3/001](#) and [H03G 3/002](#) take precedence }
- H03G 3/20
- Automatic control ({ [H03G 3/005](#) takes precedence } ; combined with volume compression or expansion [H03G 7/00](#)-)

- U H03G 3/22
H03G 3/26
- • in amplifiers having discharge tubes
 - • • Muting amplifier when no signal is present {or when only weak signals are present, or caused by the presence of noise, e.g. squelch systems}
- U H03G 3/30
H03G 3/3005
H03G 3/3036
H03G 3/3042
H03G 3/3052
H03G 3/3084
H03G 3/3094
H03G 3/34
H03G 3/341
H03G 3/342
H03G 3/344
H03G 3/345
- • in amplifiers having semiconductor devices
 - • • {in amplifiers suitable for low-frequencies, e.g. audio amplifiers ([H03G 3/32](#) , [H03G 3/34](#) take precedence-)}
 - • • {in high-frequency amplifiers or in frequency-changers ([H03G 3/3052](#) , [H03G 3/32](#) , [H03G 3/34](#) take precedence-)}
 - • • • {in modulators, frequency-changers, transmitters or power amplifiers (-transmission power control in bidirectional transmission systems [H04W 52/04](#)-)}
 - • • {in **bandpass amplifiers (H.F. or I.F.)** {in **bandpass amplifiers (H.F. or I.F.)** or in frequency-changers used in a (super)heterodyne receiver ([H03G 3/32](#) , [H03G 3/34](#) take precedence-)}
 - • • {in receivers or transmitters for electromagnetic waves other than radiowaves, e.g. lightwaves ([H03G 3/32](#) , [H03G 3/34](#) take precedence-)}
 - • • {in parametric amplifiers ([H03G 3/32](#) , [H03G 3/34](#) take precedence-)}
 - • • Muting amplifier when no signal is present {or when only weak signals are present, or caused by the presence of noise signals, e.g. squelch systems}
 - • • • {Muting when no signals or only weak signals are present ([H03G 3/344](#) , [H03G 3/345](#) take precedence-)}
 - • • • {Muting when some special characteristic of the signal is sensed which distinguishes it from noise, e.g. using speech detector ([H03G 3/344](#) , [H03G 3/345](#) take precedence-)}
 - • • • {Muting responsive to the amount of noise (**noise squelch**) (**noise squelch**) ([H03G 3/345](#) takes precedence-)}
 - • • • {Muting during a short period of time when noise pulses are detected, i.e. blanking ([H03G 3/348](#) takes precedence-)}
- U H03G 5/00**
H03G 5/005
H03G 5/02
- Tone control or bandwidth control in amplifiers**
- {of digital signals (-see provisionally also [H03G 5/00](#)-)}
 - Manually-operated control (-variable bandpass or bandstop filters [H03H 7/12](#)-)
- H03G 7/00**
H03G 7/001
H03G 7/002
H03G 7/007
H03G 7/008
- Volume compression or expansion in amplifiers{ frequency dependent [H03G 9/00](#) }**
- {without controlling loop ([H03G 7/007](#) , [H03G 7/02](#) , [H03G 7/06](#) take precedence-)}
 - {in untuned or low-frequency amplifiers e.g. audio amplifiers ([H03G 7/007](#) , [H03G 7/001](#) , [H03G 7/008](#) , [H03G 7/02](#) , [H03G 7/06](#) take precedence-)}
 - {of digital or coded signals (-see provis. also [H03G 7/00](#)-)}
 - {Control by a pilot signal ([H03G 7/007](#) , [H03G 7/02](#) , [H03G 7/06](#) take precedence-)}
- U H03G 9/00**
H03G 9/02
H03G 9/025
- Combinations of two or more types of control, e.g. gain control and tone control**
- in untuned amplifiers (-combined tone controls for low and high frequencies [H03G 5/00](#)){ compression or expansion combined with volume control [H03G 7/00](#)}
 - {frequency-dependent volume compression or expansion, e.g. multiple-band systems ([H03G 9/10](#) , [H03G 9/18](#) take precedence-)}

- H03G 9/26
- in untuned amplifying stages as well as in frequency-selective amplifying stages (-gain control in both stages [H03G 3/00](#) ; tone control or bandwidth control [H03G 5/00](#)-){ compression or expansion combined with volume control [H03G 7/00](#)-}

U H03G 11/00 Limiting amplitude; Limiting rate of change of amplitude;{Clipping in general}

- H03G 11/002
- {without controlling loop (-[H03G 11/004](#) , [H03G 11/006](#) , [H03G 11/008](#) , [H03G 11/02](#) , [H03G 11/04](#) , [H03G 11/06](#) , [H03G 11/08](#) take precedence; see provisional also [H03G 11/00](#)-)}
- H03G 11/004
- {using discharge tubes (-[H03G 11/008](#) takes precedence-)}
- H03G 11/006
- {in circuits having distributed constants (-[H03G 11/008](#) takes precedence-)}
- H03G 11/008
- {of digital or coded signals (-see provis. also [H03G 11/00](#) , [H03G 11/02](#)-)}
- H03G 11/02
- by means of diodes ({ [H03G 11/008](#) , } [H03G 11/04](#) , [H03G 11/06](#) , [H03G 11/08](#) take precedence-)
- H03G 11/04
- Limiting level dependent on strength of signal; Limiting level dependent on strength of carrier on which signal is modulated{ [H03G 11/008](#) takes precedence-}
- H03G 11/06
- {Limiters of angle-modulated signals}; such limiters combined with discriminators (-[H03G 11/00](#) takes precedence; discriminators having an inherent limiting action [H03D 3/00](#)-)
- H03G 11/08
- Limiting rate of change of amplitude{ [H03G 11/008](#) takes precedence-}

Project: N/A (H03H)

H03H

IMPEDANCE NETWORKS, e.g. RESONANT CIRCUITS; RESONATORS (-measuring, testing [G01R](#); arrangements for producing a reverberation or echo sound [G10K 15/08](#) ; impedance networks or resonators consisting of distributed impedances, e.g. of the waveguide type, [H01P](#); control of amplification, e.g. bandwidth control of amplifiers, [H03G](#); tuning resonant circuits, e.g. tuning coupled resonant circuits, [H03J](#); networks for modifying the frequency characteristics of communication systems [H04B](#)-)

NOTES

This subclass covers :

- networks comprising lumped impedance elements;
- networks comprising distributed impedance elements together with lumped impedance elements;
- networks comprising electromechanical or electro-acoustic elements;
- networks simulating reactances and comprising discharge tubes or semiconductor devices;
- constructions of electromechanical resonators.

In this subclass, the following expression is used with the meaning indicated:
"passive elements" means resistors, capacitors, inductors, mutual inductors or diodes.

Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "micro-structural devices" and "micro-structural systems".

In this subclass, main groups with a higher number take precedence.

H03H 1/00

Constructional details of impedance networks whose electrical mode of operation is not specified or applicable to more than one type of network (-constructional details of electromechanical transducers [H03H 9/00](#)-)

- U H03H 2001/0021
- {Constructional details}

- H03H 2001/0085 · · {Multilayer, e.g. LTCC, HTCC, green sheets (inside PCB filters [H05K](#))}
- H03H 2/00** **Networks using elements or techniques not provided for in groups [H03H 3/00](#) to [H03H 21/00](#)**
- H03H 2/003 · {comprising optical fibre network elements (-optical elements per se [G02B](#) , [G02F](#) ; transmission systems using light waves [H04B 10/00](#)-)}
- U H03H 3/00** **Apparatus or processes specially adapted for the manufacture of impedance networks, resonating circuits, resonators**
- U H03H 3/007 · for the manufacture of electromechanical resonators or networks
- H03H 3/0072 · · {of micro-electro-mechanical resonators or networks (-micro-membranes or micro-beams [B81B 2203/01](#) ; manufacture of micro-structural devices in general [B81C](#)-)}
- H03H 3/013 · · for obtaining desired frequency or temperature coefficient ({ [H03H 3/0076](#) } [H03H 3/04](#) , [H03H 3/10](#) take precedence-)
- H03H 3/02 · · for the manufacture of piezo-electric or electrostrictive resonators or networks (-[H03H 3/08](#) takes precedence-)
- H03H 7/00** **Multiple-port networks comprising only passive electrical elements as network components (-receiver input circuits [H04B 1/18](#) ; networks simulating a length of communication cable [H04B 3/40](#))**
- U H03H 7/01 · Frequency selective two-port networks
- H03H 7/0115 · · {comprising only inductors and capacitors (-[H03H 7/075](#) , [H03H 7/09](#) , [H03H 7/12](#) , [H03H 7/13](#) take precedence-)}
- U H03H 7/0153 · · {Electrical filters; Controlling thereof}
- H03H 7/0161 · · · {Bandpass filters (-[H03H 7/12](#) takes precedence-)}
- H03H 7/06 · · including resistors (-[H03H 7/075](#) , [H03H 7/09](#) , [H03H 7/12](#) , [H03H 7/13](#) take precedence-)
- H03H 7/12 · · Bandpass or bandstop filters with adjustable bandwidth and fixed centre frequency (-[H03H 7/09](#) takes precedence; automatic control of bandwidth in amplifiers [H03G 5/16](#)-)
- U H03H 7/17 · · {Structural details of sub-circuits of frequency selective networks}
- WARNING**
not complete, pending reorganisation, see provisionally also [H03H 7/0107](#) , [H03H 7/0123](#) to [H03H 7/07](#) , [H03H 7/09](#) to [H03H 7/13](#) and [H03H 7/42](#)
- H03H 7/1708 · · · {Comprising bridging elements, i.e. elements in a series path without own reference to ground and spanning branching nodes of another series path (-[H03H 7/07](#) takes precedence-)}
- U H03H 7/1716 · · · {Comprising foot-point elements}
- H03H 7/1733 · · · · {Element between different shunt or branch paths (-[H03H 7/425](#) takes precedence-)}
- H03H 7/1741 · · · {Comprising typical LC combinations, irrespective of presence and location of additional resistors (-when resistors are present, also classify in [H03H 7/06](#) to [H03H 7/07](#)-)}
- H03H 7/175 · · · · {Series LC in series path (-[H03H 7/1783](#) takes precedence-)}
- H03H 7/1758 · · · · {Series LC in shunt or branch path (-[H03H 7/1791](#) takes precedence-)}
- H03H 7/1766 · · · · {Parallel LC in series path (-[H03H 7/1783](#) takes precedence-)}
- H03H 7/1775 · · · · {Parallel LC in shunt or branch path (-[H03H 7/1791](#) takes precedence-)}
- U H03H 7/24 · Frequency- independent attenuators
- H03H 7/25 · · comprising an element controlled by an electric or magnetic variable (-[H03H 7/27](#) takes precedence-)

- H03H 7/30
 - Time-delay networks{(-analogue shift registers [G11C 27/04](#)-)}
- U H03H 7/42
 - Balance/unbalance networks
- U H03H 7/425
 - • {Balance-balance networks}
 - WARNING**
not complete, pending reorganisation, see provisionally also [H03H 1/00](#) to [H03H 1/0007](#), [H03H 7/0107](#), [H03H 7/0123](#) to [H03H 7/07](#) , [H03H 7/09](#) to [H03H 7/13](#) , [H03H 7/42](#) and [H03H 7/422](#)
- H03H 7/427
 - • • {Common-mode filters ([H02J 3/01](#) and [H02M 1/126](#) takes precedence-)}
 - WARNING**
not complete, pending reorganisation, see provisionally also [H03H 1/00](#) to [H03H 1/0007](#), [H03H 7/0107](#), [H03H 7/0123](#) to [H03H 7/07](#) , [H03H 7/09](#) to [H03H 7/13](#) and [H03H 7/42](#)
- H03H 7/46
 - Networks for connecting several sources or loads, working on different frequencies or frequency bands, to a common load or source (-for use in multiplex transmission systems [H04J 1/00](#)-)
- H03H 7/48
 - Networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source (-phase shifters providing two or more output signals [H03H 7/21](#)-)
- H03H 9/00**
 - Networks comprising electromechanical or electro-acoustic devices; Electromechanical resonators (-making single crystals [C30B](#); selection of materials thereof [H01L](#); piezo-electric, electrostrictive or magnetostrictive devices per se [H01L 41/00](#) ; electromechanical transducers [H04R](#)-)**
- H03H 9/0004
 - {Impedance-matching networks ([H03H 9/145](#) takes precedence-)}
- U H03H 9/0023
 - {Balance-unbalance or balance-balance networks}
- U H03H 9/0028
 - • {using surface acoustic wave devices}
- H03H 9/0047
 - • • {having two acoustic tracks ([H03H 9/008](#) , [H03H 9/0085](#) take precedence-)}
- H03H 9/008
 - • • {having three acoustic tracks ([H03H 9/0085](#) takes precedence-)}
- U H03H 9/02
 - Details
- U H03H 9/02007
 - • {of bulk acoustic wave devices}
- U H03H 9/02086
 - • • {Means for compensation or elimination of undesirable effects}
- H03H 9/02102
 - • • • {of temperature influence (-cutting angles [H03H 9/02015](#)-)}
- U H03H 9/02244
 - • {of micro-electro-mechanical resonators}
- U H03H 9/02393
 - • • {Post-fabrication trimming of parameters, e.g. resonance frequency, Q factor}
- H03H 9/02409
 - • • • {by application of a DC-bias voltage (-[H03H 9/02417](#) takes precedence-)}
- U H03H 9/02535
 - • {of surface acoustic wave devices}
- U H03H 9/02818
 - • • {Means for compensation or elimination of undesirable effects}
- H03H 9/02834
 - • • • {of temperature influence (-cut angles [H03H 9/02543](#)-)}
- H03H 9/02842
 - • • • {of reflections ([H03H 9/6406](#) takes precedence-)}
- H03H 9/02913
 - • • • {Measures for shielding against electromagnetic fields (-shielding of electrical components in general [H05K 9/00](#)-)}
- H03H 9/0296
 - • • {Surface acoustic wave [SAW] devices having both acoustic and non-acoustic properties}}
- H03H 9/02968
 - • • • {with optical devices (-mounting in enclosures [H03H 9/12](#)-)}
- U H03H 9/05
 - • Holders; Supports
- U H03H 9/0504
 - • • {for bulk acoustic wave devices}
- U H03H 9/0514
 - • • • {consisting of mounting pads or bumps}

- H03H 9/0519
 - • • • {for cantilever (~~H03H 9/1021~~ takes precedence)}
- U H03H 9/0538
 - • • {Constructional combinations of supports or holders with electromechanical or other electronic elements}
- H03H 9/0542
 - • • • {consisting of a lateral arrangement (~~H03H 9/0566~~ takes precedence)}
- H03H 9/0547
 - • • • {consisting of a vertical arrangement (~~H03H 9/0566~~ takes precedence)}
- U H03H 9/0566
 - • • • {for duplexers}
- H03H 9/0571
 - • • • {including bulk acoustic wave [BAW] devices}
- H03H 9/0576
 - • • • {including surface acoustic wave [SAW] devices}
- H03H 9/10
 - • • Mounting in enclosures{(-constructional combinations of enclosure with electromechanical and other electronic elements [H03H 9/0538](#))}
- H03H 9/1007
 - • • • {for bulk acoustic wave [BAW] devices}
- H03H 9/1064
 - • • • {for surface acoustic wave [SAW] devices}
- H03H 9/1092
 - • • • {the enclosure being defined by a cover cap mounted on an element forming part of the surface acoustic wave [SAW] device on the side of the IDT's}
- U H03H 9/125
 - • Driving means, e.g. electrodes, coils
- H03H 9/13
 - • • for networks consisting of piezo-electric or electrostrictive materials (~~H03H 9/145~~ takes precedence)
- H03H 9/135
 - • • for networks consisting of magnetostrictive materials (~~H03H 9/145~~ takes precedence)
- U H03H 9/145
 - • • for networks using surface acoustic waves
- H03H 9/14502
 - • • • {Surface acoustic wave [SAW] transducers for a particular purpose}
- H03H 9/14508
 - • • • {Polyphase SAW transducers}
- H03H 9/14544
 - • • • {Transducers of particular shape or position (~~weighting [H03H 9/14517](#)~~)}
- H03H 9/14555
 - • • • {Chirped transducers (~~H03H 9/6406~~ takes precedence)}
- H03H 9/14558
 - • • • {Slanted, tapered or fan shaped transducers (~~H03H 9/14561~~ , ~~[H03H 9/14564](#)~~ take precedence)}
- H03H 9/15
 - Constructional features of resonators consisting of piezo-electric or electrostrictive material (~~H03H 9/25~~ takes precedence)
- H03H 9/17
 - • having a single resonator (-crystal tuning forks [H03H 9/21](#)-)
- H03H 9/176
 - • • {consisting of ceramic material (~~H03H 9/177~~ , ~~[H03H 9/178](#)~~ take precedence)}
- H03H 9/205
 - • having multiple resonators (-crystal tuning forks [H03H 9/21](#)-)
- U H03H 9/24
 - Constructional features of resonators of material which is not piezo-electric, electrostrictive, or magnetostrictive
- U H03H 9/2405
 - • {of micro-electro-mechanical resonators}
- H03H 9/2447
 - • • {Beam resonators (~~H03H 9/2468~~ takes precedence)}
- H03H 9/25
 - Constructional features of resonators using surface acoustic waves{(-devices for manipulating acoustic surface waves in general [G10K 11/36](#))}
- U H03H 9/30
 - Time-delay networks
- H03H 9/36
 - • with non-adjustable delay time (~~H03H 9/40~~ , ~~[H03H 9/42](#)~~ take precedence)
- H03H 9/38
 - • with adjustable delay time (~~H03H 9/40~~ , ~~[H03H 9/42](#)~~ take precedence)
- H03H 9/40
 - • Frequency dependent delay lines, e.g. dispersive delay lines (~~H03H 9/42~~ takes precedence)
- H03H 9/42
 - • using surface acoustic waves{(-devices for manipulating acoustic surface waves in general [G10K 11/36](#)-)}
- H03H 9/46
 - Filters (~~multiple-port electromechanical filters [H03H 9/70](#)~~-)

- H03H 9/54
 - • comprising resonators of piezo-electric or electrostrictive material (~~H03H 9/64~~ takes precedence-)
- H03H 9/542
 - • • {including passive elements (~~H03H 9/545~~ takes precedence-)}
- U H03H 9/56
 - • • Monolithic crystal filters
- H03H 9/566
 - • • • {Electric coupling means therefor (~~H03H 9/0095~~ takes precedence-)}
- U H03H 9/58
 - • • Multiple crystal filters
- H03H 9/60
 - • • • Electric coupling means therefor{(~~H03H 9/0095~~ takes precedence-)}
- H03H 9/62
 - • comprising resonators of magnetostrictive material (~~H03H 9/64~~ takes precedence-)
- U H03H 9/64
 - • using surface acoustic waves
- U H03H 9/6406
 - • • {Filters characterised by a particular frequency characteristic}
- U H03H 9/6416
 - • • • {SAW matched filters, e.g. surface acoustic wave compressors, chirped or coded surface acoustic wave filters}
- H03H 9/642
 - • • • • {SAW transducers details for remote interrogation systems, e.g. surface acoustic wave transducers details for ID-tags (-remote interrogation systems per se [G06K 7/10009](#) , [G01S 13/74-](#))}
- U H03H 9/6423
 - • • {Means for obtaining a particular transfer characteristic}
- U H03H 9/6433
 - • • • {Coupled resonator filters}
- U H03H 9/644
 - • • • • {having two acoustic tracks}
- U H03H 9/6443
 - • • • • • {being acoustically coupled}
- H03H 9/6446
 - • • • • • • {by floating multistrip couplers (~~H03H 9/645~~ , ~~H03H 9/6453~~ take precedence-)}
- H03H 9/74
 - Multiple-port networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source (~~-networks for phase shifting [H03H 9/66-](#)~~)
- U H03H 11/00** **Networks using active elements**

WARNING
 Group [H03H 11/11](#) does not correspond to former or current IPC groups.
 Concordance CPC : IPC for these groups is as follows: - [H03H 11/11](#) - [H03H 11/04](#)
- U H03H 11/02
 - Multiple-port networks
- U H03H 11/04
 - • Frequency selective two-port networks
- H03H 11/0416
 - • • {using positive impedance converters (~~H03H 11/08~~ takes precedence-)}
- U H03H 11/0422
 - • • {using transconductance amplifiers, e.g. gmC filters}
- H03H 11/0427
 - • • • {Filters using a single transconductance amplifier; Filters derived from a single transistor filter, e.g. by element substitution, cascading, parallel connection (~~H03H 11/0433~~ to **H03H11/C10** take precedence-)}
- H03H 11/0433
 - • • • • {Two integrator loop filters (~~H03H 11/0455~~ takes precedence-)}
- H03H 11/10
 - • • using negative impedance converters (~~H03H 11/08~~ takes precedence-)
- H03H 11/12
 - • • using amplifiers with feedback ({ [H03H 11/0422](#) } , [H03H 11/08](#) , [H03H 11/10](#) take precedence-)
- H03H 11/1213
 - • • • {using transistor amplifiers (~~H03H 11/1204~~ takes precedence; parallel-T filters [H03H 11/1295-](#))}
- H03H 11/1217
 - • • • {using a plurality of operational amplifiers (~~H03H 11/1204~~ takes precedence; parallel-T filters [H03H 11/1295](#))}
- H03H 11/1221
 - • • • • {Theory; Synthesis (~~H03H 11/1226~~ to [H03H 11/1252](#) take precedence-)}

- H03H 11/126
 - • • {using a single operational amplifier (~~H03H 11/1204~~ takes precedence; parallel-T filters [H03H 11/1295](#))}
 - H03H 11/1265
 - • • • {Synthesis (~~H03H 11/1269~~ to ~~H03H 11/1282~~ take precedence)}
 - H03H 11/26
 - • Time-delay networks (~~analogue shift registers [G11C 27/04](#)~~)
 - H03H 11/34
 - • Networks for connecting several sources or loads working on different frequencies or frequency bands, to a common load or source (~~for use in multiplex transmission systems [H04J 1/00](#)~~)
 - H03H 11/36
 - • Networks for connecting several sources or loads, working on the same frequency band, to a common load or source (~~phase shifters providing two or more output signals [H03H 11/22](#)~~)
 - U H03H 11/40
 - • Impedance converters
 - H03H 11/405
 - • • {Positive impedance converters (~~H03H 11/42~~ takes precedence; used in frequency selective networks [H03H 11/0416](#))}
 - H03H 11/42
 - • • Gytrators (~~used in frequency selective networks [H03H 11/08](#)~~)
 - H03H 11/44
 - • • Negative impedance converters (~~H03H 11/42~~ takes precedence; used in frequency selective networks [H03H 11/10](#))
 - U H03H 11/46
 - • One-port networks
 - U H03H 11/52
 - • simulating negative resistances
 - H03H 11/525
 - • • {Simulating frequency dependent negative resistance [FDNR]}
- WARNING
Not complete, pending reorganisation, see provisionally also [H03H 11/52](#)

H03H 15/00 Transversal filters (~~electromechanical filters [H03H 9/46](#) , [H03H 9/70](#)~~)

- U H03H 17/00 **Networks using digital techniques**
- H03H 17/02
 - Frequency selective networks(~~digital computers for complex mathematical operations [G06F 17/10](#)~~)
- H03H 17/0202
 - • {Two or more dimensional filters; Filters for complex signals (~~multidimensional convolutions [G06F 17/153](#)~~)}
- H03H 17/0211
 - • {using specific transformation algorithms, e.g. WALSH functions, Fermat transforms, Mersenne transforms, polynomial transforms, Hilbert transforms (~~correlation computation [G06F 17/156](#)~~)}
- H03H 17/0219
 - • {Compensation of undesirable effects, e.g. quantisation noise, overflow (~~stability problems [H03H 17/0461](#)~~)}
- H03H 17/0223
 - • {Computation saving measures; Accelerating measures (~~computations per se [G06F](#)~~)}
- H03H 17/0238
 - • • {Measures concerning the arithmetic used (~~performing computations [G06F 7/60](#)~~)}
- H03H 2017/0245
 - • • {Measures to reduce power consumption (~~H03H 17/0223 takes preference [H03H 17/0223 takes preference](#)~~)}
- U H03H 17/0248
 - • {Filters characterised by a particular frequency response or filtering method}
- H03H 17/0255
 - • • {Filters based on statistics (~~adaptive filters [H03H 21/0029](#)~~)}
- H03H 17/0282
 - • • {Sinc or gaussian filters (~~H03H 17/0671 takes precedence~~)}
- H03H 17/0283
 - • {Filters characterised by the filter structure (~~H03H 17/0202 , [H03H 17/0219](#) to [H03H 17/0248](#) take precedence~~)}
- U H03H 17/06
 - • Non-recursive filters
- U H03H 17/0621
 - • • {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}
- U H03H 17/0635
 - • • • {characterized by the ratio between the input-sampling and output-delivery frequencies}

- H03H 17/0671 {Cascaded integrator-comb [CIC]} filters}}
- U H03H 21/00** **Adaptive networks**
- U H03H 21/0001 . {Analogue adaptive filters}
- H03H 21/0007 . . {comprising switched capacitor [SC]} devices}}
- U H03H 21/0012 . {Digital adaptive filters}
- H03H 21/002 . . {Filters with a particular frequency response (-H03H 21/0014 to H03H 21/0018 take precedence)}
- U H03H 2021/007 . . {Computation saving measures; Accelerating measures}
- H03H 2021/0076 . . . {Measures relating to the convergence time (-H03H 2021/0072 takes preference-H03H 2021/0072 takes preference)}

Project: N/A (H03J)

- U H03J 1/00** **Details of adjusting, driving, indicating, or mechanical control arrangements for resonant circuits in general (machine elements in general F16; coupling of knobs to shafts F16D)**
- U H03J 1/0008 . {using a central processing unit, e.g. a microprocessor (digital tuning in general H03J 5/0245)}
- H03J 1/0058 . . {-provided with channel identification means (arrangements for monitoring the use made of broadcast services H04H 60/31)}

Project: N/A (H03K)

- U H03K 3/00** **Circuits for generating electric pulses; Monostable, bistable or multistable circuits (H03K 4/00 takes precedence; for digital computers G06F 1/025, {G06F 1/04})**
- U H03K 3/02 . Generators characterised by the type of circuit or by the means used for producing pulses (H03K 3/64 to H03K 3/84 take precedence)
- U H03K 3/353 . . by the use, as active elements, of field-effect transistors with internal or external positive feedback (H03K 3/023, H03K 3/027 take precedence)
- U H03K 3/356 . . . Bistable circuits
- H03K 3/356104 {-using complementary field-effect transistors (H03K 3/35625 takes precedence)}
- WARNING**
Subgroups of H03K 3/356104 are not complete.
- U H03K 17/00** **Electronic switching or gating, i.e. not by contact-making or -braking (selection of the stylus or auxiliary electrode in electric printing B41J 2/405; sample-and-hold arrangements G11C 27/02; switching or interrupting devices in waveguides H01P; gated amplifiers H03F 3/72; switching arrangements for exchange systems using static devices H04Q 3/52)**
- U H03K 17/08 . Modifications for protecting switching circuit against overcurrent or overvoltage
- U H03K 17/081 . . without feedback from the output circuit to the control circuit
- H03K 17/08108 . . . {-in thyristor switches (H03K 17/0812 ,H03K 17/0814 take precedence)}
- H03K 17/08116 . . . {-in composite switches (H03K 17/0812 ,H03K 17/0814 take precedence)}
- U H03K 17/22 . Modifications for ensuring a predetermined initial state when the supply voltage has been applied (bi-stable generators H03K 3/12)
- H03K 17/223 . . {-in field-effect transistor switches}
- U H03K 17/51 . characterised by the components used (H03K 17/04 to H03K 17/30, H03K 17/94 take precedence)
- U H03K 17/56 . . using semiconductor devices (using diodes H03K 17/74)

- U H03K 17/60
 - • • using bipolar transistors
- U H03K 17/62
 - • • • Switching arrangements with several input- or output-terminals (code converters [H03M 5/00](#), [H03M 7/00](#))
- H03K 17/6221
 - • • • • {-combined with selecting means ([H03K 17/6242](#) to [H03K 17/6285](#) take precedence)}
- U H03K 17/94
 - characterised by the way in which the control signal is generated (mechanical structural details of control members of switches or keyboards, such as keys, push-buttons, levers or other mechanisms for transferring force to the activated elements, not directly producing electronic effects [H01H](#); keyboards for special applications, see the relevant places, e.g. [B41J](#), [G06F 3/023](#), [H04L 15/00](#), [H04L 17/00](#), [H04M 1/00](#))
- U H03K 17/945
 - • Proximity switches ([H03K 17/96](#) takes precedence; {proximity fuzes [F42C 13/00](#); detecting masses or objects, e.g. by using a magnetic or optical detector [G01V](#), e.g. [G01V 3/00](#), [G01V 8/10](#)})
- U H03K 17/95
 - • • using a magnetic detector
- U H03K 17/952
 - • • • {using inductive coils}
- H03K 17/9525
 - • • • • {-controlled by an oscillatory signal ([H03K 17/9537](#) takes precedence)}
- U H03K 17/96
 - • Touch switches
- H03K 17/9625
 - • • {-using a force resistance transducer}
- H03K 17/9627
 - • • {-Optical touch switches}
- H03K 17/9645
 - • • {-Resistive touch switches}
- U H03K 19/00 Logic circuits, i.e. having at least two inputs acting on one output; Inverting circuits {(inverting circuits used as delay elements [H03K 5/13](#))}**
- U H03K 19/02
 - using specified components ({[H03K 19/0005](#) to [H03K 19/0021](#)}, [H03K 19/003](#) to [H03K 19/0175](#) take precedence)
- U H03K 19/173
 - • using elementary logic circuits as components
- U H03K 19/177
 - • • arranged in matrix form
- H03K 19/17724
 - • • • {-Structural details of logic blocks}
- H03K 19/17728
 - • • • • {-Reconfigurable logic blocks, e.g. lookup tables}
- H03K 19/17732
 - • • • • {-Macro blocks}
- H03K 19/17736
 - • • • • {-Structural details of routing resources}
- H03K 19/1774
 - • • • • {-for global signals, e.g. clock, reset}
- H03K 19/17744
 - • • • • {-for input/output signals}
- H03K 19/17748
 - • • • • {-Structural details of configuration resources}
- H03K 19/17752
 - • • • • {-for hot reconfiguration}
- H03K 19/17756
 - • • • • {-for partial configuration or reconfiguration}
- H03K 19/1776
 - • • • • {-for memories}
- H03K 19/17764
 - • • • • {-for reliability}
- H03K 19/17768
 - • • • • {-for security}
- H03K 19/17772
 - • • • • {-for powering on or off}
- H03K 19/17776
 - • • • • {-for speeding up configuration or reconfiguration}
- H03K 19/1778
 - • • • • {-Structural details for adapting physical parameters}
- H03K 19/17784
 - • • • • {-for supply voltage}
- H03K 19/17788
 - • • • • {-for I/O voltages}
- H03K 19/17792
 - • • • • {-for operating speed}
- H03K 19/17796
 - • • • • {-for physical disposition of blocks}

- U H03K 23/00** **Pulse counters comprising counting chains; Frequency dividers comprising counting chains ([H03K 29/00](#) takes precedence)**
- H03K 23/80 · using semiconductor devices having only two electrodes, e.g. tunnel diode, multi-layer diode, {e.g. with a negative resistance characteristic- (unijunction transistors [H03K 23/84](#))}

Project: N/A (H03L)

- U H03L 7/00** **Automatic control of frequency or phase; Synchronisation (tuning of resonant circuits in general [H03J](#); synchronising in digital communication systems, see the relevant groups in class [H04](#))**
- U H03L 7/06 · using a reference signal applied to a frequency- or phase-locked loop
- U H03L 7/08 · · Details of the phase-locked loop
- H03L 7/0805 · · · {the loop being adapted to provide an additional control signal for use outside the loop}
- U H03L 7/081 · · · provided with an additional controlled phase shifter {([H03L 7/0998](#) takes precedence)}
- U H03L 7/0812 · · · · {and where no voltage or current controlled oscillator is used}
- H03L 7/0816 · · · · · {the controlled phase shifter and the frequency- or phase-detection arrangement being connected to a common input }
- H03L 7/0818 · · · · · {the controlled phase shifter comprising coarse and fine delay or phase-shifting means}
- U H03L 7/10 · · · for assuring initial synchronisation or for broadening the capture range
- H03L 7/101 · · · · {using an additional control signal to the controlled loop oscillator derived from a signal generated in the loop ([H03L 7/113](#), [H03L 7/187](#) take precedence)}
- H03L 7/102 · · · · · {the additional signal being directly applied to the controlled loop oscillator}
- H03L 7/103 · · · · · · {the additional signal being a digital signal}
- H03L 7/104 · · · · {using an additional signal from outside the loop for setting or controlling a parameter in the loop ([H03L 7/107](#), [H03L 7/12](#) take precedence)}
- H03L 7/105 · · · · {Resetting the controlled oscillator when its frequency is outside a predetermined limit}
- U H03L 7/107 · · · · using a variable transfer function for the loop, e.g. low pass filter having a variable bandwidth
- H03L 7/1072 · · · · · {by changing characteristics of the charge pump, e.g. changing the gain}
- H03L 7/1075 · · · · · {by changing characteristics of the loop filter, e.g. changing the gain, changing the bandwidth ([H03L 7/1072](#) takes precedence)}
- H03L 7/1077 · · · · · {by changing characteristics of the phase or frequency detection means ([H03L 7/1072](#) takes precedence)}

Project: N/A (H03M)**H03M**

CODING; DECODING; CODE CONVERSION IN GENERAL (-using fluidic means [F15C 4/00](#) ; optical analogue/digital converters [G02F 7/00](#) ; coding, decoding or code conversion, specially adapted for particular applications, see the relevant subclasses, e.g. [G01D](#), [G01R](#), [G06F](#), [G06T](#), [G09G](#), [G10L](#), [G11B](#), [G11C](#), [H04B](#), [H04L](#), [H04M](#), [H04N](#); ciphering or deciphering for cryptography or other purposes involving the need for secrecy [G09C](#)-)

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[H03M 7/32](#) covered by [H03M 7/3004](#) ,
[H03M 7/3048](#) [H03M 7/34](#) covered by [H03M 7/3004](#)
 , [H03M 7/3051](#) [H03M 7/36](#) covered by
[H03M 7/3004](#) , [H03M 7/3044](#) [H03M 7/38](#) covered
 by [H03M 7/3004](#) , [H03M 7/3046](#)

H03M 1/00

Analogue/digital conversion; Digital/analogue conversion (-conversion of analogue values to or from differential modulation [H03M 3/00](#)-)

- H03M 1/004 · {Reconfigurable analogue/digital or digital/analogue converters ([H03M 1/02](#) takes precedence)}
- H03M 1/06 · Continuously compensating for, or preventing, undesired influence of physical parameters (periodically, {e.g. by using stored correction values,} [H03M 1/10](#)-)
- H03M 1/0602 · · {of deviations from the desired transfer characteristic ([H03M 1/0617](#) takes precedence)}
- H03M 1/0604 · · · {at one point, i.e. by adjusting a single reference value, e.g. bias or gain error (-gain setting for range control [H03M 1/18](#)-)}
- H03M 1/0607 · · · · {Offset or drift compensation (-removal of offset already present on the analogue input signal [H03M 1/1295](#)-)}
- H03M 1/0614 · · {of harmonic distortion (-[H03M 1/0617](#) takes precedence)}
- U H03M 1/0617 · · {characterised by the use of methods or means not specific to a particular type of detrimental influence}
- U H03M 1/0634 · · · {by averaging out the errors, e.g. using sliding scale}
- U H03M 1/0636 · · · · {in the amplitude domain}
- H03M 1/0639 · · · · · {using dither (-for increasing resolution [H03M 1/201](#))}
- U H03M 1/0656 · · · · · {in the time domain}
- U H03M 1/066 · · · · · {by continuously permuting the elements used, i.e. dynamic element matching}
- H03M 1/0673 · · · · · · {using random selection of the elements (-with data-controlled random generator [H03M 1/0665](#))}
- U H03M 1/0675 · · · {using redundancy}
- H03M 1/0687 · · · · {using fault-tolerant coding, e.g. parity check, error correcting codes (-[H03M 1/069](#) takes precedence)}
- H03M 1/08 · · of noise (-[H03M 1/0617](#) takes precedence)}
- U H03M 1/10 · Calibration or testing
- H03M 1/1004 · · {without interrupting normal operation, e.g. by providing an additional component for temporarily replacing components to be tested or calibrated (-[H03M 1/1009](#) , [H03M 1/1071](#) take precedence)}
- U H03M 1/1009 · · {Calibration}
- H03M 1/1014 · · · {at one point of the transfer characteristic, i.e. by adjusting a single reference value, e.g. bias or gain error (-gain setting for range control [H03M 1/18](#)-)}

- H03M 1/1023
 - • • {Offset correction (~~H03M 1/1019~~ takes precedence; removal of offset already present on the analogue input signal ~~H03M 1/1295~~)}
- H03M 1/1028
 - • • {at two points of the transfer characteristic, i.e. by adjusting two reference values, e.g. offset and gain error (~~gain setting for range control H03M 1/18~~)}
- U H03M 1/1033
 - • • {over the full range of the converter, e.g. for correcting differential non-linearity}
- H03M 1/1038
 - • • {by storing corrected or correction values in one or more digital look-up tables (~~H03M 1/1057~~ takes precedence)}
- H03M 1/1042
 - • • • {the look-up table containing corrected values for replacing the original digital values (~~H03M 1/1052~~ takes precedence)}
- H03M 1/1047
 - • • • {using an auxiliary digital/analogue converter for adding the correction values to the analogue signal (~~H03M 1/1052~~ takes precedence)}
- U H03M 1/1071
 - • {Measuring or testing}
- H03M 1/109
 - • • {for dc performance, i.e. static testing (~~H03M 1/1085~~ takes precedence)}
- H03M 1/1095
 - • • {for ac performance, i.e. dynamic testing (~~H03M 1/1085~~ takes precedence)}
- H03M 1/12
 - Analogue/digital converters ({ ~~H03M 1/001~~ to ~~H03M 1/004~~ as well as } ~~H03M 1/02~~ to ~~H03M 1/10~~ take precedence-)
- H03M 1/1235
 - • {Non-linear conversion not otherwise provided for in subgroups of ~~H03M 1/12~~}
- H03M 1/124
 - • {Sampling or signal conditioning arrangements specially adapted for A/D converters (~~S/H circuits G11C 27/02~~ ; sample rate conversion ~~H03H 17/0416~~ , ~~H03H 17/0621~~)}
- U H03M 1/1245
 - • • {Details of sampling arrangements or methods}
- U H03M 1/1265
 - • • • {Non-uniform sampling}
- H03M 1/128
 - • • • • {at random intervals, e.g. digital alias free signal processing [DASP]}
- H03M 1/129
 - • • {Means for adapting the input signal to the range the converter can handle, e.g. limiting, pre-scaling (~~H03M 1/18~~ takes precedence-); Out-of-range indication}
- U H03M 1/14
 - • Conversion in steps with each step involving the same or a different conversion means and delivering more than one bit
- H03M 1/143
 - • • {in pattern-reading type converters, e.g. having both absolute and incremental tracks on one disc or strip (~~H03M 1/16~~ takes precedence)}
- H03M 1/144
 - • • {the steps being performed sequentially in a single stage, i.e. recirculation type (~~H03M 1/141~~ , ~~H03M 1/143~~ , ~~H03M 1/16~~ take precedence)}
- H03M 1/145
 - • • {the steps being performed sequentially in series-connected stages (~~H03M 1/141~~ , ~~H03M 1/143~~ , ~~H03M 1/16~~ take precedence)}
- H03M 1/16
 - • • with scale factor modification, i.e. by changing the amplification between the steps (~~H03M 1/141~~ takes precedence)}
- H03M 1/162
 - • • • {the steps being performed sequentially in a single stage, i.e. recirculation type (~~H03M 1/161~~ takes precedence)}
- H03M 1/164
 - • • • {the steps being performed sequentially in series-connected stages (~~H03M 1/161~~ takes precedence)}
- H03M 1/167
 - • • • • {all stages comprising simultaneous converters (~~H03M 1/165~~ takes precedence)}
- U H03M 1/22
 - • Pattern-reading type
- U H03M 1/24
 - • • using relatively movable reader and disc or strip
- H03M 1/245
 - • • • {Constructional details of parts relevant to the encoding mechanism, e.g. pattern carriers, pattern sensors (for details of other parts, e.g. housings, casings or the like, see the relevant application subclasses of ~~G01~~, ~~H01~~)}

- U H03M 1/28 with non-weighted coding
- U H03M 1/30 incremental
- H03M 1/301 {Constructional details of parts relevant to the encoding mechanism, e.g. pattern carriers, pattern sensors (details of housings, casings or the like, see the relevant application subclasses of [G01](#), [H01](#))}
- H03M 1/32 . . . using cathode-ray tubes {or analogous two-dimensional deflection systems}
- H03M 1/34 . . Analogue value compared with reference values (~~H03M 1/48~~ takes precedence-)
- H03M 1/36 . . . simultaneously only, i.e. parallel type{(thermometer to binary encoders [H03M 7/165](#)-)}
- H03M 1/38 . . . sequentially only, e.g. successive approximation type (-converting more than one bit per step [H03M 1/14](#)-)
- H03M 1/50 . . with intermediate conversion to time interval (~~H03M 1/64~~ takes precedence, time-to-digital converters [G04F 10/005](#)-)
- H03M 1/64 . . with intermediate conversion to phase of sinusoidal {or similar periodical}signals
- H03M 1/645 . . . {for position encoding, e.g. using resolvers or synchros (~~H03M 1/485~~ takes precedence-)}
- H03M 1/66 . . Digital/analogue converters ({ [H03M 1/001](#) to [H03M 1/004](#) as well as } [H03M 1/02](#) to [H03M 1/10](#) take precedence-)
- H03M 1/664 . . {Non-linear conversion not otherwise provided for in subgroups of [H03M 1/66](#)-}
- H03M 1/72 . . Sequential conversion in series-connected stages (~~H03M 1/68~~ takes precedence-)
- U H03M 1/74 . . Simultaneous conversion
- H03M 1/80 . . . using weighted impedances (~~H03M 1/76~~ takes precedence-)
- U H03M 3/00 Conversion of analogue values to or from differential modulation**
- H03M 3/02 . . Delta modulation, i.e. one-bit differential modulation{(H03M 3/30 takes precedence-)}
- U H03M 3/30 . . {Delta-sigma modulation}
- NOTE**
In this group branch, in the absence of an indication of the contrary, classification is made in the first appropriate place
- H03M 3/322 . . {Continuously compensating for, or preventing, undesired influence of physical parameters (-periodically, e.g. by using stored correction values, [H03M 3/378](#)-)}
- U H03M 3/324 . . . {characterised by means or methods for compensating or preventing more than one type of error at a time, e.g. by synchronisation or using a ratiometric arrangement}
- U H03M 3/326 {by averaging out the errors}
- H03M 3/338 {by permutation in the time domain, e.g. dynamic element matching (-in multiple bit sub-converters [H03M 1/066](#)-)}
- U H03M 3/352 . . . {of deviations from the desired transfer characteristic}
- H03M 3/354 {at one point, i.e. by adjusting a single reference value, e.g. bias or gain error (-gain setting for range control [H03M 3/478](#)-)}
- H03M 3/356 {Offset or drift compensation (-removal of offset already present on the analogue input signal [H03M 3/494](#)-)}

- H03M 3/358
 - . . . {of non-linear distortion, e.g. instability (-avoiding instability by structural design [H03M 3/44-](#))}
- U H03M 3/38
 - . . {Calibration}
- H03M 3/382
 - . . . {at one point of the transfer characteristic, i.e. by adjusting a single reference value, e.g. bias or gain error (gain setting for range control [H03M 3/478-](#))}
- H03M 3/384
 - {Offset correction (-removal of offset already present on the analogue input signal [H03M 3/494-](#))}
- H03M 3/39
 - . . {Structural details of delta-sigma modulators, e.g. incremental delta-sigma modulators (-of digital delta-sigma modulators [H03M 7/3004-](#))}
- U H03M 3/458
 - . . {Analogue/digital converters using delta-sigma modulation as an intermediate step}
- H03M 3/462
 - . . . {Details relating to the decimation process (-decimation filters in general [H03H 17/0416](#) , [H03H 17/0621-](#))}
- H03M 3/494
 - . . . {Sampling or signal conditioning arrangements specially adapted for delta-sigma type analogue/digital conversion systems (-sample/hold circuits [G11C 27/02](#) ; sample rate conversion [H03H 17/0416](#) , [H03H 17/0621-](#))}
- H03M 3/50
 - . . {Digital/analogue converters using delta-sigma modulation as an intermediate step (-digital delta-sigma modulators per se [H03M 7/3004-](#))}
- H03M 3/508
 - . . . {Details relating to the interpolation process (-interpolation filters in general [H03H 17/0416](#) , [H03H 17/0621-](#))}
- H03M 7/00**
 - Conversion of a code where information is represented by a given sequence or number of digits to a code where the same information (or similar information or a subset of information) is represented by a different sequence or number of digits**
- U H03M 7/001
 - . {characterised by the elements used}
- H03M 7/005
 - . . {using semiconductor devices (-[H03M 7/006](#) takes precedence-)}
- U H03M 7/14
 - . Conversion to or from non-weighted codes
- H03M 7/20
 - . . Conversion to or from n-out-of-m codes (-number-of-one counters [G06F 7/607-](#))}
- H03M 7/30
 - . Compression (-speech analysis-synthesis for redundancy reduction [G10L 19/00](#) ; for image communication [H04N-](#)); Expansion; Suppression of unnecessary data, e.g. redundancy reduction (-for data acquisition [G06F 17/40](#) ; for image data processing [G06T 9/00](#) ; redundancy reduction in data recording [G11B 20/14](#) ; for transmission [H04B 1/66-](#))}
- U H03M 7/3002
 - . . {Conversion to or from differential modulation}
- U H03M 7/3004
 - . . . {Digital delta-sigma modulation}
- U H03M 7/3006
 - {Compensating for, or preventing of, undesired influence of physical parameters}
- H03M 7/3011
 - {of non-linear distortion, e.g. by temporarily adapting the operation upon detection of instability conditions (-avoiding instability by structural design [H03M 7/3035-](#))}
- H03M 7/3015
 - {Structural details of digital delta-sigma modulators (-[H03M 7/3006](#) , [H03M 7/3013](#) take precedence-)}
- H03M 7/3048
 - . . . {Conversion to or from one-bit differential modulation only, e.g. delta modulation [DM](-[H03M 7/3004](#) takes precedence-)}
- U H03M 7/40
 - . . Conversion to or from variable length codes, e.g. Shannon-Fano code, Huffman code, Morse code
- U H03M 7/4006
 - . . . {Conversion to or from arithmetic code}
- U H03M 7/4012
 - {Binary arithmetic codes}

- H03M 7/4018 · · · · {Context adaptive binary arithmetic codes [CABAC]}
- H03M 7/42 · · · using table look-up for the coding or decoding process, e.g. using read-only memory{(H03M 7/4006 takes precedence)}
- H03M 9/00 Parallel/series conversion or vice versa (-digital stores in which the information is moved stepwise per se G11C 19/00)**
- H03M 11/00 Coding in connection with keyboards or like devices, i.e. coding of the position of operated keys (-keyboard switch arrangements, structural association of coders and keyboards H01H 13/70 , H03K 17/94)**
- H03M 11/20 · Dynamic coding, i.e. by key scanning (H03M 11/26 takes precedence)
- H03M 11/22 · Static coding (H03M 11/26 takes precedence)
- H03M 13/00 Coding, decoding or code conversion, for error detection or error correction; Coding theory basic assumptions; Coding bounds; Error probability evaluation methods; Channel models; Simulation or testing of codes (-error detection or error correction for analogue/digital, digital/analogue or code conversion H03M 1/00 to H03M 11/00 ; specially adapted for digital computers G06F 11/08 , for information storage based on relative movement between record carrier and transducer G11B, e.g. G11B 20/18 , for static stores G11C; { use of error detection or error correction in transmission systems H04L 1/004 , in television systems H04N 7/0357 })**
- U H03M 13/01 · Coding theory basic assumptions; Coding bounds; Error probability evaluation methods; Channel models; Simulation or testing of codes
- H03M 13/015 · · {Simulation or testing of codes, e.g. bit error rate [BER]/measurements}
- WARNING
- H03M 13/015 and H03M 13/036 are not complete, see provisionally also H03M 13/01
- U H03M 13/03 · Error detection or forward error correction by redundancy in data representation, i.e. code words containing more digits than the source words
- H03M 13/05 · · using block codes, i.e. a predetermined number of check bits joined to a predetermined number of information bits{(H03M 13/2906 takes precedence)}
- H03M 13/09 · · · Error detection only, e.g. using cyclic redundancy check [CRC] codes or single parity bit{(error detection or correction by redundancy in data representation G06F 11/08)}
- WARNING
- Not complete, see also G06F11/10B
- U H03M 13/11 · · · using multiple parity bits
- H03M 13/1102 · · · · {Codes on graphs and decoding on graphs, e.g. low-density parity check [LDPC]/codes}
- U H03M 13/1148 · · · · · {Structural properties of the code parity-check or generator matrix}
- H03M 13/1151 · · · · · {Algebraically constructed LDPC codes, e.g. LDPC codes derived from Euclidean geometries [EG-LDPC codes]}(H03M 13/116 , H03M 13/1174 take precedence)}
- H03M 13/1154 · · · · · {Low-density parity-check convolutional codes [LDPC-CC]}
- H03M 13/1157 · · · · · {Low-density generator matrices [LDGM]}
- H03M 13/116 · · · · · {Quasi-cyclic LDPC [QC-LDPC]/codes, i.e. the parity-check matrix being composed of permutation or circulant sub-matrices}
- H03M 13/1165 · · · · · {QC-LDPC codes as defined for the digital video broadcasting [DVB]/specifications, e.g. DVB-Satellite [DVB-S2]}

- H03M 13/118 {Parity check matrix structured for simplifying encoding , e.g. by having a triangular or an approximate triangular structure (~~H03M 13/1165~~ takes precedence)}
- U H03M 13/1191 {Codes on graphs other than LDPC codes}
- H03M 13/1194 {Repeat-accumulate [RA]} codes}
- H03M 13/1197 {Irregular repeat-accumulate [IRA]} codes}
- U H03M 13/13 . . . Linear codes
- H03M 13/136 {Reed-Muller [RM]} codes}
- H03M 13/15 Cyclic codes, i.e. cyclic shifts of codewords produce other codewords, e.g. codes defined by a generator polynomial, Bose-Chaudhuri-Hocquenghem (BCH) codes (~~H03M 13/17~~ takes precedence-)
- U H03M 13/151 {using error location or error correction polynomials}
- H03M 13/152 {Bose-Chaudhuri-Hocquenghem [BCH]} codes}
- H03M 13/1565 {Decoding beyond the bounded minimum distance [BMD]}
- H03M 13/158 {Finite field arithmetic processing (~~methods or arrangements for finite field arithmetic G06F 7/72-~~)}
- H03M 13/25 . Error detection or forward error correction by signal space coding, i.e. adding redundancy in the signal constellation, e.g. Trellis Coded Modulation [TCM] (~~modulation codes H03M 13/31-~~)}
- U H03M 13/27 . using interleaving techniques
- U H03M 13/2703 . . {the interleaver involving at least two directions}
- U H03M 13/271 . . . {Row-column interleaver with permutations, e.g. block interleaving with inter-row, inter-column, intra-row or intra-column permutations}
- H03M 13/2714 {Turbo interleaver for 3rd generation partnership project [3GPP]} universal mobile telecommunications systems [UMTS], e.g. as defined in technical specification TS 25.212}
- H03M 13/2725 . . . {Turbo interleaver for 3rd generation partnership project 2 [3GPP2]} mobile telecommunication systems, e.g. as defined in the 3GPP2 technical specifications C.S0002}
- H03M 13/2735 . . {Interleaver using powers of a primitive element, e.g. Galois field [GF]} interleaver}
- H03M 13/2739 . . {Permutation polynomial interleaver, e.g. quadratic permutation polynomial [QPP]} interleaver and quadratic congruence interleaver}
- U H03M 13/275 . . {Interleaver wherein the permutation pattern is obtained using a congruential operation of the type $y=ax+b$ modulo c }
- H03M 13/2753 . . . {Almost regular permutation [ARP]} interleaver}
- H03M 13/2757 . . {Interleaver with an interleaving rule not provided for in the subgroups [H03M 13/2703](#) - [H03M 13/2753](#)}
- H03M 13/2771 . . {Internal interleaver for turbo codes (~~H03M 13/2714~~ and ~~H03M 13/2725~~ take precedence-)}
- U H03M 13/29 . combining two or more codes or code structures, e.g. product codes, generalised product codes, concatenated codes, inner and outer codes
- H03M 13/2906 . . {using block codes (~~H03M 13/2957~~ takes precedence-)}
- U H03M 13/2921 . . . {wherein error correction coding involves a diagonal direction}
- H03M 13/2924 {Cross interleaved Reed-Solomon codes [CIRC]}
- H03M 13/2933 . . {using a block and a convolutional code (~~H03M 13/2957~~ takes precedence-)}

WARNING

[H03M 13/2933](#) - [H03M 13/2954](#) are not complete, see provisionally also [H03M 13/29](#)

- H03M 13/2939
- H03M 13/2945
- H03M 13/2948
- H03M 13/2954
- U H03M 13/2957
 - {using convolutional codes (~~H03M 13/2957~~ takes precedence)}
 - {using at least three error correction codes (~~H03M 13/2957~~ takes precedence)}
 - {Iterative decoding (~~H03M 13/2957~~ takes precedence)}
 - {using Picket codes or other codes providing error burst detection capabilities, e.g. burst indicator codes and long distance codes [LDC]}
 - {Turbo codes and decoding}

NOTE

This group covers also aspects when a component code is replaced by a non-coded constraint, e.g. like in joint turbo decoding and detection
- H03M 13/2975
- H03M 13/31
- H03M 13/33
 - {Judging correct decoding, e.g. iteration stopping criteria (~~stopping criteria for iterative decoding, see also H04L 1/0051~~)}
 - combining coding for error detection or correction and efficient use of the spectrum (~~without error detection or correction H03M 5/14~~, { H03M 5/145 })
 - Synchronisation based on error coding or decoding (~~for transmission H04L 7/048~~)

WARNING

Groups [H03M 13/333](#) - [H03M 13/336](#) are not complete pending reclassification; see also this group
- U H03M 13/35
 - Unequal or adaptive error protection, e.g. by providing a different level of protection according to significance of source information or by adapting the coding according to the change of transmission channel characteristics
- H03M 13/356
 - {Unequal error protection [UEP]}
- H03M 13/37
 - Decoding methods or techniques, not specific to the particular type of coding provided for in groups [H03M 13/03](#) to [H03M 13/35](#)
- H03M 13/3761
 - {using code combining, i.e. using combining of codeword portions which may have been transmitted separately, e.g. Digital Fountain codes, Raptor codes or Luby Transform [LT] codes}
- U H03M 13/39
 - Sequence estimation, i.e. using statistical methods for the reconstruction of the original codes
- H03M 13/3905
 - {Maximum a posteriori probability (MAP) decoding and approximations thereof based on trellis or lattice decoding, e.g. forward-backward algorithm, log-MAP decoding, max-log-MAP decoding; MAP decoding also to be found in [H04L 1/0055](#)}
- H03M 13/3938
 - {Tail-biting (~~H03M 13/2996~~ takes precedence)}
- U H03M 13/41
 - using the Viterbi algorithm or Viterbi processors
- U H03M 13/4161
 - {implementing path management}
- H03M 13/4169
 - {using traceback (~~H03M 13/4192~~ takes precedence)}
- H03M 13/4184
 - {using register-exchange (~~H03M 13/4192~~ takes precedence)}
- H03M 13/42
 - {MAP decoding or approximations thereof based on trellis or lattice decoding, e.g. forward-backward algorithm, log-MAP decoding, max-log-MAP decoding (~~see also H04L 1/0055~~)}
- H03M 13/45
 - Soft decoding, i.e. using symbol reliability information (~~H03M 13/41~~ takes precedence)

- H03M 13/451
- • • {using a set of candidate code words, e.g. ordered statistics decoding [OSD]}
WARNING
[H03M 13/451](#) - [H03M 13/458](#) are not complete, see provisionally also [H03M 13/45](#)
- U H03M 13/453
- • • • {wherein the candidate code words are obtained by an algebraic decoder, e.g. Chase decoding}
- H03M 13/455
- • • • • {using a set of erasure patterns or successive erasure decoding, e.g. generalized minimum distance [GMD] decoding}
- H03M 13/47
- Error detection, forward error correction or error protection, not provided for in groups [H03M 13/01](#) to [H03M 13/37](#)
- U H03M 13/61
- {Aspects and characteristics of methods and arrangements for error correction or error detection, not provided for otherwise}
- WARNING
[H03M 13/61](#) - [H03M 13/6597](#) are not complete, see provisionally also [H03M 13/61](#) , [H03M 13/63](#) and [H03M 13/65](#)
- H03M 13/612
- • {Aspects specific to channel or signal-to-noise ratio estimation (~~[H03M 13/63](#) takes precedence~~)}
- H03M 13/63
- {Joint error correction and other techniques (~~[H03M 13/31](#) and [H03M 13/33](#) take precedence~~)}
- H03M 13/6306
- • {Error control coding in combination with Automatic Repeat reQuest [ARQ] and diversity transmission, e.g. coding schemes for the multiple transmission of the same information or the transmission of incremental redundancy (~~[H03M 13/3761](#) , [H03M 13/3769](#) and [H03M 13/635](#) take precedence; ARQ schemes in general [H04L 1/18](#)~~)}
- U H03M 13/635
- • {Error control coding in combination with rate matching}
- U H03M 13/6362
- • • {by puncturing}
- U H03M 13/6368
- • • • {using rate compatible puncturing or complementary puncturing}
- H03M 13/6375
- • • • • {Rate compatible punctured convolutional [RCPC] codes}
- H03M 13/6381
- • • • • {Rate compatible punctured turbo [RCPT] codes}
- H03M 13/6387
- • • • • {Complementary punctured convolutional [CPC] codes}
- H03M 13/6393
- • • • • {Rate compatible low-density parity check [LDPC] codes}
- U H03M 13/65
- {Purpose and implementation aspects}
- U H03M 13/6522
- • {Intended application, e.g. transmission or communication standard}
- H03M 13/6544
- • • {IEEE 802.16 (*WIMAX and broadband wireless access*) (~~WIMAX and broadband wireless access~~)}
- U H03M 2201/00

Indexing scheme relating to A/D or D/A conversion

NOTE

As this scheme is obtained by conversion from the former deep indexing system RM03 it reflects the several editions of that system in the following way:

- code symbols added at subsequent editions are indicated by numbers [2] or [3] in square brackets, the code symbols present from the first edition on having no indication;
- headers which did not have a code symbol in the RM03

system and thus could not be assigned to documents, but which need a code symbol in the ICO system for the purpose of a correct hierarchical order, are indicated by the symbol [H];
- the edition according to which a document has been indexed is indicated by the assignment of one of code symbols [H03M 2201/01](#) through [H03M 2201/03](#) to that document.
In principle, therefore, a search should include a separate combination of appropriate code symbols for each edition, each combination including one of codes [H03M 2201/01](#) through [H03M 2201/03](#).

On an incidental base, however, code symbols from later editions have been assigned to documents indexed according to an earlier edition.

WARNING

The use of this indexing scheme has been discontinued for all documents published later than 1989.

- U H03M 2201/60 • Fidelity improvement
- U H03M 2201/61 • • Adjustment or control means [H]
- U H03M 2201/6142 • • • Means used [H]
- U H03M 2201/615 • • • • Compensation [3]
- H03M 2201/6164 • • • • • using stored correction values (-for previous editions, see provisionally [H03M 2201/72](#)-)[3]
- H03M 2201/6171 • • • • • using a computer for more than just storing (-for previous editions, see provisionally [H03M 2201/72](#)-)[3]
- H03M 2201/6185 • • • • Interpolation (-for fine conversions [H03M 2201/1172](#) , [H03M 2201/162](#)-)[3]
- U H03M 2201/63 • • Calibration; Deviation correction [2]
- U H03M 2201/6345 • • • Type of correction [H]
- H03M 2201/639 • • • • Offset or drift correction (-for the second edition, see provisionally [H03M 2201/64](#)-)[3]
- U H03M 2201/80 • Components, circuits or devices used with or within A/D or D/A converters but not disclosed in detail and not provided for elsewhere [H]

NOTE

The codes of this subgroup should be assigned only insofar as the component, circuit or device concerned is not usual for the type of converter concerned, e.g. an intermediate time interval type A/D converter usually has a counter which therefore need not be indexed in this subgroup.

- U H03M 2201/81 • • Electrical components
- U H03M 2201/8124 • • • Semiconductor devices
- U H03M 2201/8132 • • • • Transistors
- H03M 2201/814 • • • • • FET (-varistors [H03M 2201/8156](#)-)[2]
- U H03M 2201/83 • • Basic logic components [H]

H03M 2201/838

- • • Microprocessors (-as an application system [H03M 2201/198](#) , for fidelity improvement [H03M 2201/6171](#) , for computing as part of the conversion process [H03M 2201/72](#) , for testing [H03M 2201/657](#) [3]-)

Project: N/A (H04B)**H04B**

TRANSMISSION (transmission systems for measured values, control or similar signals [G08C](#); coding, decoding, code conversion, in general [H03M](#); broadcast communication [H04H](#); multiplex systems [H04J](#); secret communication [H04K](#); transmission of digital information [H04L](#))

NOTE

This subclass covers the transmission of information-carrying signals, the transmission being independent of the nature of the information, and includes monitoring and testing arrangements and the suppression and limitation of noise and interference.

H04B 1/00

Details of transmission systems, not covered by a single one of groups [H04B 3/00](#) to [H04B 13/00](#); Details of transmission systems not characterised by the medium used for transmission (tuning resonant circuits [H03J](#))

NOTE

In this group, group [H04B 1/0003](#) takes precedence over groups [H04B 1/005](#) to [H04B 1/76](#)

H04B 1/0003

- {Software-defined radio [SDR]} systems, i.e. systems wherein components typically implemented in hardware, e.g. filters or modulators/demodulators, are implemented using software, e.g. by involving an AD or DA conversion stage such that at least part of the signal processing is performed in the digital domain (-digital baseband systems [H04L 25/00](#) ; digital modulation/demodulation [H04L 27/00](#) ; CDMA [H04B 1/707](#) ; TDMA [H04B 7/2643](#) ; image transmission [H04N 5/00](#)-)}

WARNING

Groups [H04B 1/0003](#) and subgroups are not complete pending a reorganisation. See also group [H04B 1/406](#)

U H04B 1/0007

- • {wherein the AD/DA conversion occurs at radiofrequency or intermediate frequency stage}

H04B 1/001

- • • {Channel filtering, i.e. selecting a frequency channel within the SDR system (-multiplexing of multicarrier modulation signals being represented by different frequencies [H04L 5/06](#) ; multiplexing of multicarrier modulation signals [H04L 5/023](#)-)}

H04B 1/0014

- • • {using DSP [Digital Signal Processor]} quadrature modulation and demodulation}

H04B 1/0017

- • • {Digital filtering (-[H04B 1/001](#) takes precedence; digital filters per se [H03H 17/00](#)-)}

H04B 1/0021

- • • {Decimation, i.e. data rate reduction techniques (-[H04B 1/0025](#) takes precedence-)}

H04B 1/0025

- • • {using a sampling rate lower than twice the highest frequency component of the sampled signal (-for demodulation of angle-modulated signals [H03D 3/006](#)-)}

U H04B 1/0028

- • {wherein the AD/DA conversion occurs at baseband stage}

H04B 1/0032

- • • {with analogue quadrature frequency conversion to and from the baseband (-quadrature modulators and demodulators per se [H03D 3/007](#) , [H03C 3/40](#)-)}

- H04B 1/0035
 - • • {Channel filtering, i.e. selecting a frequency channel within a software radio system (-multiplexing of multicarrier modulation signals being represented by different frequencies [H04L 5/06](#) ; multiplexing of multicarrier modulation signals [H04L 5/023](#)-)}
- H04B 1/0039
 - • • {using DSP [Digital Signal Processor]} quadrature modulation and demodulation}
- H04B 1/0042
 - • • {Digital filtering (-[H04B 1/0035](#) takes precedence; digital filters per se [H03H 17/00](#)-)}
- U H04B 1/005
 - {adapting radio receivers, transmitters and transceivers for operation on two or more bands, i.e. frequency ranges}
- U H04B 1/0053
 - • {with common antenna for more than one band}
- H04B 1/006
 - • • {using switches for selecting the desired band (-[H04B 1/0057](#) takes preference -[H04B 1/0057](#) takes preference)}
- H04B 1/0064
 - • {with separate antennas for the more than one band (-[H04B 1/0053](#) takes precedence-)}
- U H04B 1/0067
 - • {with one or more circuit blocks in common for different bands}
- H04B 1/0071
 - • • {using a common intermediate frequency for more than one band (-[H04B 1/0075](#) takes precedence-)}
- H04B 1/02
 - Transmitters (-spatial arrangements of component circuits in radio pills for living beings [A61B 5/07](#)-)
- H04B 1/03
 - • Constructional details, e.g. casings, housings (-adapted for airplanes [B64D](#)-)}
- H04B 1/034
 - • • Portable transmitters (-distress beacons [G01S 1/68](#) ; means for indicating the location of accidentally buried persons [A63B 29/021](#)-)}
- H04B 1/036
 - • • Cooling arrangements (-cooling transformers [H01F 27/08](#) ; cooling discharge tubes [H01J 7/24](#) , [H01J 19/74](#)-)}
- H04B 1/04
 - • Circuits (-of television transmitters [H04N 5/38](#); { oscillators [H03B](#) ; modulators [H03C 1/00](#) , [H03C 3/00](#) , [H03C 5/00](#) ; amplifiers [H03F](#) ; power supplies [H04B 1/1607](#) })
- H04B 1/0458
 - • • {Arrangements for matching and coupling between power amplifier and antenna or between amplifying stages (-matching circuits in general [H03H](#)-)}
- H04B 1/0466
 - • • {Fault detection or indication (-[H04B 1/0483](#) takes precedence-)}
- H04B 1/0475
 - • • {with means for limiting noise, interference or distortion (-[H04B 1/0483](#) takes precedence-)}
- H04B 1/06
 - Receivers (-control of amplification [H03G](#) ; television receivers [H04N 5/44](#) , [H04N 5/64](#)-)
- U H04B 1/08
 - • Constructional details, e.g. cabinet
- H04B 1/082
 - • • {to be used in vehicles (-[H04B 1/086](#) takes precedence; holding or mounting accessories [B60R 11/02](#)-)}
- H04B 1/10
 - • Means associated with receiver for limiting or suppressing noise or interference {induced by transmission (-interference reduction in spread spectrum systems [H04B 1/7097](#) ; equalising on HF or IF [H04B 7/005](#) ; diversity systems [H04B 7/02](#) ; elimination of image frequencies [H03D 7/18](#) ; noise suppression by control of amplification [H03G 3/00](#) , [H03G 5/00](#) , [H03G 7/00](#) ; squelching [H03G 3/26](#) , [H03G 3/34](#)-)}
- H04B 1/1009
 - • • {Placing the antenna at a place where the noise level is low and using a noise-free transmission line between the antenna and the receivers (-screened aerials [H01Q 7/04](#) ; feeders for aerials [H01Q 9/00](#)-)}

- H04B 1/1018
 - . . . {noise filters connected between the power supply and the receiver (-suppression or limitation of noise from electric apparatus [H04B 15/00](#) ; demodulation [H03D](#); ripple filters [H02M 1/14](#) ; filters in general [95G](#), [H03H](#); power supplies [H04B 1/1607](#)-)}
- U H04B 1/1027
 - . . . {assessing signal quality or detecting noise/interference for the received signal}
- H04B 1/1036
 - {with automatic suppression of narrow band noise or interference, e.g. by using tuneable notch filters (-[H04B 1/123](#) takes precedence; filter circuits [H03H](#)-)}
- H04B 1/1081
 - . . . {Reduction of multipath noise (-by equalising [H04B 7/005](#)-)}
- H04B 1/12
 - . . . Neutralising, balancing, or compensation arrangements(-balancing ripple filters [H04B 15/005](#) , [H02M 1/143](#)-)}
- H04B 1/123
 - {using adaptive balancing or compensation means (-adaptive filter circuits and algorithms [H03H](#)-)}
- H04B 1/126
 - {having multiple inputs, e.g. auxiliary antenna for receiving interfering signal (-aerials in general [H01Q](#)-)}
- H04B 1/16
 - . . Circuits(-demodulators [H03D](#)-)}
- H04B 1/1607
 - . . . {Supply circuits (-converters [92P](#), [92Q](#), [H02M](#); filters therefor [H02M 1/14](#) ; voltage stabilisers [G05F 1/46](#)-)}
- H04B 1/1615
 - {Switching on; Switching off, e.g. remotely (-battery saving circuits associated with selective call operation [H04W 52/00](#) ; details of power consumption reduction in a PLL, [H03L 7/0802](#) , [H03L 7/14](#) , [H03L 2207/08](#) , [H03L 2207/18](#) ; muting amplifiers by gain control see [H03G 3/34](#)-)}
- H04B 1/163
 - . . . {Special arrangements for the reduction of the damping of resonant circuits of receivers (-amplifiers [H03F](#) ; negative impedance networks for line transmission systems [H04B 3/16](#)-)}
- H04B 1/1638
 - . . . {Special circuits to enhance selectivity of receivers not otherwise provided for (-resonant circuits [H03H](#)-)}
- U H04B 1/1646
 - . . . {adapted for the reception of stereophonic signals}
- H04B 1/1692
 - {using companding of the stereo difference signal, e.g. FMX (-volume compression or expansion in amplifiers [H03G 7/00](#)-)}
- H04B 1/18
 - . . . Input circuits, e.g. for coupling to an aerial or a transmission line (-input circuits for amplifiers in general [H03F](#) ; coupling networks between aerials or lines and receivers independent of the nature of the receiver [H03H](#)-)}
- H04B 1/20
 - . . . for coupling gramophone pick-up, recorder output, or microphone to receiver,{e.g. for Hi-Fi systems or audio/video combinations (-constructional details for associated working of receivers and recording devices [G11B 31/003](#) ; for television signals only [H04N 5/00](#)-)}
- H04B 1/207
 - {with an audio or audio/video bus for signal distribution (-[H04B 1/205](#) takes precedence-)}
- H04B 1/26
 - . . . for superheterodyne receivers (-multiple frequency-changing [H03D 7/16](#)-)
- H04B 1/30
 - . . . for homodyne or synchrodyne receivers (-demodulator circuits [H03D 1/22](#)-)
- H04B 1/302
 - {for single sideband receivers (-demodulator circuits [H03D 1/24](#)-)}
- H04B 1/38
 - . Transceivers, i.e. devices in which transmitter and receiver form a structural unit and in which at least one part is used for functions of transmitting and receiving{ (- construction of portable transceivers [H04B 1/034](#) ; specially adapted to be fitted into airplanes [B64D 43/00](#) ; paging systems [G08B 3/10](#) ; traffic between a small number of stations with amplifiers or loudspeakers [H04M 9/001](#); selecting arrangements for radio-calling systems [H04W](#) ; wireless communication networks [H04W](#) -)}
- H04B 1/3805
 - . . {with built-in auxiliary receivers}

- H04B 1/3816
 - • {Mechanical arrangements for accommodating identification devices, e.g. cards; ~~or~~ chips; ~~with connectors for programming identification devices~~}
- N H04B 1/3818
 - • • Arrangements for facilitating insertion or removal of identification devices
 - WARNING
 - Group [H04B 1/3818](#) is incomplete pending reclassification of documents from group [H04B 1/3816](#)
 - Until reclassification is complete, groups [H04B 1/3816](#) and [H04B 1/3818](#) should be considered in order to perform a complete search
- H04B 1/3822
 - • { ~~specially adapted for being used use~~ in vehicles (~~H04B 1/3827~~ takes precedence; ~~holding or mounting accessories B60R 11/02~~)}
- H04B 1/3827
 - • {Portable transceivers}
- U H04B 1/3833
 - • • {Hand-held transceivers}
- H04B 1/3838
 - • • • { ~~arrangements~~ ~~Arrangements~~ for reducing RF exposure to the user, e.g. by changing the shape of the transceiver while in use (~~means for shaping the antenna pattern H01Q 1/245~~)}
- H04B 2001/3844
 - • • • • {with ~~an alert~~ ~~means~~ to ~~alert~~ the user that a certain exposure has been reached}
- U H04B 1/385
 - • • {Transceivers carried on the body, e.g. in helmets}
- H04B 2001/3855
 - • • • { ~~Portable transmission device~~ carried in a belt or harness}
- H04B 2001/3861
 - • • • { ~~Portable transmission device~~ carried ~~on~~ ~~in~~ a hand or ~~finger~~ ~~on~~ ~~fingers~~}
- H04B 2001/3866
 - • • • { ~~Portable transmission device or transceiver~~ carried on the head}
- H04B 2001/3872
 - • • • { ~~Portable transmission device~~ with extendable ~~microphone~~ ~~microphones~~ or ~~earphone~~ ~~earphones~~}
- H04B 1/3877
 - • • {Arrangements for ~~converting~~ ~~enabling~~ portable transceivers ~~for other use to be used in a fixed position~~, e.g. ~~fixed~~ ~~cradles~~ or ~~mobile-use~~ ~~boosters~~}
- H04B 1/3883
 - • • {Arrangements for mounting batteries or battery chargers}
- H04B 1/3888
 - • • {Arrangements for carrying or protecting transceivers}
- U H04B 1/40
 - • Circuits
- H04B 1/401
 - • • {for selecting or indicating operating mode}
- H04B 1/403
 - • • {using the same oscillator for generating ~~both~~ the transmitter frequency ~~as well as~~ ~~and~~ the receiver local oscillator frequency}
- H04B 1/405
 - • • • {with multiple discrete channels}
- H04B 1/408
 - • • • {the transmitter oscillator frequency being identical to the receiver local oscillator frequency}
- H04B 1/44
 - • • Transmit/receive switching (~~{ in radar systems G01S 7/034 };~~ ~~tubes therefor H01J 17/64~~; ~~waveguide switches H01P 1/10~~)
- H04B 1/46
 - • • • by voice-frequency signals; by pilot signals (~~{ echo suppression H04B 3/20 }~~)
- H04B 1/48
 - • • • in ~~circuit~~ ~~circuits~~ for connecting transmitter and receiver to a common transmission path, e.g. by energy of transmitter ~~{ (in radar systems G01S; { H04B 1/46 takes precedence }) }~~
- U H04B 1/50
 - • • using different frequencies for the two directions of communication
- H04B 1/52
 - • • • Hybrid arrangements, i.e. ~~arrangements~~ for transition from single-path two- ~~way~~ ~~direction~~ transmission to single- ~~direction~~ transmission on each of two ~~path~~, ~~paths~~ or vice- versa (~~{ multipoint networks H03H 7/46; microwave multiplexers H01P 1/213 }~~)
- H04B 1/525
 - • • • • {with means for reducing leakage of transmitter signal into the receiver (~~for repeater stations H04B 7/15564 }~~)}

- H04B 1/54
 - • • using the same frequency for **both two** directions of communication (~~H04B 1/44~~ takes precedence-)
- H04B 1/56
 - • • • with provision for simultaneous communication in **both two** directions
- H04B 1/58
 - • • • Hybrid arrangements, i.e. **arrangements** for transition from single-path two-way **direction** transmission to single-**direction** transmission on each of two paths; or vice-versa (~~multiport networks H03H 7/48 ; for two-way amplifiers H03F 3/62 ; in multiplex communication H04J 1/10 ; balance/unbalance networks H03H 7/42 , H03H 11/32 ; construction of transformers 95G2, H01F; conjugate coupling devices of the waveguide type H01P 5/16~~)
- H04B 1/587
 - • • • {using opto-couplers (light transmission systems [H04B 10/00](#)-)}
- H04B 1/59
 - Responders; Transponders (~~relay systems [H04B 7/14](#)~~)
 - WARNING
 - contains no documents, see provisionally [G01S 13/74](#)
- H04B 1/62
 - for providing a predistortion of the signal in the transmitter and corresponding correction in the receiver, e.g. for improving the signal/noise ratio (~~for optical transmitters [H04B 10/58](#)~~)
- H04B 1/64
 - • Volume compression or expansion arrangements (~~for amplifiers [H03G 7/00](#)~~)
- H04B 1/66
 - for reducing bandwidth of signals (in pictorial communication systems [H04N](#)); for improving efficiency of transmission (~~H04B 1/68~~ takes precedence; {vocoders **42T2B**, [G10L](#)})
- H04B 1/68
 - for wholly or partially suppressing the carrier or one side band (or by using special modulation methods (~~modulator circuits [H03C 1/52](#) , [H03C 1/60](#) ; single sideband receivers [H04B 1/302](#) ; for data transmission [H04L 27/02](#)~~))
- U H04B 1/69
 - Spread spectrum techniques
- U H04B 1/707
 - • using direct sequence modulation
- H04B 1/70712
 - • • {with demodulation by means of convolvers, e.g. of the SAW type (~~SAW convolvers in general [G06G 7/195](#)~~)}
- U H04B 1/7073
 - • • Synchronisation aspects
- H04B 1/70735
 - • • • {Code identification (~~H04B 1/7083~~ takes precedence-)}
- U H04B 1/7075
 - • • • with code phase acquisition
- H04B 1/70751
 - • • • • {using partial detection (~~H04B 1/70758~~ takes precedence-)}
- H04B 1/70754
 - • • • • {Setting of search window, i.e. range of code offsets to be searched (~~H04B 1/70758~~ takes precedence-)}
- H04B 1/70756
 - • • • • {Jumping within the code, i.e. masking or slewing (~~H04B 1/70758~~ takes precedence-)}
- H04B 1/70757
 - • • • • {with increased resolution, i.e. higher than half a chip (~~H04B 1/70758~~ takes precedence-)}
- U H04B 1/7097
 - • • Interference-related aspects
- U H04B 1/7103
 - • • • the interference being multiple access interference
- U H04B 1/7105
 - • • • • Joint detection techniques, e.g. linear detectors
- H04B 1/71055
 - • • • • • {using minimum mean squared error [MMSE] detector}}
- H04B 1/71057
 - • • • • • {using maximum-likelihood sequence estimation [MLSE]}}

- U H04B 1/7163
- using impulse radio
- WARNING
As from 01/04/2011 documents relating to pulse-related aspects are classified in [H04B 1/717](#) and the backlog for such documents is continuously being reclassified from [H04B 1/7163](#)
- H04B 1/71632
- • • {Signal aspects (~~H04B 1/7172~~ and [H04B 1/7176](#) take precedence)}
- H04B 1/71635
- • • {Transmitter aspects (~~H04B 1/7174~~ takes precedence)}
- H04B 1/71637
- • • {Receiver aspects (~~H04B 1/7183~~ takes precedence)}
- U H04B 1/717
- • • Pulse-related aspects
- WARNING
Not complete pending the completion of reclassification; see also group [H04B 1/7163](#)
- H04B 1/7172
- • • • {Pulse shape (~~in general H04L 25/03834~~)}
- H04B 1/7174
- • • • {Pulse generation (~~in general H04L 25/03834~~)}
- H04B 1/72
- Circuits or components for simulating aerials, e.g. dummy aerial (~~dissipative waveguide terminations H01P 1/26~~)
- WARNING
contains no documents, see [H03H](#), e.g. [H03H 7/38](#) , [H03H 11/28](#)
- H04B 1/74
- for increasing reliability, e.g. using redundant or spare channels or apparatus(~~replacing by standby devices for amplifiers H03F 1/52 , H03F 1/542~~)}
- H04B 3/00**
- Line transmission systems (~~combined with near-field transmission systems H04B 5/00 ; constructional features of cables H01B 11/00~~)**
- U H04B 3/02
- Details
- H04B 3/03
- • Hybrid circuits (~~for transceivers H04B 1/52 , H04B 1/58 ; hybrid junctions of the waveguide type H01P 5/16~~)
- WARNING
not used, see [H04B 1/52](#) , [H04B 1/58](#)
- H04B 3/04
- • Control of transmission; Equalising (~~control of amplification in general H03G~~)
- U H04B 3/10
- • • by pilot signal
- H04B 3/11
- • • • using pilot wire (~~H04B 3/12~~ takes precedence)
- H04B 3/26
- • Improving frequency characteristic by the use of loading coils (~~loading coils per se H01F 17/08~~)
- H04B 3/36
- • Repeater circuits (~~H04B 3/58~~ takes precedence; amplifiers therefor [H03F](#))
- U H04B 3/46
- • Monitoring; Testing
- H04B 3/462
- • • {Testing group delay or phase shift, e.g. timing jitter (~~H04B 3/46~~ takes precedence)}
- D H04B 3/464
- • • {Testing crosstalk effects}
- H04B 3/466
- • • • {Testing ~~simultaneously~~ attenuation ~~and~~ *in combination with at least one of* group delay ~~or~~ *and* phase shift}
- D H04B 3/468
- • • {Testing echo effects or singing (~~reducing echo effects or singing H04B 3/20~~)}
- H04B 3/48
- • • Testing attenuation (*H04B 3/466* takes precedence)
- N H04B 3/487
- • • Testing crosstalk effects
- N H04B 3/493
- • • Testing echo effects or singing

- H04B 3/50
 - Systems for transmission between fixed stations via two-conductor transmission lines (~~H04B 3/54~~ takes precedence-)
- U H04B 3/54
 - Systems for transmission via power distribution lines
- H04B 3/546
 - {Combination of signalling, telemetering, protection (~~circuits for remote indication of supply or distribution network condition H02J 13/00-~~)}
- H04B 3/548
 - {the power on the line being DC (~~arrangements for feeding power H04L 12/10~~ ; extracting feeding power from signals ~~H04L 25/02-~~)}
- H04B 3/58
 - • Repeater circuits (~~amplifiers therefor H03F-~~)
- H04B 3/60
 - Systems for communication between relatively movable stations, e.g. for communication with lift (~~H04B 3/54~~ takes precedence-)
- U **H04B 5/00**
 - Near-field transmission systems, e.g. inductive loop type**
- H04B 5/0018
 - {using leaky or radiating cables, e.g. leaky coaxial cables or power lines for inductive transmission (~~leaky cables per se H01Q 13/20~~ ; for railways ~~B61L 3/22-~~)}
- H04B 5/0056
 - {for use in interrogation, identification or read/write systems (~~record carriers G06K 7/00~~ , ~~G06K 19/00~~ ; for railways ~~B61L 3/12-~~)}
- H04B 5/0062
 - • {in RFID [Radio Frequency Identification] ~~systems~~ *Systems*}
- H04B 5/0075
 - {using inductive coupling (~~transformers or inductances adapted for inductive coupling H01F 38/14-~~)}
- H04B 5/0081
 - • {with antenna coils (~~loop aerials H01Q 7/00-~~)}
- H04B 7/00**
 - Radio transmission systems, i.e. using radiation field (~~H04B 10/00~~ , ~~H04B 15/00~~ take precedence)**
- H04B 7/02
 - Diversity systems (~~for direction finding G01S 3/72~~ ; aerial arrays or systems ~~H01Q~~; { reducing multipath interference in spread spectrum systems ~~H04B 1/7115~~ ; specially adapted for satellite systems ~~H04B 7/18534~~ ; for telegraphy or data transmission ~~H04L 1/02~~ })
- H04B 7/022
 - • {Site diversity, e.g. macro-diversity (~~for co-located independent aerials H04B 7/04-~~)}
- H04B 7/026
 - • • {Cooperative diversity, e.g. using fixed or mobile stations as relays (~~cooperative coding H04L 1/0077~~ , relays per se in CoMP ~~H04B 7/15592-~~)}
- U H04B 7/04
 - • using a plurality of spaced independent aerials
- H04B 7/0404
 - • • {the mobile station comprising multiple antennas (*e.g. aspects of uplink diversity*) (~~e.g. aspects of uplink diversity~~)}
- H04B 7/0413
 - • • {Multiple input multiple output [MIMO] ~~systems~~}

WARNING
Group ~~H04B 7/0413~~ and subgroups are not complete pending reorganisation. See also ~~H04W 52/42~~
- H04B 7/0456
 - • • • {Selection of precoding matrix or codebook, e.g. using matrices for antenna weighting (~~codebook-based design for spatial equalizers at the transmitter H04L 25/03898-~~)}
- U H04B 7/06
 - • • at transmitting station, e.g. time diversity
- H04B 7/0602
 - • • • {using antenna switching (~~H04B 7/0686~~ takes precedence; antenna beam directivity switching ~~H01Q 3/24-~~)}
- H04B 7/0613
 - • • • {using simultaneous transmission (~~H04B 7/0686~~ takes precedence)}
- U H04B 7/0615
 - • • • • {of weighted versions of same signal}
- H04B 7/0619
 - • • • • • {using feedback from receiving side (~~feedback signaling for adaptive modulation/coding H04L 1/0001-~~)}

- U H04B 7/0621 {Feedback content}
- H04B 7/063 {Parameters other than those covered in groups [H04B 7/0623](#) - [H04B 7/0634](#) , e.g. channel matrix rank or transmit mode selection-}
- H04B 7/0667 {of delayed versions of same signal (-using space-time coding [H04L 1/0618](#)-)}
- H04B 7/0669 {using different channel coding between antennas (-space-time coding [H04L 1/0618](#)-)}
- H04B 7/0678 {using different spreading codes between antennas (-code allocation [H04J 13/16](#)-)}
- H04B 7/068 {using space frequency diversity (-space-frequency coding [H04L 1/0606](#)-)}
- H04B 7/0682 {using phase diversity (*e.g. phase sweeping*)}(*e.g. phase sweeping*)}
- U H04B 7/08 at receiving station, e.g. space diversity
- H04B 7/0802 {using antenna selection ([H04B 7/0868](#) takes precedence; antenna beam directivity switching [H01Q 3/24](#)-)}
- H04B 7/0805 {with single receiver and antenna switching (-[H04B 7/0822](#) takes precedence-)}
- H04B 7/0837 {using pre-detection combining (-[H04B 7/0868](#) takes precedence-)}
- H04B 7/084 {Equal gain combining, only phase adjustments (-antenna beam scanning or forming by phase or amplitude control [H01Q 3/26](#) , e.g. phased arrays-)}
- U H04B 7/0842 {Weighted combining}
- H04B 7/0845 {per branch equalization, e.g. by an FIR-filter or RAKE receiver per antenna branch (-rake receivers as such [H04B 1/7115](#)-)}
- U H04B 7/0848 {Joint weighting}
- H04B 7/0851 {using training sequences or error signal (-minimizing error signal [H04B 7/0854](#)-)}
- H04B 7/0891 {Space-time diversity (-rake receivers [H04B 1/7115](#) ; space-time decoding [H04L 1/0631](#)-)}
- H04B 7/0897 {using beamforming per multi-path, e.g. to cope with different directions of arrival [DOA]}at different multi-paths}}
- H04B 7/14 {Relay systems (-interrogator-responder radar systems [G01S 13/74](#) ; {CATV(*community antenna television*) systems [H04H 20/78](#) ; {CATV [*community antenna television*] systems [H04H 20/78](#) ; adapted for television [H04N 7/20](#))}
- H04B 7/145 {Passive relay systems(-construction of passive reflectors [G01S 13/02](#)-)}
- U H04B 7/15 {Active relay systems}
- H04B 7/155 {Ground-based stations (-[H04B 7/204](#) takes precedence; { for satellite systems [H04B 7/18517](#))}
- H04B 7/15507 {Relay station based processing for cell extension or control of coverage area,(-network planning with network coordinated processing with regard to cell extension [H04W 16/26](#) ; network topologies using dedicated repeater stations [H04W 84/047](#) ; terminal devices adapted for relaying to or from an other terminal [H04W 88/04](#)-)}
- H04B 7/15514 {for shadowing compensation (-for satellite mobile telephony service systems [H04B 7/18536](#)-)}

- H04B 7/15521 {combining by calculations packets received from different stations before transmitting the combined packets as part of network coding (-network coding aspects for detection or prevention of errors in the information received [H04L 1/0076](#) ; network traffic management with optimizing of information sizing, e.g. header compression, by using assembly and disassembly of packets [H04W 28/065](#)-)}
- U H04B 7/15528 {Control of operation parameters of a relay station to exploit the physical medium}
- H04B 7/15535 {Control of relay amplifier gain (-amplifier gain control in general [H03G 3/00](#) ; gain control reducing self - or loop interference [H04B 7/15578](#)-)}
- H04B 7/15542 {Selecting at relay station its transmit and receive resources (-selection of wireless resources by user or terminal [H04W 72/02](#) ; arrangements affording multiple use of the transmission path by two-dimensional division of the resources [H04L 5/0003](#) , or by allocating sub-channels [H04L 5/003](#)-)}
- H04B 7/15592 {Adapting at the relay station communication parameters for supporting cooperative relaying, i.e. transmission of the same data via direct - and relayed path (-cooperative diversity [H04B 7/024](#)-)}
- H04B 7/185 Space-based or airborne stations; {Stations for satellite systems} (-[H04B 7/204](#) takes precedence-)
- H04B 7/1851 {Systems using a satellite or space-based relay (-[H04B 7/18508](#) , [H04B 7/18521](#) take precedence; providing specific services [H04B 7/18523](#) to [H04B 7/18576](#)-)}
- H04B 7/18521 {Systems of inter linked satellites, i.e. inter satellite service (-for optical links between satellites [H04B10/105](#)-)}
- H04B 7/18523 {Satellite systems for providing broadcast service to terrestrial stations, i.e. broadcast satellite service (-arrangements specially adapted for satellite broadcast receiving [H04H 40/90](#) ; picture transmission via satellite [H04N 1/00103](#) ; television transmission via satellite [H04N 7/20](#)-)}
- H04B 7/18526 {Arrangements for data linking, networking or transporting, or for controlling an end to end session (-data switching networks [H04L 12/00](#)-)}
- H04B 7/1853 {Satellite systems for providing telephony service to a mobile station, i.e. mobile satellite service (-for selecting [H04W](#)-)}
- U H04B 7/18539 {Arrangements for managing radio, resources, i.e. for establishing or releasing a connection}
- H04B 7/18543 {for adaptation of transmission parameters, e.g. power control (-for detecting or preventing errors in the information received [H04L 1/00](#)-)}
- U H04B 7/18545 {Arrangements for managing station mobility, i.e. for station registration or localisation}
- H04B 7/18547 {for geolocalisation of a station (-position fixing by direction or distance determination [G01S 5/00](#)-)}
- U H04B 7/1855 {using a telephonic control signal, e.g. propagation delay variation, Doppler frequency variation, power variation, beam identification}
- H04B 7/18552 {using a telephonic control signal and a second ranging satellite (-determining absolute distances from a plurality of spaced points of known location [G01S 5/14](#)-)}
- H04B 7/18563 {Arrangements for interconnecting multiple systems (-data switching networks [H04L 12/00](#)-)}
- H04B 7/18565 {Arrangements for preventing unauthorised access or for providing user protection (-arrangements for secret or secure communication [H04L 9/00](#)-)}

- H04B 7/18576 {Satellite systems for providing narrowband data service to fixed or mobile stations, e.g. using a minisatellite, a microsatellite (-for selecting [H04W-](#))}
- H04B 7/18578 {Satellite systems for providing broadband data service to individual earth stations (-for selecting [H04W](#) ; provisions for broadband connection, [H04Q 11/0478-](#))}
- H04B 7/18584 {Arrangements for data networking, i.e. for data packet routing, for congestion control (-data switching networks [H04L 12/00-](#))}
- H04B 7/18591 {Arrangements for interconnecting multiple systems (-data switching networks [H04L 12/00-](#))}
- H04B 7/18593 {Arrangements for preventing unauthorised access or for providing user protection (-arrangements for secret or secure communication [H04L 9/00-](#))}
- U H04B 7/204 . . . Multiple access
- H04B 7/216 Code division or spread-spectrum multiple access ({CDMA, SSMA} ; spread spectrum techniques in general [H04B 1/69-](#))
- H04B 7/24 . . for communication between two or more posts (-for selecting [H04W](#) ; {wireless communication networks [H04W](#)})
- U H04B 7/26 . . at least one of which is mobile
- H04B 7/2603 . . . {Arrangements for wireless physical layer control (-[H04B 7/2612](#) takes precedence-)}
- H04B 7/2612 . . . {Arrangements for wireless medium access control, e.g. by allocating physical layer transmission capacity (-[H04B 7/2615](#) to [H04B 7/2643](#) take precedence; provision for broadband connection [H04Q 11/0478-](#))}
- H04B 7/2615 . . . {using hybrid frequency-time division multiple access [FDMA-TDMA]}
- H04B 7/2618 . . . {using hybrid code-time division multiple access [CDMA-TDMA]}
- H04B 7/2621 . . . {using frequency division multiple access [FDMA]}(-[H04B 7/2615](#) takes precedence-)}
- H04B 7/2628 . . . {using code-division multiple access [CDMA]}or spread spectrum multiple access [SSMA](-[H04B 7/2618](#) takes precedence-)}
- H04B 7/2643 . . . {using time-division multiple access [TDMA]}(-[H04B 7/2615](#) , [H04B 7/2618](#) take precedence-)}
- U H04B 7/2662 . . . {Arrangements for Wireless System Synchronisation}
- H04B 7/2668 {-Arrangements for Wireless Code-Division Multiple Access (CDMA) System Synchronisation, for code acquisition [H04B 1/7075](#) , for code tracking [H04B 1/7085-](#)}
- U H04B 7/2671 {Arrangements for Wireless Time-Division Multiple Access (TDMA) System Synchronisation}
- U H04B 7/2678 {Time synchronisation}
- U H04B 7/2687 {Inter base stations synchronisation}
- H04B 7/2696 {Over the air autonomous synchronisation, e.g. by monitoring network activity (-[H04B 7/2693](#) takes preference- [H04B 7/2693](#) takes preference)}

- U H04B 10/00** **Transmission systems employing electromagnetic waves other than radio-waves, e.g. infrared, visible or ultraviolet light, or employing corpuscular radiation, e.g. quantum communication**
- NOTE
Groups [H04B 10/03](#) , [H04B 10/07](#) , [H04B 10/11](#) , [H04B 10/25](#) , [H04B 10/27](#) , [H04B 10/29](#) and [H04B 10/40](#) to [H04B 10/90](#) , and their subgroups are based on IPC2013.01
- WARNING
Group [H04B 10/2572](#) does not correspond to former or current IPC groups. Concordance CPC:IPC for this group is as follows: - [H04B 10/2572](#) : [H04B 10/2507](#)
- U H04B 10/03** • Arrangements for fault recovery
- WARNING
This group and its subgroups are not complete pending reclassification; see also [H04B 10/07](#) and subgroups [H04B 10/071](#) - [H04B 10/0799](#)
- H04B 10/032 • • using working and protection systems{([H04J 14/0287](#) takes precedence-)}
- U H04B 10/07** • Arrangements for monitoring or testing transmission systems; Arrangements for fault measurement of transmission systems
- H04B 10/073 • • using an out-of-service signal ([H04B 10/071](#) takes precedence-)
- H04B 10/075 • • using an in-service signal ([H04B 10/071](#) takes precedence-)
- H04B 10/12 • {Transmission through light guides, e.g. optical fibres} ([H04B 10/25](#) takes precedence-)
- WARNING
This group and its subgroups is no longer used for classification of new documents as from March 1, 2012. If not indicated differently for a particular subgroup, the backlog of its subgroups is being continuously reclassified to [H04B 10/25](#) - [H04B 10/2587](#)
- H04B 10/25 • Arrangements specific to fibre transmission{(optical fibres per se, structural details of arrangements comprising optical fibres or other optical elements [G02B 6/00](#)-)}
- WARNING
This group and its subgroups are not complete pending reclassification; see also [H04B 10/12](#) and its subgroups
- H04B 10/2504 • • {Transmission components ([H04B 10/40](#) takes precedence-)}
- U H04B 10/2507** • • for the reduction or elimination of distortion or dispersion
- U H04B 10/2513** • • • due to chromatic dispersion
- H04B 10/25133 • • • • {including a lumped electrical or optical dispersion compensator ([H04B 10/2519](#) , [H04B 10/2525](#) take precedence-) ; optical dispersion compensators involving optical fibres per se [G02B 6/293](#)-}
- H04B 10/25137 • • • • {using pulse shaping at the transmitter, e.g. pre-chirping or dispersion supported transmission [DST]-}
- H04B 10/2519 • • • • using Bragg gratings{(~~Bragg gratings per se [G02B 6/02076](#) ;~~ *Bragg gratings per se [G02B 6/02076](#) ;* devices using fibre gratings for dispersion control per se [G02B 6/29316](#)-)}
- H04B 10/2525 • • • • using dispersion-compensating fibres{(dispersion-tailored or dispersion compensation fibres per se [G02B 6/02214](#)-)}

- H04B 10/25253
 - • • • {with dispersion management, i.e. using a combination of different kind of fibres in the transmission system (-devices with different kinds of fibres for dispersion control per se [G02B 6/29374-](#))}
 - H04B 10/2543
 - • • due to fibre non-linearities, e.g. Kerr effect{(-non-linear optical devices [G02F 1/35-](#))}
 - H04B 10/2575
 - • Radio-over-fibre, e.g. radio frequency signal modulated onto an optical carrier{(-sub-carrier multiplexing [H04J 14/0298-](#))}
 - H04B 10/25751
 - • • {Optical arrangements for CATV or video distribution (-adaptations of television systems for optical transmission [H04N 7/22-](#))}
 - U H04B 10/25752
 - • • {Optical arrangements for wireless networks}
 - H04B 10/25753
 - • • • {Distribution optical network, e.g. between a base station and a plurality of remote units (-WDM networks in general [H04J 14/0278-](#))}
 - H04B 10/2581
 - • Multimode transmission{(-mode multiplex systems [H04J 14/04-](#))}
 - H04B 10/27
 - Arrangements for networking{(-free-space networks [H04B 10/11](#) , WDM networks [H04J 14/0278](#) , specific to radio-over-fibre [H04B 10/25753-](#))}
 - H04B 10/272
 - • Star-type networks {or tree-type networks}
 - U H04B 10/29
 - Repeaters
 - H04B 10/291
 - • in which processing or amplification is carried out without conversion of the main signal from optical form{(-fibre optical amplifiers per se [H01S 3/067-](#))}
 - U H04B 10/2912
 - • • {characterised by the medium used for amplification or processing}
 - H04B 10/2914
 - • • • {using lumped semiconductor optical amplifiers [SOA]}{(-semiconductor optical amplifiers per se [H01S 5/50-](#))}
 - H04B 10/2916
 - • • • {using Raman or Brillouin amplifiers (-Raman or Brillouin amplifiers per se [H01S 3/302-](#))}
 - U H04B 10/293
 - • • Signal power control
 - H04B 10/2931
 - • • • {using AGC (-[H04B 10/294](#) takes precedence)}
 - H04B 10/294
 - • • • in a multiwavelength system, e.g. gain equalisation{(-for general power control in WDM systems, see also [H04J 14/0221-](#))}
 - H04B 10/2941
 - • • • • {using an equalising unit, e.g. a filter (-[H04B 10/296](#) takes precedence)}
 - H04B 10/2942
 - • • • • {using automatic gain control [AGC]}{(-[H04B 10/296](#) takes precedence)}
 - H04B 10/30
 - Transmission systems employing beams of corpuscular radiation (-arrangements for handling beams of corpuscular radiation, e.g. focusing, moderating, [G21K 1/00-](#))
- WARNING**
- This group is no longer used for classification of new documents as from March 1, 2012. The backlog of this group and its subgroups is being continuously reclassified to [H04B 10/80](#) and [H04B 10/90](#)
- U H04B 10/50
 - Transmitters
 - U H04B 10/501
 - • {Structural aspects}
 - H04B 10/506
 - • • {Multi-wavelength transmitters (-WDM systems in general [H04J 14/02-](#))}
 - U H04B 10/516
 - • Details of coding or modulation
 - H04B 10/532
 - • • Polarisation modulation {e.g. polarization switching or transmission of a single data stream on two orthogonal polarizations (-polarization multiplexed systems [H04J 14/06-](#))}
 - U H04B 10/60
 - Receivers
 - H04B 10/61
 - • Coherent receivers {i.e., optical receivers using an optical local oscillator (-delay line interferometer based DPSK optical receivers [H04B 10/677-](#))}

- H04B 10/614
 - • • {comprising one or more polarization beam splitters, e.g. polarization multiplexed [PolMux] X-PSK coherent receivers, polarization diversity heterodyne coherent receivers (~~H04J 14/06~~ takes precedence-)}
- H04B 10/615
 - • • {Arrangements affecting the optical part of the receiver (~~adjustment of the frequency or phase of the local oscillator in homodyne receivers H04B 10/63~~, use of polarization beam splitters [H04B 10/614](#)-)}
- U H04B 10/616
 - • • {Details of the electronic signal processing in coherent optical receivers}
- H04B 10/6166
 - • • • {Polarization demultiplexing, tracking or alignment of orthogonal polarization components (~~polarisation multiplex systems H04J 14/06~~-)}
- H04B 10/80
 - Optical aspects relating to the use of optical transmission for specific applications, not provided for in groups [H04B 10/03](#) - [H04B 10/70](#), e.g. optical power feeding or optical transmission through water
- U H04B 10/806
 - • {Arrangements for feeding power}
- H04B 10/808
 - • • {Electrical power feeding of an optical transmission system (~~power feeding arrangements in general H04B 3/44~~-)}
- H04B 13/00**

Transmission systems characterised by the medium used for transmission, not provided for in groups [H04B 3/00](#) to [H04B 11/00](#)
- H04B 13/02
 - Transmission systems in which the medium consists of the earth or a large mass of water thereon, e.g. earth telegraphy (~~line transmission systems with earth or water return H04B 3/00~~; { geophysics, detecting hidden masses [G01H](#), [G01V 1/16](#), [G01V 1/18](#), [G01V 3/00](#); sonars [G01S 1/72](#); applications of earth currents [G01S 1/72](#), [H05F 7/00](#); direction and distance determination with lead cables [G01S 13/00](#) })
- H04B 14/00**

Transmission systems not characterised by the medium used for transmission (~~details thereof H04B 1/00~~-)
- H04B 14/002
 - {characterised by the use of a carrier modulation (~~using subcarrier modulation H04B 14/08~~-)}
- H04B 14/02
 - characterised by the use of pulse modulation (~~in radio transmission relays H04B 7/17~~; transmission of digital information per se [H04L](#)-)
- H04B 14/04
 - • using pulse code modulation (~~analogue/digital or digital/analogue conversion per se [H03M 1/00](#)~~; { for TV signals [H04N 7/24](#) })
- H04B 14/044
 - • • {Sample and hold circuits (~~in general [G11C 27/02](#)~~-)}
- H04B 14/06
 - • Using differential modulation, e.g. delta modulation (~~conversion of analogue values to or from differential modulation [H03M 3/00](#)~~-)
- H04B 14/062
 - • • {using delta modulation or one-bit differential modulation [[1DPCM](#)]}]}
- H04B 15/00**

Suppression or limitation of noise or interference (~~by means associated with receiver H04B 1/10~~-)
- H04B 15/02
 - Reducing interference from electric apparatus by means located at or near the interfering apparatus (~~structural association with dynamo-electric machines [H02K 11/00](#)~~-)
- H04B 15/025
 - • {Reducing interference from ignition apparatus of fuel engines (~~cables with high resistance [H01B](#)~~-)}
- H04B 15/04
 - • the interference being caused by substantially sinusoidal oscillations, e.g. in a receiver, in a tape-recorder (~~reducing parasitic oscillations [H03B](#), [H03F](#); screening [H05K 9/00](#)~~-)
- H04B 17/00**

Monitoring; Testing (*of line transmission systems [H04B 3/46](#); arrangements for monitoring or testing transmission systems employing electromagnetic waves other than radio waves [H04B 10/07](#)*)
- D H04B 17/0002
 - {of transmitters(~~H04B 17/0082~~ takes precedence-)}
- D H04B 17/0005
 - • {for calibration}

- D H04B 17/0007 . . . {of transmit antennas, e.g. of the amplitude or phase}
- D H04B 17/001 . . . {of power amplifier, e.g. gain or non-linearities}
- D H04B 17/0012 . . . {of the whole transmission and reception path, e.g. self-test loop-back}
- D H04B 17/0015 . . . {of other elements, e.g. filter calibration or I/Q mismatch}
- D H04B 17/0017 . . {for performance testing}
- D H04B 17/002 . . . {Test equipment at the transmitter}
- D H04B 17/0022 . . . {Detection of faulty performance, e.g. under performance or response deviations}
- D H04B 17/0025 . . . {Monitoring during normal operation}
- D H04B 17/0027 . . . {Self-testing arrangements}
- D H04B 17/003 . . {for measurement of parameters}
- D H04B 17/0032 . . . {of radiated power at antenna port}
- D H04B 17/0035 . . . {of reflected power, e.g. return loss}
- D H04B 17/0037 . . . {of other parameters, e.g. DC offset, delay or propagation times}
- D H04B 17/004 . . {of receivers(H04B 17/0082 , H04B 17/009 take precedence)}
- D H04B 17/0042 . . {Measuring channel quality parameters}
- D H04B 17/0045 . . . {Signal code power and other power values per channel}
- D H04B 17/0047 . . . {Delay profiles}
- D H04B 17/005 . . . {Interference values}
- D H04B 17/0052 . . . {Adjacent channel leakage power}
- D H04B 17/0055 . . . {Noise values}
- D H04B 17/0057 . . . {Received signal strength}
- D H04B 17/006 . . . {Estimation of signal-to-interference ratio [SIR] or carrier-to-interference ratio [CIR]}
- D H04B 17/0062 . . {Calibrating or correcting measurements}
- D H04B 17/0065 . . {Indication means, e.g. displays, alarms, audible means}
- D H04B 17/0067 . . {with feedback of measurements to the transmitter(for modifying transmission characteristics H04L 1/0026 , for allocation of payload in multicarrier systems H04L 27/2608)}
- D H04B 17/007 . . {using historical readings, averaging values or statistics}
- D H04B 17/0072 . . {for locating or positioning the transmitter}
- D H04B 17/0075 . . {Predicting channel quality parameters}
- D H04B 17/0077 . . {for resource allocation, admission control or handover}
- D H04B 17/008 . . {for testing the receiver RF performance}
- H04B 17/0082 . {using a service channel or an auxiliary channel} channels; using auxiliary channels}
- D H04B 17/009 . . {Modeling or characterizing the propagation channel}
- D H04B 17/0092 . . . {Fading models and fading generators}
- D H04B 17/0095 . . . {Simulation models}
- D H04B 17/0097 . . . {Predictive models}
- D H04B 17/02 . . . of relay systems
- D H04B 17/021 . . . {with selective localization}
- D H04B 17/022 . . . {using different frequencies}
- D H04B 17/023 {generated by local oscillators}
- D H04B 17/024 {selected by local filters}

- D H04B 17/025 {generated by local multipliers, dividers, modulators}
- D H04B 17/026 . . . {using coded addresses}
- D H04B 17/027 . . {without selective localization}
- D H04B 17/028 . . . {using successive loop-backs}
- D H04B 17/029 . . . {by means of resistance, voltage or current measurement}
- N H04B 17/10 . . of transmitters
- N H04B 17/101 . . {for measurement of parameters}
- N H04B 17/102 . . . {of radiated power at antenna port}
- N H04B 17/103 . . . {of reflected power, e.g. return loss}
- N H04B 17/104 . . . {of other parameters, e.g. DC offset, delay or propagation times}
- N H04B 17/11 . . for calibration
- N H04B 17/12 . . . of transmit antennas, e.g. of the amplitude or phase
- N H04B 17/13 . . . of power amplifiers, e.g. gain or non-linearity
- N H04B 17/14 . . . of the whole transmission and reception path, e.g. self-test loop-back
- N H04B 17/15 . . Performance testing
- N H04B 17/16 . . . Test equipment located at the transmitter
- N H04B 17/17 . . . Detection of non-compliance or faulty performance, e.g. response deviations ([H04B 17/18](#) takes precedence)
- N H04B 17/18 . . . Monitoring during normal operation
- N H04B 17/19 . . . Self-testing arrangements
- N H04B 17/20 . . of receivers
- N H04B 17/21 . . for calibration; for correcting measurements
- N H04B 17/23 . . Indication means, e.g. displays, alarms, audible means
- N H04B 17/24 . . with feedback of measurements to the transmitter
- N H04B 17/26 . . using historical data, averaging values or statistics
- N H04B 17/27 . . for locating or positioning the transmitter
- N H04B 17/29 . . Performance testing
- N H04B 17/30 . . of propagation channels
- N H04B 17/309 . . Measuring or estimating channel quality parameters
- N H04B 17/318 . . . Received signal strength
- N H04B 17/327 Received signal code power [RSCP]
- N H04B 17/336 . . . Signal-to-interference ratio [SIR] or carrier-to-interference ratio [CIR]
- N H04B 17/345 . . . Interference values ([H04B 17/336](#) takes precedence)
- N H04B 17/354 . . . Adjacent channel leakage power
- N H04B 17/364 . . . Delay profiles
- N H04B 17/373 . . Predicting channel quality parameters
- N H04B 17/382 . . for resource allocation, admission control or handover
- N H04B 17/391 . . Modelling the propagation channel
- N H04B 17/3911 . . . {Fading models or fading generators}
- N H04B 17/3912 . . . {Simulation models}
- N H04B 17/3913 . . . {Predictive models}
- N H04B 17/40 . . of relay systems
- N H04B 17/401 . . {with selective localization}
- N H04B 17/402 . . . {using different frequencies}

- N H04B 17/403 {generated by local oscillators}
- N H04B 17/404 {selected by local filters}
- N H04B 17/405 {generated by local multipliers, dividers, modulators}
- N H04B 17/406 . . . {using coded addresses}
- N H04B 17/407 . . {without selective localization}
- N H04B 17/408 . . . {using successive loop-backs}
- N H04B 17/409 . . . {by means of resistance, voltage or current measurement}
- H04B 2201/00** **Indexing scheme relating to details of transmission systems not covered by a single group of [H04B 3/00](#) to [H04B 13/00](#)**
- U H04B 2203/00** **Indexing scheme relating to line transmission systems**
H04B 2203/54 . Aspects of powerline communications not already covered by [H04B 3/54](#) and its subgroups (not used)
- U H04B 2210/00** **Indexing scheme relating to optical transmission systems**
H04B 2210/07 . Monitoring an optical transmission system using a supervisory signal (-OAM for WDM transmission [H04J 14/0272](#)-)

Project: N/A (H04H)

- U H04H 20/00** **Arrangements for broadcast or for distribution combined with broadcast**
- U H04H 20/10 . Arrangements for replacing or switching information during the broadcast or the distribution
- H04H 20/103 . . {-Transmitter-side switching}
- H04H 20/106 . . {-Receiver-side switching}
- U H04H 20/42 . Arrangements for resource management
- H04H 20/423 . . {-Transmitter side}
- H04H 20/426 . . {-Receiver side}
- U H04H 20/53 . Arrangements specially adapted for specific applications, e.g. for traffic information or for mobile receivers
- U H04H 20/61 . . for local area broadcast, e.g. instore broadcast
- H04H 20/63 . . . to plural spots in a confined site, e.g. MATV [*Master Antenna Television*](~~Master Antenna Television~~)
- U H04H 20/65 . Arrangements characterised by transmission systems for broadcast
- U H04H 20/76 . . Wired systems
- U H04H 20/77 . . . using carrier waves
- H04H 20/78 CATV [*Community Antenna Television*] systems(~~Community Antenna Television~~) systems
- U H04H 20/86 . Arrangements characterised by the broadcast information itself
- H04H 20/93 . . which locates resources of other pieces of information, e.g. URL [*Uniform Resource Locator*](~~Uniform Resource Locator~~)
- U H04H 60/00** **Arrangements for broadcast applications with a direct linking to broadcast information or broadcast space-time; Broadcast-related systems**
- U H04H 60/35 . Arrangements for identifying or recognising characteristics with a direct linkage to broadcast information or to broadcast space-time, e.g. for identifying broadcast stations or for identifying users
- U H04H 60/37 . . for identifying segments of broadcast information, e.g. scenes or extracting programme ID
- H04H 60/372 . . . {-Programme}

- H04H 60/375 . . . {-Commercial}
 - H04H 60/377 . . . {-Scene}
 - U H04H 60/68 . Systems specially adapted for using specific information, e.g. geographical or meteorological information
 - H04H 60/72 . . using EPGs *Electronic Programme Guides*(focusing on identifying broadcast space-time [H04H 60/39](#); { menu type display of EPG in television receivers [H04N 5/44543](#)})
- H04H 2201/00 {-Aspects of broadcast communication}**
- H04H 2201/10 . {-characterised by the type of broadcast system}
 - H04H 2201/11 . . {-digital multimedia broadcasting [DMB]}
 - H04H 2201/12 . . {-digital radio mondiale [DRM]}
 - H04H 2201/13 . . {-radio data system/radio broadcast data system [RDS/RBDS]}
 - H04H 2201/14 . . {-direct broadcast satellite [DBS]}
 - H04H 2201/15 . . {-system for wireless information forwarding and teledistribution [SWIFT]}
 - H04H 2201/16 . . {-digital video broadcasting - handhelds [DVB-H]}
 - H04H 2201/17 . . {-in band adjacent channel [IBAC]}
 - H04H 2201/18 . . {-in band on channel [IBOC]}
 - H04H 2201/183 . . . {-FM digital or hybrid}
 - H04H 2201/186 . . . {-AM digital or hybrid}
 - H04H 2201/19 . . {-digital satellite radio [DSR]}
 - H04H 2201/20 . . {-digital audio broadcasting [DAB]}
 - H04H 2201/30 . {-characterised by the use of a return channel, e.g. for collecting users' opinions, for returning broadcast space/time information or for requesting data}
 - H04H 2201/33 . . {-via the broadcast channel}
 - H04H 2201/37 . . {-via a different channel}
 - H04H 2201/40 . {-characterised in that additional data relating to the broadcast data are available via a different channel than the broadcast channel}
 - H04H 2201/50 . {-characterised by the use of watermarks}
 - H04H 2201/60 . {-characterised in that the receiver comprises more than one tuner}
 - H04H 2201/70 . {-characterised in that receivers can be addressed}
 - H04H 2201/80 . {-characterised in that motion picture association of America [MPAA] ratings are used}
 - H04H 2201/90 . {-characterised by the use of signatures}

Project: N/A (H04J)**H04J**

MULTIPLEX COMMUNICATION (-transmission in general [H04B](#); peculiar to transmission of digital information [H04L 5/00](#) ; systems for the simultaneous or sequential transmission of more than one television signal [H04N 7/08](#) ; in exchanges [H04Q 11/00](#) ; stereophonic systems [H04S](#)-)

NOTE

This subclass covers

- circuits or apparatus for combining or dividing signals for the purpose of transmitting them simultaneously or sequentially over the same transmission path;
- monitoring arrangements therefor.

H04J 1/00

Frequency-division multiplex systems (-[H04J 14/00](#) takes precedence-)

- U H04J 1/02 · Details
- H04J 1/04 · · Frequency-transposition arrangements{ modulation with carrier or side-band suppression [H03C 1/52](#) , [H03C 1/60](#) ; single-band suppression [H04B 1/00](#) , [H04B 15/00](#) ; telegraphic communication [H04L 27/02](#) , [H04L 25/49](#) ; transference of modulation from one carrier to another, e.g. frequency-changing [H03D 7/00](#) ; demodulation or transference of modulation of modulated electromagnetic waves [H03D 9/00](#)}
- H04J 1/06 · · Arrangements for supplying the carrier waves {Arrangements for supplying synchronisation signals(-carrier supply [H04L 5/10](#) ; frequency multiplication [H03B 19/00](#) , [H03B 21/00](#) ; mixing [H03D 7/00](#) , [H03D 9/00](#) ; synchronisation in general [H03B](#)-)}
- H04J 1/08 · · Arrangements for combining channels{(-branching filters [H01P 1/213](#) , [H03H 7/46](#)-)}
- H04J 1/10 · · Intermediate station arrangements, e.g. for branching, for tapping-off{ repeater circuits [H04B 3/36](#) , [H04B 3/58](#) ; two-way amplifiers [H03F 3/62](#)-}
- H04J 1/12 · · Arrangements for reducing cross-talk between channels{ in line transmission systems [H04B 3/32](#) ; in cables or lines [H04B 3/26](#) to [H04B 3/30](#)}
- H04J 1/16 · · Monitoring arrangements{(-for transmission in general [H04B 17/00](#) ; for amplifiers [H03F 1/52](#) , [H03F 1/523](#)-)}
- H04J 1/18 · in which all the carriers are amplitude-modulated (-[H04J 1/02](#) takes precedence-){ in telephony [H04Q 11/02](#) , [H04Q 11/023](#) ; in stereophony [H04H](#) ; in telegraphy [H04L 5/06](#) ; in telemetry [G08C 15/02](#) , [G08C 15/04](#)}
- H04J 1/20 · in which at least one carrier is angle-modulated (-[H04J 1/02](#) takes precedence; FM without multiplex [H04B 1/00](#) , [H04B 14/006](#) , [H04B 15/00](#) ; PSK [H04L 5/12](#) ; impulse-modulation without multiplex [H04B 14/02](#) ; time-division multiplexing for data transmission [H04L 5/22](#) ; telemetry [G08C 15/06](#) to [G08C 15/12](#) ; telephony [H04Q 11/00](#) , [H04Q 11/04](#) , [H04Q 11/0407](#)-)}
- H04J 3/00 Time-division multiplex systems ([H04J 14/00](#) takes precedence; relay systems [H04B 7/14](#) ; selecting techniques [H04Q](#)-)**
- H04J 3/02 · Details (-electronic switching or gating [H03K 17/00](#)-)
- H04J 3/025 · · {Filter arrangements (-[H04J 3/08](#) takes precedence; filters per se [H03H 7/00](#) , [H03H 9/00](#)-)}
- H04J 3/04 · · Distributors combined with modulators or demodulators{(-pulse distributors in general [H03K 5/15](#) ; pulse counters [H03K 21/00](#) to [H03K 29/06](#) ; for telegraphy [H04L 5/22](#) , [H04L 13/00](#) to [H04L 23/00](#) , [H04L 25/45](#) ; for telephony [H04Q 11/04](#)-)}
- H04J 3/06 · · Synchronising arrangements{(-for television systems [H04N 5/04](#) ; bit-synchronisation [H04L 7/00](#)-)}
- U H04J 3/0602 · · · {Systems characterised by the synchronising information used}
- U H04J 3/0605 · · · · {Special codes used as synchronising signal}
- H04J 3/0611 · · · · · {PN codes (-[H04J 3/0608](#) takes precedence-)}
- H04J 3/062 · · · {Synchronisation of signals having the same nominal but fluctuating bit rates, e.g. using buffers (-pulse-stuffing [H04J 3/07](#) ; asynchronous-synchronous conversion [H04L 5/24](#) ; speed conversion [H04L 25/05](#) ; speed conversion in computers [G06F 5/06](#)-)}
- H04J 3/0635 · · · {Clock or time synchronisation in a network (-timer in protocols [H04L 69/28](#)-)}
- H04J 3/0638 · · · · {Clock or time synchronisation among nodes; Internode synchronisation (-synchronization for ring networks [H04L 12/422](#) ; data switching networks with synchronous transmission [H04L 12/43](#)-)}

- H04J 3/0652
 - • • • {Synchronisation among time division multiple access [TDMA] nodes, e.g. time triggered protocol [TTP](-bus network with centralized control in which slots are of a TDMA packet structure [H04L 12/4035-](#))}
- U H04J 3/0658
 - • • • • {Clock or time synchronisation among packet nodes}
- U H04J 3/0661
 - • • • • • {using timestamps}
- H04J 3/0667
 - • • • • • • {Bidirectional timestamps, e.g. NTP or PTP for compensation of clock drift and for compensation of propagation delays (-monitoring or testing of delay in data switching networks [H04L 12/2657-](#))}
- H04J 3/07
 - • • using pulse stuffing for systems with different or fluctuating information rates {or bit rates}
- H04J 3/14
 - • Monitoring arrangements(-for SDH/SONET rings [H04J 3/085-](#))}
- H04J 3/16
 - in which the time allocation to individual channels within a transmission cycle is variable, e.g. to accommodate varying complexity of signals, to vary number of channels transmitted (-[H04J 3/17](#) , [H04J 3/24](#) take precedence-)
- U H04J 3/1605
 - • {Fixed allocated frame structures}
- H04J 3/1611
 - • • {Synchronous digital hierarchy [SDH] or SONET (-[H04J 3/1664](#) takes precedence for interactions with OTN-)}
- U H04J 3/1652
 - • • {Optical Transport Network (OTN)}
- H04J 3/1658
 - • • • {-carrying packets or ATM cells; [H04J 3/1664](#) takes precedence for payloads with different packet types-}
- H04J 3/167
 - • • • {-interaction with SDH/SONET, e.g. carrying SDH/SONET frames, interfacing with SDH/SONET; [H04J 3/1664](#) takes precedence-}
- U H04J 3/1682
 - • {Allocation of channels according to the instantaneous demands of the users, e.g. concentrated multiplexers, statistical multiplexers}
- H04J 3/1688
 - • • {the demands of the users being taken into account after redundancy removal, e.g. by predictive coding, by variable sampling (-reducing bandwidth of signals in general [H04B 1/66](#) ; in PCM-systems [H04B 14/046](#) ; removal of redundancy in telegraph communication [H03M 7/30-](#))}
- H04J 3/1694
 - • {Allocation of channels in TDM/TDMA networks, e.g. distributed multiplexers (-Passive Optical Networks [H04Q 11/0062-](#))}
- U H04J 3/17
 - in which the transmission channel allotted to a first user may be taken away and re-allotted to a second user if the first user becomes inactive, e.g. TASI{(speech analysis or identification [G10L](#))}
- H04J 3/175
 - • {Speech activity or inactivity detectors (-echo suppressors [H04B 3/20-](#))}
- H04J 3/22
 - in which the sources have different rates or codes(-simultaneous speech and digital data or video transmission [H04M 11/06](#) ; see provisional also [H04J 3/16-](#))}
- H04J 3/24
 - in which the allocation is indicated by an address {the different channels being transmitted sequentially}(-[H04J 3/17](#) takes precedence; in computers [G06F 12/00](#) , [G06F 13/00](#) { code multiplex systems [H04J 13/00](#) ; selecting techniques [H04Q](#) ; relay systems [H04B 7/14](#) })
- H04J 3/245
 - • {in which the allocation protocols between more than two stations share the same transmission medium}(-stations for satellite systems [H04B 7/185-](#))}
- H04J 4/00**

Combined time-division and frequency-division multiplex systems (-[H04J 13/00](#) takes precedence; { data transmission [H04L 5/26](#) ; telemetry [G08C 15/00](#) })
- H04J 11/00**

Orthogonal multiplex systems,{e.g. using WALSH codes} (-[H04J 13/00](#) takes precedence-)

- H04J 11/0023
- {Interference mitigation or co-ordination (-traffic scheduling [H04W 72/082](#) , [H04W 72/1226](#) ; power management [H04W 52/00](#) ; allocation criteria for ingress interference avoidance [H04L 5/0062](#) ; frequency allocation criteria for requirements on out-of-channel emissions [H04L 5/0066](#) ; peak power aspects in multicarrier modulation [H04L 27/2614](#) ; arrangements for removing intersymbol interference or baseband equalisers [H04L 25/03006](#) ; direct sequence spread spectrum [DSSS] systems [H04B 1/7097](#) ; frequency hopping [H04B 1/713](#)-)}
- U H04J 11/0026
- • {of multi-user interference}
- H04J 11/003
- • • {at the transmitter (-transmission to multiple receive units in multiple input multiple output (MIMO) [H04B 7/0452](#) ; transmit antenna weighting [H04B 7/0615](#)-)}
- H04J 11/0033
- • • • {by pre-cancellation of known interference, e.g. using a matched filter, dirty paper coder or Tomlinson-Harashima precoder (-correlative coding in synchronous or start-stop systems [H04L 25/497](#)-)}
- U H04J 11/005
- • {of intercell interference}
- H04J 11/0053
- • • {using co-ordinated multipoint transmission/reception (-co-ordinated antenna or beam-forming aspects [H04B 7/022](#)-)}
- H04J 11/0066
- • {of narrowband interference (-narrowband interference reduction [H04B 1/1036](#)-)}
- H04J 11/0069
- {Cell search, i.e. determining cell identity [cell-ID]} (-design of multiplexing codes [H04J 13/00](#) ; processing access restriction or access information [H04W 48/16](#) ; discovery of network devices for network data management [H04W 8/005](#) ; sounding signals for channel estimation [H04L 25/0226](#) ; structure of reference signals in multicarrier modulation systems [H04L 27/2613](#) ; frame, time or carrier synchronisation in multicarrier modulation systems [H04L 27/2655](#)-)}
- H04J 11/0086
- • {Search parameters, e.g. search strategy, accumulation length, range of search, thresholds (-code acquisition in DSSS [H04B 1/7075](#)-)}
- H04J 13/00**
- Code division multiplex systems (-for frequency hopping [H04B 1/713](#)-)**
- NOTE
- When classifying in this group, any aspect of spread spectrum techniques not specific to frequency hopping, and which is considered to represent information of interest for search, may also be classified in group [H04B 1/69](#) .
- U H04J 13/0007
- {Code type}
- NOTE
- Code type information should be classified in addition to other relevant aspects. This should also be done in cases where the other relevant symbol refers to code type, e.g. [H04J 13/14](#) , [H04J 13/20](#))
- U H04J 13/004
- • {Orthogonal}
- H04J 13/0044
- • • {OVSF [orthogonal variable spreading factor]}
- H04J 13/0055
- • {ZCZ [zero correlation zone]}
- H04J 13/0059
- • • {CAZAC [constant-amplitude and zero auto-correlation]}
- H04J 13/0066
- • • • {GCL [generalized chirp-like] sequences}
- H04J 14/00**
- Optical multiplex systems (-optical coupling, mixing or splitting, per se [G02B](#))**
- U H04J 14/02
- Wavelength-division multiplex systems
- U H04J 14/0201
- • {Add-and-drop multiplexing}
- U H04J 14/0202
- • • {Arrangements therefor}

- H04J 14/021 · · · · {Reconfigurable arrangements, e.g. reconfigurable optical add/drop multiplexers [ROADM]} or tunable optical add/drop multiplexers [TOADM]}
- H04J 14/0212 · · · · {using optical switches or wavelength selective switches [WSS]}
- H04J 14/0227 · {Operation, administration, maintenance or provisioning [OAMP] of WDM network, e.g. media access, routing or wavelength allocation (-monitoring of optical transmission parameters in general [H04B 10/07-](#))}
- U H04J 14/0241 · · {Wavelength allocation for communications one to one, e.g. unicasting wavelengths}
- U H04J 14/0242 · · · · {in WDM-PON}
- U H04J 14/0243 · · · · ·
- H04J 14/0245 · · · · · {for downstream transmission, e.g. optical line terminal [OLT] to ONU}
- H04J 2014/0253 · · · · · {Allocation of downstream wavelengths for upstream transmission (-optical transmission using a single light source for multiple stations [H04B 10/2587-](#))}
- U H04J 14/0254 · · {Optical medium access}
- H04J 14/0267 · · · · {Optical signalling or routing, (-routing in packet switched systems [H04L 12/5689-](#))}
- H04J 14/0268 · · · · · {Restoration of optical paths, e.g. p-cycles (-route fault recovery in packet switched systems [H04L 45/28-](#))}
- H04J 14/0269 · · · · · {using tables for routing (-organization of routing tables in packet switched systems [H04L 45/54-](#))}
- H04J 14/0272 · · · · {Transmission of OAMP information (-using a supervisory or additional signal for monitoring of optical transmission parameters in general [H04B 10/077-](#))}
- U H04J 14/08 · Time-division multiplex systems
- H04J 14/086 · {Medium access (-[H04J 3/16](#) takes precedence-)}
- H04J 2203/00 Aspects of optical multiplex systems other than those covered by [H04J 14/00](#)**

Project: N/A (H04K)

- U H04K 1/00 **Secret communication (ciphering or deciphering apparatus per se [G09C](#); systems with reduced bandwidth or suppressed carrier [H04B 1/66](#); spread spectrum techniques [H04B 1/69](#); by using a sub-carrier [H04B 14/08](#); by multiplexing [H04J](#); transmission systems for secret digital information [H04L 9/00](#); secret or subscription television systems [H04N 7/16](#), [H04N 21/00](#))**
- H04K 1/02 · by adding a second signal to make the desired signal unintelligible {(selective content distribution involving video stream encryption [H04N 21/2347](#), [H04N 21/4408](#); selective content distribution involving multiplex stream encryption-)}
- H04K 1/025 · {-using an analogue chaotic signal}
- U H04K 3/00 **Jamming of communication; Counter-measures (counter-measures used in radar or analogous systems [G01S 7/00](#); { in radar [G01S 7/36](#), [G01S 7/38](#); in lidar [G01S 7/495](#); in sonar [G01S 7/537](#))**

NOTE

1. This group covers: "Jamming", only when it means purposefully trying to interfere with the physical transmission and reception of communication. Provided this condition is met, this group covers devices and methods for: (a) jamming

of communication: i. jamming by intentionally decreasing the signal to noise ratio ii. deceptive jamming iii. passive jamming iiiii. destructive jamming (b) countermeasures against jamming (c) countermeasures against undesired self-jamming resulting from jamming (d) countermeasures against surveillance, interception or detection (e) other electronic countermeasures using or against electromagnetic or acoustic waves (f) signal detection techniques used in relation to i. jamming: for interception and monitoring of the jamming target signal ii. anti-jamming: for jamming detection, iii. anti-surveillance: for surveillance detection (g) jamming for testing or assessing countermeasures (h) jamming used to prevent: - cellular phone communication i. in a vehicle during motion ii. in particular areas, including prisons, hospitals, planes, petrol stations, theatres iii. to trigger RCIEDs - reception of positioning data using GPS - wireless communication in ad hoc networks or in sensor networks - exchange of data between wirelessly connected devices or device units, on Bluetooth, infrared or near field links - unauthorized access to network, service or information, including: i. access to a WLAN network ii. access to information stored in contactless carriers, including RFID carriers - transmission of an alarm, against burglary or vehicle theft - remote control of devices - surveillance i. of speech in meeting rooms ii. of electromagnetic emissions from a computer screen - interception or detection of a wirelessly transmitted signal] 2. In this group, the following acronyms are used: GPS = global positioning system RCIED = remote controlled improvised explosive device RFID = radio frequency identification WLAN= wireless local area network

WARNING

Groups [H04K 3/00](#) -[H04K 3/94](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04K 3/00](#) - [H04K 3/94](#) : [H04K 3/00](#)

- H04K 3/20
 - {~~C~~ountermeasures against jamming (in radar [G01S 7/36](#); interference suppression in receivers [H04B 1/10](#))}
- H04K 3/22
 - • {including jamming detection and monitoring}
- H04K 3/222
 - • • {wherein jamming detection includes detecting the absence or impossibility of intelligible communication on at least one channel}
- H04K 3/224
 - • • {with countermeasures at transmission and/or reception of the jammed signal, e.g. stopping operation of transmitter or receiver, nulling or enhancing transmitted power in direction of or at frequency of jammer}
- H04K 3/226
 - • • • {~~S~~election of non-jammed channel for communication (spectrum sharing arrangements [H04W 16/14](#); selection of wireless resources by user or terminal [H04W 72/02](#))}
- H04K 3/228
 - • • • {Elimination in the received signal of jamming or of data corrupted by jamming (interference suppression in receivers [H04B 1/10](#))}
- H04K 3/25
 - • {based on characteristics of target signal or of transmission (as countermeasure against surveillance [H04K 3/827](#)), e.g. using direct sequence spread spectrum or fast frequency hopping-(spread spectrum techniques [H04B 1/69](#))}
- H04K 3/255
 - • • {based on redundancy of transmitted data, transmission path or transmitting source}
- H04K 3/28
 - • {with jamming and anti-jamming mechanisms both included in a same device or system, e.g. wherein anti-jamming includes prevention of undesired self-jamming resulting from jamming}
- H04K 3/40
 - {~~J~~amming having variable characteristics}
- H04K 3/41
 - • {characterized by the control of the jamming activation or deactivation time (control of jamming activation and deactivation time only for the purpose of alternating between jamming mode and target monitoring mode [H04K 3/45](#))}
- H04K 3/415
 - • • {based on motion status or velocity, e.g. for disabling use of mobile phones in a vehicle}

- H04K 3/42
 - H04K 3/43
 - H04K 3/44
 - H04K 3/45
 - H04K 3/46
 - H04K 3/60
 - H04K 3/62
 - H04K 3/65
 - H04K 3/68
 - H04K 3/80
 - H04K 3/82
 - H04K 3/822
 - H04K 3/825
 - H04K 3/827
 - H04K 3/84
 - H04K 3/86
 - H04K 3/88
 - H04K 3/90
 - H04K 3/92
 - H04K 3/94
 - H04K 2203/00**
 - H04K 2203/10
 - H04K 2203/12
 - H04K 2203/14
 - H04K 2203/16
 - H04K 2203/18
- • {-characterized by the control of the jamming frequency or wavelength}
 - • {-characterized by the control of the jamming power, signal-to-noise ratio or geographic coverage area}
 - • {-characterized by the control of the jamming waveform or modulation type}
 - • {-characterized by including monitoring of the target or target signal, e.g. in reactive jammers or follower jammers for example by means of an alternation of jamming phases and monitoring phases, called "look-through mode"}
 - • {-characterized in that the jamming signal is produced by retransmitting a received signal, after delay or processing}
 - {-Jamming involving special techniques}
 - • {-by exposing communication, processing or storing systems to electromagnetic wave radiation, e.g. causing disturbance, disruption or damage of electronic circuits, or causing external injection of faults in the information}
 - • {-using deceptive jamming or spoofing, e.g. transmission of false signals for premature triggering of RCIED, for forced connection or disconnection to/from a network or for generation of dummy target signal}
 - • {-using passive jamming, e.g. by shielding or reflection (shielding of apparatus or components against electric or magnetic field [H05K 9/00](#))}
 - {-Jamming or countermeasure characterized by its function}
 - • {-related to preventing surveillance, interception or detection}
 - • • {-by detecting the presence of a surveillance, interception or detection}
 - • • {-by jamming}
 - • • {-using characteristics of target signal or of transmission (as countermeasure against jamming [H04K 3/25](#)), e.g. using direct sequence spread spectrum or fast frequency hopping (spread spectrum techniques [H04B 1/69](#))}
 - • {-related to preventing electromagnetic interference in petrol station, hospital, plane or cinema}
 - • {-related to preventing deceptive jamming or unauthorized interrogation or access, e.g. WLAN access or RFID reading (record carriers with integrated circuit chips including means for preventing undesired reading or writing from or to record carriers by hindering electromagnetic reading or writing [G06K 19/07318](#); arrangements for sensing record carriers including arrangements for protecting the interrogation against piracy attacks [G06K 7/10257](#))}
 - • {-related to allowing or preventing alarm transmission}
 - • {-related to allowing or preventing navigation or positioning, e.g. GPS}
 - • {-related to allowing or preventing remote control}
 - • {-related to allowing or preventing testing or assessing}
 - {-Jamming of communication; Countermeasures}**
 - {-Jamming or countermeasure used for a particular application}
 - • {-for acoustic communication}
 - • {-for the transfer of light or images, e.g. for video-surveillance, for television or from a computer screen}
 - • {-for telephony}
 - • {-for wireless local area networks or WLAN}

- H04K 2203/20
 - • {-for contactless carriers, e.g. RFID carriers (record carriers with integrated circuit chips including means for preventing undesired reading or writing from or to record carriers by hindering electromagnetic reading or writing [G06K 19/07318](#); arrangements for sensing record carriers including arrangements for protecting the interrogation against piracy attacks [G06K 7/10257](#))}
- H04K 2203/22
 - • {-for communication related to vehicles}
- H04K 2203/24
 - • {-for communication related to weapons}
- H04K 2203/30
 - • {-Jamming or countermeasure characterized by the infrastructure components}
- H04K 2203/32
 - • {-including a particular configuration of antennas}
- H04K 2203/34
 - • {-involving multiple cooperating jammers}
- H04K 2203/36
 - • {-including means for exchanging jamming data between transmitter and receiver, e.g. in forward or backward direction}

Project: N/A (H04L)**H04L**

TRANSMISSION OF DIGITAL INFORMATION, e.g. TELEGRAPHIC COMMUNICATION (typewriters [B41J](#); order telegraphs, fire or police telegraphs [G08B](#); visual telegraphy [G08B](#), [G08C](#); teleautographic systems [G08C](#); ciphering or deciphering apparatus per se [G09C](#); coding, decoding or code conversion, in general [H03M](#); arrangements common to telegraphic and telephonic communication [H04M](#); selecting [H04Q](#))

NOTE

This subclass covers transmission of signals having been supplied in digital form and includes data transmission, telegraphic communication and methods or arrangements for monitoring.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

H04L 12/20	covered by	H04L 29/00
H04L 25/04	"	H04L 25/03
H04L 25/17	"	H03H
H04L 25/18	"	H04L25/02G1C
H04L 25/28	"	H04L25/02G1A
H04L 25/30	"	H04L 25/061
H04L 25/32	"	H04L 25/49
H04L 25/34	"	H04L 25/4917
H04L 25/36	"	
H04L 25/48	"	H04L 25/49
H04L 25/50	"	H04L25/02A
H04L 25/52	"	H04L 25/20
H04L 25/54	"	H04L 25/20
H04L 25/56	"	H04L 25/202
H04L 25/58	"	H04L 25/20
H04L 25/60	"	H04L 25/207
H04L 25/62	"	H04L 25/205
H04L 25/64	"	H04L 25/245
H04L 25/66	"	H04L 25/247

H04L 1/00

Arrangements for detecting or preventing errors in the information received (-correcting synchronisation [H04L 7/00](#) ; { for digital computers [G06F 11/00](#) } ; arrangements in the transmission path [H04B-](#))

- H04L 1/0001
 - {Systems modifying transmission characteristics according to link quality, e.g. power backoff (-adaptive data allocation for multicarrier modulation [H04L 5/0044](#) ; controlling transmission power for radio systems [H04W 52/04-](#))}

- H04L 1/0009
 - • {by adapting the channel coding (~~H04L 1/1812~~ takes precedence)}
- U H04L 1/0023
 - • {characterised by the signalling}
- U H04L 1/0028
 - • • {Formatting}
- H04L 1/0029
 - • • • {Reduction of the amount of signalling, e.g. retention of useful signalling or differential signalling (~~power control H04W 52/04~~)}
- H04L 1/0031
 - • • • {Multiple signaling transmission (~~H04L 1/1664~~, ~~F15~~ take precedence)}
- U H04L 1/0036
 - • {arrangements specific to the receiver}
- H04L 1/0038
 - • • {Blind format detection (~~for detection of modulation format H04L 27/0012~~)}
- H04L 1/0039
 - • • {other detection of signalling, e.g. detection of TFCI explicit signalling (~~H04L 1/0046~~, ~~H04L 27/0012~~ and ~~H04L 25/0262~~ take precedence)}
- H04L 1/004
 - {by using forward error control (~~H04L 1/0618~~ takes precedence; coding, decoding or code conversion, for error detection or correction ~~H03M 13/00~~)}
- U H04L 1/0041
 - • {Arrangements at the transmitter end}
- H04L 1/0042
 - • • {Encoding specially adapted to other signal generation operation, e.g. in order to reduce transmit distortions, jitter, or to improve signal shape (~~H04L 1/0067~~ takes precedence)}
- U H04L 1/0045
 - • {Arrangements at the receiver end}
- H04L 1/0046
 - • • {Code rate detection or code type detection (~~H04L 1/0038~~ takes precedence; detection of the data rate ~~H04L 25/0262~~; for packet format ~~H04L 1/0091~~)}
- H04L 1/0047
 - • • {Decoding adapted to other signal detection operation (~~in conjunction with sequence estimation or equalization H04L 25/03286~~)}
- H04L 1/0048
 - • • • {in conjunction with detection of multiuser or interfering signals, e.g. iteration between CDMA or MIMO detector and FEC decoder (~~for spatial equalizer H04L 25/03286~~)}
- H04L 1/0056
 - • {Systems characterized by the type of code used (~~H04L 1/08~~ takes precedence)}
- H04L 1/0057
 - • • {Block codes (~~H04L 1/0061~~, ~~H04L 1/0064~~ take precedence)}
- H04L 1/0067
 - • • {Rate matching (~~H04L 1/0013~~ and ~~H04L 1/08~~ take precedence)}
- H04L 1/007
 - • • {Unequal error protection (~~for format H04L 1/0078~~; for codes per se ~~H03M 13/35~~)}
- H04L 1/0071
 - • • {Use of interleaving (~~interleaving per se H03M 13/27~~)}
- H04L 1/0075
 - • {Transmission of coding parameters to receiver (~~H04L 1/0023~~ takes precedence)}
- H04L 1/0076
 - • {Distributed coding, e.g. network coding, involving channel coding (~~coding in both space and time H04L 1/0618~~; cooperative diversity ~~H04B 7/022~~)}
- H04L 1/0078
 - {Avoidance of errors by organising the transmitted data in a format specifically designed to deal with errors, e.g. location (~~forward error control, e.g. FEC, CRC H04L 1/004~~; adaptive formatting ~~H04L 1/0006~~; mappings ~~H04L 27/00~~)}
- H04L 1/0079
 - • {Formats for control data (~~H04L 1/16~~ takes precedence; training sequences ~~H04L 25/00~~ and ~~H04L 27/00~~)}
- H04L 1/0081
 - • • {Formats specially adapted to avoid errors in the feedback channel (~~H04L 1/1607~~ takes precedence)}
- H04L 1/0086
 - • {Unequal error protection (~~H04L 27/00~~ and ~~H04L 1/004~~ take precedence for layer 1/2 aspects, e.g. bit loading)}
- H04L 1/0091
 - • {arrangements specific to receivers, e.g. format detection (~~detection of data rate H04L 25/0262~~; detection of coding rate ~~H04L 1/0046~~)}
- H04L 1/02
 - by diversity reception (~~in general H04B 7/02~~)

- H04L 1/08
 - by repeating transmission, e.g. Verdan system{(H04L 1/1858 and H04L 1/189 take precedence)}
- U H04L 1/12
 - by using return channel
- H04L 1/14
 - in which the signals are sent back to the transmitter to be checked {echo systems}
- U H04L 1/16
 - in which the return channel carries supervisory signals, e.g. repetition request signals
- U H04L 1/1607
 - • • {Details of the supervisory signal}
- H04L 1/1628
 - • • • {List acknowledgements, i.e. the acknowledgement message consisting of a list of identifiers, e.g. of sequence numbers (H04L 1/1614 takes precedence)}
- U H04L 1/18
 - • • Automatic repetition systems, e.g. van Duuren system;{ARQ protocols}
- U H04L 1/1829
 - • • • {Arrangements specific to the receiver end}
- U H04L 1/1835
 - • • • • {Buffer management}
- H04L 1/1838
 - • • • • • {for semi-reliable protocols, e.g. for less sensitive applications such as streaming video (-buffer level management for video bitstream receiver H04N 21/44004)}
- H04L 1/1858
 - • • • • • {Transmission or retransmission of more than one copy of acknowledgement message (-repetition in general H04L 1/08)}
- H04L 1/1861
 - • • • • • {Physical mapping arrangements (-for ACK signaling see also H04L 5/0053)}
- H04L 1/1864
 - • • • • • {ARQ related signaling (H04L 1/1607 takes precedence)}
- U H04L 1/1867
 - • • • • {Arrangements specific to the transmitter end}
- U H04L 1/1874
 - • • • • • {Buffer management}
- H04L 1/1877
 - • • • • • • {for semi-reliable protocols, e.g. for less sensitive applications like streaming video (-buffer level management for video bitstream control arrangements H04N 21/44004)}
- H04L 1/189
 - • • • • • • {Transmission or retransmission of more than one copy of a message (-repetition in general H04L 1/08)}
- H04L 1/1893
 - • • • • • • • {Physical mapping arrangements (physical resource mapping in general H04L 5/00)}
- U H04L 1/20
 - using signal quality detector

WARNING

see **95C20**, [G01R 29/02](#)
- H04L 1/201
 - • {Frame classification, e.g. bad, good or erased (-frame indication per se H04L 1/0082)}
- H04L 1/22
 - using redundant apparatus to increase reliability{ see [G06F 11/08](#) to [G06F 11/20](#)}
- U H04L 1/24
 - Testing correct operation
- H04L 1/248
 - • {Distortion measuring systems (-measurement of non-linear distortion [G01R 23/20](#) ; measuring characteristics of individual pulses, e.g. deviation from pulse flatness, rise time, duration [G01R 29/02](#)-)}
- H04L 5/00**

Arrangements affording multiple use of the transmission path (multiplex communication in general H04J; { orthogonal multiplex systems H04J 11/00 })
- H04L 5/0001
 - {Arrangements for dividing the transmission path (-duplexing H04L 5/14 ; multiplexing of different sources on one path H04J-)}

- H04L 5/0003
 - • {Two-dimensional division (-time-code division [H04J 11/00](#) , [H04J 13/00](#) ; for time-space division [H04B 7/0413](#) , [H04B 7/0697](#)-)}
- U H04L 5/0005
 - • • {Time-frequency}
- U H04L 5/0007
 - • • • {the frequencies being orthogonal e.g. OFDM(A), DMT}
- H04L 5/0012
 - • • • • {Hopping in multicarrier systems (-for frequency hopping in spread spectrum systems [H04B 1/713](#)-)}
- H04L 5/0014
 - • {Three-dimensional division (-time-code-space division [H04B 7/0413](#) , [H04B 7/0697](#)-)}
- H04L 5/0028
 - • {Variable division (-signaling therefor [H04L 5/0092](#)-)}
- U H04L 5/003
 - {Arrangements for allocating sub-channels of the transmission path}
- U H04L 5/0053
 - • {Allocation of signaling, i.e. of overhead other than pilot signals}
- H04L 5/0055
 - • • {Physical resource allocation for ACK/NACK (-for physical mapping arrangements in ARQ protocols [H04L 1/1861](#)-)}
- U H04L 5/0058
 - • {Allocation criteria}
- H04L 5/0069
 - • • {Allocation based on distance or geographical location (-allocation based on terminal or device properties in general, [H04W 72/048](#)-)}
- H04L 5/0073
 - • • {Allocation arrangements that take into account other cell interferences (-for intercell interference mitigation or co-ordination in orthogonal multiplex systems [H04J 11/005](#)-)}
- U H04L 5/02
 - Channels characterised by the type of signal
- H04L 5/023
 - • {Multiplexing of multicarrier modulation signals (-multicarrier modulation [H04L 27/2601](#)-)}
- H04L 5/06
 - • the signals being represented by different frequencies (-combined with time-division multiplexing [H04L 5/26](#)-)}
- H04L 5/08
 - • • each combination of signals in different channels being represented by a fixed frequency{ e.g. twinplex; see [H04L 27/16](#)-}
- H04L 5/14
 - Two-way operation using the same type of signal, i.e. duplex ({ duplex repeaters [H04L 25/22](#) } ; conditioning for two-way transmission in general [H04B 3/20](#) ; { for interconnection between telephone switching centres [H04Q 3/00](#) })
- H04L 5/1407
 - • {Artificial lines or their setting (-for line transmission systems in general [H04B 3/40](#)-)}
- H04L 5/143
 - • {for modulated signals (-[H04L 5/1469](#) takes precedence-)}
- H04L 5/1438
 - • {Negotiation of transmission parameters prior to communication (-modified according to link quality [H04L 1/0001](#)-)}
- H04L 5/16
 - • Half-duplex systems; Simplex-duplex switching; Transmission of break signals {non automatically inverting the direction of transmission}
- H04L 5/20
 - using different combinations of lines, e.g. phantom working((-phantom interconnection between telephone switching centres [H04M 7/08](#) ; coupling arrangements therefor [H04L 25/0272](#)-)}
- H04L 5/22
 - using time-division multiplexing{ in general [H04J 3/00](#)-}
- H04L 5/225
 - • {combined with the use of transition coding (-transition coding [H04L 25/493](#)-)}
- U H04L 5/24
 - • with start-stop synchronous converters
- H04L 5/245
 - • • {with a number of discharge tubes or semiconductor elements which successively connect the different channels to the transmission channels (-see: [H04L 13/00](#) to [H04L 23/00](#) , [H03K 5/15](#) , [H03K 17/62](#) , [H04J 3/047](#)-)}

- H04L 7/00** Arrangements for synchronising receiver with transmitter{(synchronisation of electronic time-pieces [G04G 7/00](#) ; synchronisation of generators of electric oscillations or pulses [H03L](#) ; synchronising in TV system [H04N 5/04](#) ; regeneration of clock signals for television systems [H04N 7/0352](#)-)}
- H04L 7/0004 • {Initialisation of the receiver (-([H04L 7/0075](#) and [H04L 7/10](#) take precedence-)}
- H04L 7/0054 • {Detection of the synchronisation error by features other than the received signal transition (-(by means of signal transition [H04L 7/033](#)-)}
- H04L 7/02 • Speed or phase control by the received code signals, the signals containing no special synchronisation information{(-([H04L 7/0075](#) takes precedence; tuning or selecting resonant circuits [H03J](#) ; using the properties of error detecting or correcting codes [H04L 7/048](#)-)}
- U H04L 7/033 • • using the transitions of the received signal to control the phase of the synchronising-signal-generating means, e.g. using a phase-locked loop
- H04L 7/0331 • • • {with a digital phase-locked loop (PLL) processing binary samples, e.g. add/subtract logic for correction of receiver clock (-([H04L 7/0337](#) takes precedence-)}
- H04L 7/04 • Speed or phase control by synchronisation signals{(-([H04L 7/0075](#) takes precedence-)}
- U H04L 7/041 • • {using special codes as synchronising signal}
- H04L 7/042 • • • {Detectors therefor, e.g. correlators, state machines (-(digital correlators in general [G06F 17/15](#)-)}
- H04L 7/043 • • • {Pseudo-noise (PN) codes variable during transmission (-(synchronisation of spread spectrum receivers [H04B 1/69](#)-)}
- H04L 7/06 • • the synchronisation signals differing from the information signals in amplitude, polarity, or frequency (or length}
- H04L 9/00** {Cryptographic mechanisms or cryptographic}arrangements for secret or secure communication{(network architectures or network communication protocols for network security [H04L 63/00](#) or for wireless network security [H04W 12/00](#) ; security arrangements for protecting computers or computer systems against unauthorized activity [G06F 21/00](#)-)}

NOTE

1. This group covers: 1.1 Cryptographic mechanisms including cryptographic protocols and cryptographic algorithms, whereby a cryptographic protocol is a distributed cryptographic algorithm defined by a sequence of steps precisely specifying the actions required of two or more entities to achieve specific security objectives (e.g. cryptographic protocol for key agreement), and whereby a cryptographic algorithm is specifying the steps followed by a single entity to achieve specific security objectives (e.g. cryptographic algorithm for symmetric key encryption). 1.2 [H04L 9/00](#) focuses on cryptographic mechanisms such as encryption schemes, digital signatures, hash functions, random number generation, key management, said cryptographic mechanisms providing information security such as privacy or confidentiality, data integrity, message authentication, entity authentication, authorization, validation, certification, time-stamping, anonymity, revocation, non-repudiation. 1.3 [H04L 9/00](#) covers also countermeasures against attacks on cryptographic mechanisms. 2. This group does not cover: 2.1 Networking architectures or network communication protocols for securing the traffic flowing through data packet networks and providing secure exchanges among applications communicating through data packet networks, which are covered by [H04L 63/00](#). Attention is drawn to the Note 1. after group [H04L 63/00](#). 2.2 Security arrangements for protecting computers or computer

systems against unauthorised activity, which are covered by [G06F 21/00](#)

- H04L 9/002
 - {Countermeasures against attacks on cryptographic mechanisms (~~network architectures or network communication protocols for protection against malicious traffic~~ [H04L 63/1441](#)-)}
- H04L 9/006
 - {involving public key infrastructure [PKI] trust models (~~network architecture or network communication protocol for supporting authentication of entities using certificates in a packet data network~~ [H04L 63/0823](#)-)}
- H04L 9/06
 - the encryption apparatus using shift registers or memories for block-wise {or stream}coding, e.g. DES systems {or RC4; Hash functions; Pseudorandom sequence generators}
- H04L 9/0606
 - {including means for manipulating block length (~~H04L 9/0687~~ takes precedence-)}

WARNING
This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/0618](#)
- H04L 9/08
 - Key distribution {or management, e.g. generation, sharing or updating, of cryptographic keys or passwords(~~network architectures or network communication protocols for supporting key management in a packet data network~~ [H04L 63/06](#)-)}

WARNING
The former subgroup [H04L 9/08](#) was a 2-dot subgroup placed under [H04L 9/06](#). However since the former subgroup [H04L 9/08](#) comprises both symmetric and asymmetric key distribution the subgroup [H04L 9/08](#) was promoted to one-dot-level, unlike the corresponding IPC subgroup
- U H04L 9/0816
 - {Key establishment, i.e. cryptographic processes or cryptographic protocols whereby a shared secret becomes available to two or more parties, for subsequent use}
- H04L 9/0819
 - • {Key transport or distribution, i.e. key establishment techniques where one party creates or otherwise obtains a secret value, and securely transfers it to the other(s)(~~network architectures or network communication protocols for key distribution in a packet data network~~ [H04L 63/062](#)-)}
- H04L 9/0825
 - • • {using asymmetric-key encryption or public key infrastructure [PKI], e.g. key signature or public key certificates}
- H04L 9/083
 - • • {involving central third party, e.g. key distribution center [KDC] or trusted third party [TTP]}
- H04L 9/0833
 - • • • {involving conference or group key (~~network architectures or network communication protocols for key management in group communication in a packet data network~~ [H04L 63/065](#)-)}
- H04L 9/0838
 - • • {Key agreement, i.e. key establishment technique in which a shared key is derived by parties as a function of information contributed by, or associated with, each of these (~~network architectures or network communication protocols for key exchange in a packet data network~~ [H04L 63/061](#)-)}
- H04L 9/0852
 - • • {Quantum cryptography (~~transmission systems employing electromagnetic waves other than radio waves, e.g. light, infra-red~~ [H04B 10/00](#); wavelength-division multiplex systems [H04J 14/02](#)-)}
- U H04L 9/0861
 - {Generation of secret information including derivation or calculation of cryptographic keys or passwords}

- H04L 9/0863
 - • • {involving passwords or one-time passwords (-network architectures or network communication protocols for using one-time keys in a packet data network [H04L 63/067-](#))}
- H04L 9/088
 - • {Usage controlling of secret information, e.g. techniques for restricting cryptographic keys to pre-authorized uses, different access levels, validity of crypto-period, different key- or password length, or different strong and weak cryptographic algorithms (-network architectures or network communication protocols for using time-dependent keys in a packet data network [H04L 63/068-](#))}
- H04L 9/10
 - with particular housing, physical features or manual controls{(-not used; see [H04L 9/00-](#))}
- H04L 9/14
 - using a plurality of keys or algorithms{(-network architectures or network communication protocols wherein the sending and receiving network entities apply hybrid encryption, i.e. combination of symmetric and asymmetric encryption [H04L 63/045-](#))}
- U H04L 9/18
 - Encryption by serially and continuously modifying data stream elements, e.g. stream cipher systems

WARNING

This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/065](#)
- H04L 9/20
 - • Pseudorandom key sequence combined element-for-element with data sequence{ not used; see [H04L 9/18-](#)}
- U H04L 9/22
 - • • with particular pseudorandom sequence generator

WARNING

This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/065](#)
- H04L 9/24
 - • • sequence produced by more than one generator{(-not used; see [H04L 9/22-](#))}
- H04L 9/32
 - including means for verifying the identity or authority of a user of the system, {or for message authentication, e.g. authorization, entity authentication, data integrity or data verification, non-repudiation, key authentication or verification of credentials}{ network architectures or network communication protocols for supporting entities authentication in a packet data network [H04L 63/08](#) ; applying verification of the received information [H04L 63/12](#) ; } computer systems [G06F](#); coin-freed or like apparatus with coded identity card or credit card [G07F 7/08-](#)}
- U H04L 9/321
 - • {involving a third party or a trusted authority}
- H04L 9/3213
 - • • {using tickets or tokens, e.g. Kerberos (-network architectures or network communication protocols for entities authentication using tickets in a packet data network [H04L 63/0807-](#))}
- H04L 9/3215
 - • {using a plurality of channels (-network architectures or network communication protocols using different networks [H04L 63/18-](#))}
- H04L 9/3226
 - • {using a predetermined code, e.g. password, passphrase or PIN (-network architectures or network communication protocols for supporting authentication of entities using passwords in a packet data network [H04L 63/083-](#))}
- H04L 9/3231
 - • • {Biological data, e.g. fingerprint, voice or retina (-network architectures or network communication protocols for supporting authentication of entities using biometrical features in a packet data network [H04L 63/0861-](#))}

- H04L 9/3234
 - {involving additional secure or trusted devices, e.g. TPM, smartcard, USB or software token (-network architectures or network communication protocols for supporting authentication of entities using an additional device in a packet data network [H04L 63/0853](#)-)}
- H04L 9/3244
 - {for message authentication (-[H04L 9/3281](#) takes precedence-)}
 - WARNING
This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/32](#)
- H04L 9/3263
 - {involving certificates, e.g. public key certificate [PKC] or attribute certificate [AC]; Public key infrastructure [PKI] arrangements (-network architectures or network communication protocols for supporting authentication of entities using certificates in a packet data network [H04L 63/0823](#)-)}
- U H04L 9/3271
 - {using challenge-response}
- H04L 9/3273
 - • {for mutual authentication (-network architectures or network communication protocols for achieving mutual authentication in a packet data network [H04L 63/0869](#)-)}
- H04L 9/34
 - Bits, or blocks of bits, of the telegraphic message being interchanged in time(-for speech signals [H04K 1/06](#)-)}
- H04L 12/00**

Data switching networks (-interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units [G06F 13/00](#)-)
- U H04L 12/02
 - Details
- H04L 12/14
 - {Metering,}charging {or billing}arrangements {specially adapted for data wireline or wireless communications(payment schemes, architectures or protocols per se [G06Q 20/00](#))}
- H04L 12/1428
 - • {Invoice generation, e.g. customization, lay-out, database processing, algorithms for calculating the bill or formatting invoices as WWW pages (-invoicing in general [G06Q 30/04](#)-)}
- H04L 12/16
 - • Arrangements for providing special services to substations {contains provisionally no documents}
- H04L 12/18
 - • • for broadcast or conference{, e.g. multicast(-multicast or broadcast switches [H04L 49/201](#)-)}
- H04L 12/1813
 - • • {for computer conferences, e.g. chat rooms (-protocols for multimedia communication [H04L 29/06027](#) ; signaling and real-time protocols for multimedia conference [H04L 29/06414](#) ; instant messaging [H04L 12/581](#) ; telephonic conference arrangements [H04M 3/56](#) ; television conference systems [H04N 7/15](#)-)}
- H04L 12/1845
 - • • {broadcast or multicast in a specific location, e.g. geocast (-protocols for adapting network applications to user terminal location [H04L 29/08657](#) ; services specially adapted for wireless communication networks making use of the location of users or terminals [H04W 4/02](#)-)}
- H04L 12/1863
 - • • {comprising mechanisms for improved reliability, e.g. status reports (-arrangements for detecting or preventing errors by carrying supervisory signal the return channel [H04L 1/16](#)-)}
- H04L 12/189
 - • • {in combination with wireless systems (-selective distribution or broadcast in wireless communication networks [H04W 4/06](#)-)}
- H04L 12/22
 - • Arrangements for preventing the taking of data from a data transmission channel without authorisation (-means for verifying the identity or the authority of a user of a secure or secret communication system [H04L 9/32](#)-)

- U H04L 12/24
- • Arrangements for maintenance or administration
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/00](#)
- U H04L 12/2401
- • • {involving integration or standardization}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/02](#)
- H04L 12/2402
- • • • {using standardized network management architectures, e.g. TMN [Telecommunication Management network]}, UNMA [Unified Network Management Architecture]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/0206](#)
- H04L 12/2403
- • • • {using standardized network management protocols, e.g. SNMP [Simple Network Management Protocol]}, CMIP [Common Management Interface Protocol]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/0213](#)
- U H04L 12/2414
- • • {involving network analysis}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/14](#)
- H04L 12/2416
- • • • {for automatically determining the actual topology of a network (-Topology discovery in routers [H04L 45/02](#)-)}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/12](#)
- H04L 12/2417
- • • • {Service management, i.e. managing value added network services and related parameters, e.g. SLA [Service Level Agreements]}, responsetimes, performance, throughput]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/00](#)

- H04L 12/2424 . . . {Configuration management of network or network elements (-management of devices network applications for proprietary or special purpose network environments [H04L 29/08567](#) ; automatic configuration in wireless networks [H04W 24/02-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/08](#)
- U H04L 12/2425 Configuration setting of network or network elements]
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/0803](#)
- U H04L 12/2428 {Changing of configuration}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/0813](#)
- H04L 12/243 {due to updating or upgrading of network functionality, e.g. firmware (-topology update or discovery for routing purposes [H04L 45/02-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/085](#)
- U H04L 12/2455 . . . {Hardware and software tools for network management}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/14](#) , [H04L 41/20](#) , [H04L 41/22](#) , [H04L 41/24](#) , [H04L 41/26](#)
- H04L 12/246 {using dedicated tools for LAN [Local Area Network]} management]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/26](#)
- H04L 12/2461 . . . {Security in network management, e.g. restricting network management access (-protocols or architecture for network security [H04L 29/06551-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/28](#)
- U H04L 12/2464 . . . {Network service management, ensuring proper service fulfilment according to an agreement or contract between two parties, e.g. between an IT-provider and a customer}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/50](#)

- H04L 12/2465 {Managing SLA [Service Level Agreement]} or interaction between SLA and QoS [Quality of Service]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/5003](#)
- H04L 12/2466 {Defining or negotiating SLA contracts, guarantees or penalties (-SLA negotiation in wireless networks [H04W 28/24](#)-)}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/5006](#)
- H04L 12/2467 {Measuring SLA quality parameters, e.g. against possible contract or guarantee violations (-Monitoring performance metrics on a simple network level [H04L 12/2634](#)-)}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/5009](#)
- H04L 12/2471 {determining service performance, i.e. performance on service level, e.g. response time or MTBF [Mean Time Between Failure]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/5009](#)
- H04L 12/2472 {Ensuring SLA (-flow or congestion control at network level [H04L 12/569](#)-)}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/5019](#)
- H04L 12/2474 {by proactively reacting to service quality change (*e.g. degradation or upgrade*) by reconfiguration (~~e.g. degradation or upgrade~~) by reconfiguration (-mere restoration of network faults [H04L 12/2422](#)-)}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/5025](#)
- H04L 12/2475 {Service quality level based billing, e.g. dependent on measured service level customer is charged more or less (-general charging or billing for transport of data packets [H04L 12/14](#)-)}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/5029](#)

- H04L 12/2477 {Measuring contribution of individual network components to actual service level (-alarm or event correlation [H04L 12/2421-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 41/5035](#)
- U H04L 12/2479 {Service implementation}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 41/5041](#)
- H04L 12/2483 {Automatic provisioning of the service triggered by the service manager, e.g. concrete service implementation by automatic configuration of network components (-for initializing configuration, i.e. provisioning of network or devices [H04L 12/2425-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 41/5054](#)
- H04L 12/2484 {Service discovery by the Service Manager (-automatically determining the actual topology of a network [H04L 12/2416](#) ; topology discovery in routers [H04L 45/02](#) ; arrangements for service discovery, e.g. Service Location Protocol [SLP] [H04L 29/08648-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 41/5058](#)
- U H04L 12/2485 {Customer care}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 41/5061](#)
- H04L 12/2486 {Customer Relationship Management (-for arrangements involving Customer Network Management, i.e. giving the customer access to network management functions [H04L 12/2413-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 41/5064](#)
- H04L 12/2487 {Customer-centric QoS [Quality of Service]**measurement**
Measurement}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 41/5067](#)

- U H04L 12/2491 {based on type of value added network service under agreement}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 41/508](#)
- H04L 12/2492 {wherein the managed service relates to web hosting (-web hosting as such [H04L 29/0809](#) , web-browsers [G06F 17/30861](#) , video-hosting [H04N 21/2743-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 41/5083](#)
- H04L 12/2493 {wherein the managed service relates to voice services (-protocols for real-time multimedia communications [H04L 29/06176](#) ; management of telephonic communication services [H04M 3/22](#) ; management of VoIP services [H04M 7/0081-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 41/5087](#)
- H04L 12/2494 {wherein the managed service relates to audio / video / TV (-protocols for real-time multimedia communications [H04L 29/06176](#) ; interactive television or VoD [H04N 21/00-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 41/509](#)
- H04L 12/2495 {wherein the managed service relates to messaging (-messaging, such as e-mail in packet-switching networks [H04L 12/58-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 41/5093](#)
- H04L 12/2496 {wherein the managed service relates to chat services (-conducting a computer conference [H04L 12/1822](#) ; instant messaging [H04L 12/581-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 41/5093](#)
- U H04L 12/26 . . Monitoring arrangements; Testing arrangements
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of
[H04L 43/00](#)

- U H04L 12/2602
 - • • {Monitoring arrangements}
 - WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 43/00](#)
- U H04L 12/2605
 - • • • {involving a reduction of monitoring data}
- H04L 12/2615
 - • • • • {using filtering (-alarm or event filtering [H04L 12/242-](#))}
- U H04L 12/2618
 - • • • {processing of captured monitoring data}
- H04L 12/2621
 - • • • • {for graphical visualization of monitoring data (-graphical user interfaces [H04L 12/2458-](#))}
- U H04L 12/2623
 - • • • • {Report generation}
- H04L 12/2628
 - • • • • • {for device related reporting (-reporting of sensed information of home appliances [H04L 12/2803-](#))}
- U H04L 12/2634
 - • • • {Monitoring using or based on specific metrics}
- U H04L 12/2636
 - • • • • {based on availability}
- H04L 12/2642
 - • • • • • {based on functioning (-monitoring the activity of the application user [H04L 29/08675](#) ; monitoring appliance functionality of home appliances [H04L 12/2803-](#))}
- H04L 12/2644
 - • • • • {using errors (-management of events, faults or alarms [H04L 12/2419-](#))}
- U H04L 12/28
 - characterised by path configuration, e.g. local area networks (LAN), wide area networks (WAN)
- U H04L 12/2803
 - • {Home automation networks}
- H04L 12/2807
 - • • {Exchanging configuration information on appliance services in a home automation network (-adress allocation [H04L 29/12207](#) ; arrangements for maintenance or administration involving network analysis for automatically determining the actual topology of a network [H04L 12/2416](#) ; hardware or software tools for network management using graphical user interfaces [H04L 12/2458-](#))}
- H04L 12/2809
 - • • • {indicating that an appliance service is present in a home automation network (-monitoring functionality [H04L 12/2642](#) ; arrangements for service discovery [H04L 29/08648-](#))}
- H04L 12/281
 - • • • {indicating a format for calling an appliance service function in a home automation network (-protocols for network applications involving the use of web-based technology [H04L 29/08099-](#))}
- H04L 12/2812
 - • • • {describing content present in a home automation network, e.g. audio video content (-retrieval from the Internet [G06F 17/30861](#))}
- H04L 12/2814
 - • • • {Exchanging control software or macros for controlling appliance services in a home automation network (-arrangements for maintenance or administration involving configuration of the network and network elements [H04L 12/2424](#))}
- H04L 12/2816
 - • • {Controlling appliance services of a home automation network by calling their functionalities (-arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station; in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom [H04Q 9/00-](#))}

- H04L 12/2818
 - • • {from a device located outside both the home and the home network (-access arrangements [H04L 12/2856](#) ; protocols for network applications involving the use of web-based technology for remote control or remote monitoring [H04L 29/08099](#) ; telephonic communication systems adapted for combination with remote control systems [H04M 11/007](#); arrangements for transmitting signals characterised by the use of a wireless electrical link [G08C 17/00](#)-)}
- H04L 12/282
 - • • {based on user interaction within the home (-receiver circuitry for displaying additional information being controlled by a remote control apparatus [H04N 5/44582](#))}
- H04L 12/2821
 - • • {Avoiding conflicts related to the use of home appliances (-arrangements for network security [H04L 29/06551](#))}
- H04L 12/2823
 - • • {Reporting information sensed by appliance or service execution status of appliance services in a home automation network (-device-related reporting [H04L 43/065](#) ; arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom [H04Q 9/00](#)-)}
- H04L 12/2825
 - • • {Reporting to a device located outside the home and the home network (-access arrangements [H04L 12/2856](#) ; protocols for network applications involving the use of web-based technology for remote control or remote monitoring [H04L 29/08099](#) ; telephonic communication systems adapted for combination with telemetering systems [H04M 11/002](#))}
- U H04L 12/283
 - • • {Processing of data at an internetworking point of a home automation network}
- H04L 12/2832
 - • • {Interconnection of the control functionalities between home networks (-single bridge functionality [H04L 12/4625](#)-)}
- H04L 12/2834
 - • • {Switching of information between an external network and a home network (-access arrangements [H04L 12/2856](#)-)}
- H04L 12/2836
 - • • {Protocol conversion between an external network and a home network (-protocol conversion [H04L 29/06068](#); adaptation of digital video signals for transport over a specific home network **H04N7/24T6** ; controlling appliance services of a home automation network from a device located outside the home and the home network [H04L 12/2818](#)-)}
- H04L 12/2838
 - • • {Distribution of signals within a home automation network, e.g. involving splitting/multiplexing signals to/from different paths (-adaptations of television systems for transmission by electric cable for domestic distribution [H04N 7/106](#); hybrid transport [H04L 12/6418](#); home network arrangements specially adapted for distribution of digital video signals **H04N7/24N**)}
- U H04L 12/2854
 - • {Wide area networks, e.g. public data networks}
- H04L 12/2856
 - • • {Access arrangements, e.g. Internet access (-asynchronous transfer mode networks [H04L 12/5601](#) ; broadband local area networks [H04L 12/2801](#) ; optical access or distribution networks [H04Q 11/0067](#) ; access to open networks [H04L 12/5691](#) ; digital subscriber line end-user equipment and bit-level processing of data on a PSTN-based network [H04M 11/00](#) ; home network gateways [H04L 12/2834](#) ; wireless access networks [H04W](#)-)}

NOTE

(1) This group covers:

- access to a public data network, such as an IP network, for subscribers, i.e. customers of a network service provider, over a wired network.
- communication of generic types of data between end-user equipments, located typically at the subscriber premises, and an access server, which acts as interface between the access network and the public data network.

(2) This group does not cover:

- wireless access networks, which are covered by [H04W](#)
- optical distribution networks, which are covered by [H04Q 11/0067](#)
- bit-level, or PHY layer, processing of data between digital subscriber line equipments, which is covered by [H04M 11/06](#)
- design of DSL, digital subscriber line, modems, which is covered by [H04M 11/06](#)
- exchange of data related to functionalities of home network appliances between a home network and an external network, which is covered by [H04L 12/2803](#)
- management of WDM parameters in optical multiplex systems, which is covered by [H04J 14/02](#)
- circuit-switched access networks, which are covered by [H04M 7/1205](#)
- access arrangements for providing telephone service in networks other than PSTN/ISDN, which are covered by [H04M 7/0066](#)

(3) In this group the following terms or expressions are used with the meaning indicated:

- ATM means Asynchronous Transfer Mode
- LAN means Local Area Network
- BRAS means Broadband Remote Access Server
- DSLAM means Digital Subscriber Line Access Multiplexer
- MSAN means MultiService Access Node
- DSL means Digital Subscriber Line
- IP means Internet Protocol
- WDM means Wavelength Division Multiplexing
- SDH means Synchronous Digital Hierarchy
- OTN means Optical Transport Network
- PSTN means Public Switched Telephone Network
- ISDN means Integrated Services Digital Network
- TDM means Time-Division Multiplexing
- TDMA means Time Division Multiple Access

WARNING

Subgroups of [H04L 12/2856](#) are not complete pending reorganisation. See also [H04L 12/5691](#)

- U H04L 12/2858 {Access network architectures}
- H04L 12/2859 {Point-to-point connection between the data network and the subscribers (-encapsulation [H04L 12/4633](#) ; virtual LANs [H04L 12/4641](#) ; routing of packets [H04L 12/5689](#)-)}
- H04L 12/2863 {Arrangements for combining access network resources elements, e.g. channel bonding (-multichannel protocols [H04L 29/06088](#) ; routing of packets [H04L 12/5689](#) ; modem pooling [H04L 25/14](#)-)}
- H04L 12/2869 {Operational details of access network equipments (-admission control or resource allocation in access networks [H04L 12/5692](#)-)}
- U H04L 12/287 {Remote access server, e.g. BRAS}
- H04L 12/2876 {Handling of subscriber policies (-~~group policies management~~ [H04L 12/244](#)-~~group policies management~~ [H04L 12/244](#)-)}
- H04L 12/2878 {Access multiplexer, e.g. DSLAM (-generic distributed time multiplexers, e.g. TDM/TDMA [H04J 3/1694](#)-)}
- U H04L 12/2879 {characterised by the network type on the uplink side, i.e. towards the service provider network}
- H04L 12/2885 {Arrangements interfacing with optical systems (-optical network equipment [H04B 10/00](#) ; optical multiplexers [H04J 14/00](#)-)}
- H04L 12/2898 {Subscriber equipments (-~~DSL modems~~ [H04M 11/062](#)-; ~~DSL modems~~ [H04M 11/062](#) ; cable modems [H04L 12/2801](#)-)}
- U H04L 12/40 Bus networks

- H04L 12/40006 . . . {Architecture of a communication node (-intermediate storage or scheduling [H04L 12/5694](#) ; current supply arrangements [H04L 12/10-](#))}
- NOTE**
In this group the following terms or expressions are used with the meaning indicated:
- . a bus controller is a microprocessor dedicated to input and output of data by a node on a bus;
 - . a bus master is a device controlling which node accesses the bus at a particular time;
 - . a bus guardian is a device monitoring the timing of node accesses on the bus;
 - . a bus interface enhancer is a hardware or software arrangement managing the bus controller or the bus interface to modify its behaviour or providing a transparent interface to the bus controller
- H04L 12/40052 . . . {High-speed IEEE 1394 serial bus (-bus transfer protocol on a daisy chain bus using an embedded synchronisation [G06F 13/426-](#))}
- H04L 12/40065 . . . {Bandwidth and channel allocation (-home automation networks [H04L 12/2803](#); flow control [H04L 12/569](#))}
- H04L 12/40071 . . . {Packet processing; Packet format (-packet switches [H04L 12/5696](#); intermediate storage or scheduling [H04L 12/5694](#); Adaptation of digital video signals for transport over a specific network [H04N 21/2381](#), [H04N 21/4363](#), [H04N 21/4381-](#))}
- H04L 12/40078 . . . {Bus configuration (-home automation networks [H04L 12/2803](#); Arrangements for maintenance or administration [H04L 12/24-](#))}
- H04L 12/40091 . . . {Bus bridging (-LAN interconnection over a bridge based backbone [H04L 12/462](#) ; single bridge functionality [H04L 12/462-](#))}
- H04L 12/40097 . . . {Interconnection with other networks (-LAN interconnection over a bridge based backbone [H04L 12/462](#) ; single bridge functionality [H04L 12/462-](#))}
- H04L 12/40104 . . . {Security; Encryption; Content protection (-arrangements for network security [H04L 29/06551](#))}
- H04L 12/4011 . . . {Wireless (wireless communication networks [H04W](#))}
- H04L 12/40117 . . . {Interconnection of audio or video/imaging devices (-home automation networks [H04L 12/2803](#); bitstream network arrangements specially adapted for distribution of digital video signals [H04N7/24N](#))}
- H04L 12/40123 . . . {Interconnection of computers and peripherals (-printer information exchange with computer [G06F 3/1293](#))}
- H04L 12/4013 . . . {Management of data rate on the bus (-systems modifying transmission characteristics according to link quality [H04L 1/0001](#) ; negotiation of transmission parameters of transmission speed prior to communication [H04L 5/1446](#) ; adaptive data allocation for multicarrier modulation [H04L 27/2608-](#))}
- H04L 12/40136 . . . {Nodes adapting their rate to the physical link properties (-LAN switches [H04L 49/351-](#))}
- H04L 12/40143 . . . {involving priority mechanisms (-intermediate storage or scheduling [H04L 12/5694](#) ; hybrid switching fabrics [H04L 12/6402](#) ; time-division multiplex systems [H04J 3/00-](#))}
- H04L 12/40169 . . . {Flexible bus arrangements (-arrangements for maintenance or administration involving management of faults; events, alarms [H04L 12/2419](#) ; automatic restoration of network faults [H04L 12/2422-](#))}

- H04L 12/40176
 - . . . {involving redundancy (-error detection or correction of the data by redundancy in hardware using active fault-masking in interconnections [G06F 11/2002](#) ; error detection or correction of the data by redundancy in hardware using active fault-masking in storage systems using spares or by reconfiguring [G06F 11/2053](#)-)}
 - U H04L 12/403
 - . . . with centralised control, e.g. polling
 - H04L 12/4035
 - . . . {in which slots of a TDMA packet structure are assigned based on a contention resolution carried out at a master unit (-TDM/TDMA multiplex systems per se [H04J 3/1694](#); hybrid switching systems [H04L 12/64](#)-)}
 - U H04L 12/42
 - . . Loop networks
 - H04L 12/422
 - . . . {Synchronisation for ring networks (-Time Division Multiplex ring networks, e.g. SDH/SONET [H04J 3/085](#))}
 - H04L 12/437
 - . . . Ring fault isolation or reconfiguration{-for SDH/SONET ring networks [H04J 3/085](#)-}
 - U H04L 12/46
 - . . Interconnection of networks
 - H04L 12/4641
 - . . . {Virtual LANs, VLANs, e.g. virtual private networks [VPN]}(-virtual private networks for security [H04L 29/06612](#) ; routing of packets [H04L 12/5689](#) ; encapsulation techniques [H04L 12/4633](#) ; LAN interconnection over a bridge based backbone [H04L 12/462](#) ; packet switches [H04L 12/5696](#)-)}
- NOTE**
- (1) This group covers: - a group of hosts with a common set of requirements that communicate as if they were attached to the same broadcast domain, regardless of their physical location. (2) This group does not cover: - group multicasting, which is covered by [H04L 12/18](#) - configuration of switches supporting VLANs, which is covered by [H04L 12/2424](#) - multiprotocol label switching [MPLS], which is covered by [H04L 12/5689](#) - spanning tree protocol [STP], which is covered by [H04L 12/462](#) - arrangements for network security, which is covered by [H04L 29/06612](#) - encapsulation techniques, which is covered by [H04L 12/4633](#) - access arrangements, which is covered by [H04L 12/2856](#)
- (3) In this group the following terms or expressions are used with the meaning indicated: - B-Tag means Backbone VLAN Tag - C-Tag means Customer VLAN Tag - GARP means Generic Attribute Registration Protocol - GVRP means GARP VLAN Registration Protocol - I-SID means Service Instance Identifier - MVRP means Multiple VLAN Registration Protocol - PBB means Provider Backbone Bridges - S-Tag means Service VLAN Tag - VLAN means Virtual Local Area Network - VPN means Virtual Private Network - VTP means VLAN Trunking Protocol]
- H04L 12/4645
 - . . . {Details on frame tagging (-routing of packets [H04L 12/5689](#) ; support for virtual LAN [H04L 49/354](#)-)}
 - H04L 12/4675
 - . . . {Dynamic sharing of VLAN information amongst network nodes (-configuration of the network or of network elements [H04L 12/2424](#)-)}
 - U H04L 12/4683
 - {characterized by the protocol used}
 - H04L 12/4687
 - {MVRP [multiple VLAN registration protocol]}
 - H04L 12/4691
 - {GVRP [GARP VLAN registration protocol]}
 - H04L 12/4695
 - {VTP [VLAN trunking protocol]}
 - U H04L 12/50
 - . Circuit switching systems, i.e. systems in which the path is physically permanent during the communication
 - H04L 12/52
 - . . using time division techniques (-in digital transmission systems [H04L 5/22](#)-)
 - H04L 12/54
 - . Store-and-forward switching systems (-packet switching systems [H04L 12/70](#)-)
 - U H04L 12/56
 - . {Packet switching systems}

- U H04L 12/5601 . . . {Transfer mode dependent, e.g. ATM}
- U H04L 2012/5603 {Access techniques}
- U H04L 2012/5609 {Topology}
- H04L 2012/5613 {Bus *(including DQDB)*~~*(including DQDB)*~~}
- U H04L 12/58 . . . Message switching systems,{e.g. electronic mail systems}
 - WARNING
 - This subgroup and all its subgroups are no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 51/00](#)

- H04L 12/581 . . . {Real time or near real time messaging, e.g. instant messaging [IM]}
- H04L 12/5815 {use or manipulation of presence information in messaging ~~(-presence management [H04L 29/08684](#)-)}~~
- H04L 12/5845 . . . {messages including multimedia information ~~(-protocols for multimedia communication [H04L 29/06176](#) ; voice messaging in telephonic communication using automatic or semi-automatic exchanges with non-audio components [H04M 3/5307](#)-)}~~
- H04L 12/5865 . . . {messaging using geographical location information ~~(-protocols for adapting network applications to user terminal location [H04L 29/08657](#) ; services specially adapted for wireless communication networks making use of the location of users or terminals [H04W 4/02](#)-)}~~
- H04L 12/589 . . . {unified messaging, e.g. interactions between instant messaging [IM], e-mail or other types of messages such as Converged IP Messaging [CPM]}
- H04L 12/5895 . . . {in combination with wireless systems ~~(-messaging in wireless communication networks [H04W 4/12](#)-)}~~

- H04L 13/00** **Details of the apparatus or circuits covered by groups [H04L 15/00](#) or [H04L 17/00](#)**
- U H04L 13/02 . . . Details not particular to receiver or transmitter
- H04L 13/04 . . . Driving mechanisms; Clutches ~~(-in general [F16](#)-)~~
- U H04L 13/10 . . . Distributors
- U H04L 13/12 . . . Non-mechanical distributors, e.g. relay distributors
- H04L 13/14 Electronic distributors ~~(-in general [H03K 17/00](#)-)~~

- H04L 15/00** **Apparatus or local circuits for transmitting or receiving dot-and-dash codes, e.g. Morse code ~~(-teaching apparatus therefor [G09B](#) ; keyboard switches in general [H01H 13/70](#) , [H03K 17/94](#) ; telegraph tapping keys [H01H 21/86](#) ; coding in connection with keyboards or like devices, in general [H03M 11/00](#)-)~~**

- H04L 17/00** **Apparatus or local circuits for transmitting or receiving codes wherein each character is represented by the same number of equal-length code elements, e.g. Baudot code ~~(-keyboard switches in general [H01H 13/70](#) , [H03K 17/94](#) ; coding in connection with keyboards or like devices, in general [H03M 11/00](#)-)~~**

- H04L 23/00** **Apparatus or local circuits for systems other than those covered by groups [H04L 15/00](#) to [H04L 21/00](#)**

- U H04L 25/00** **Baseband systems**
- H04L 25/02 . . . Details ~~(-circuits in general for handling pulses [H03K](#) ; in line transmission systems in general [H04B 3/02](#)-); {Arrangements for supplying electrical power along data transmission lines~~(-systems for transmitting signals via power distribution lines [H04B 3/54](#)-)}~~~~

- H04L 25/026 . . {Arrangements for coupling transmitters, receivers or transceivers to transmission lines; Line drivers (-duplexing arrangements [H04L 5/14](#)-)}
 - H04L 25/0264 . . {Arrangements for coupling to transmission lines (-duplexing arrangements [H04L 5/14](#)-) ; line equalisers, line build-out devices [H04L 25/03878](#)}
 - U H04L 25/0266 . . . {Arrangements for providing Galvanic isolation, e.g. by means of magnetic or capacitive coupling}
 - H04L 25/027 {specifically for telegraph signals (-induction coil interrupters [H01H 51/34](#) dynamo-electric generators [H02K](#)-)}
 - U H04L 25/028 . . . {Arrangements specific to the transmitter end}
 - H04L 25/0286 {Provision of wave shaping within the driver (-wave shaping per se [H04L 25/03834](#)-)}
 - H04L 25/0288 {the shape being matched to the transmission line (-pre-equalisation per se [H04L 25/03343](#)-)}
 - H04L 25/03 . . . Shaping networks in transmitter or receiver, e.g. adaptive shaping networks (-impedance networks per se [H03H](#)); {Receiver end arrangements for processing baseband signals}
 - U H04L 25/03006 . . . {Arrangements for removing intersymbol interference}
 - H04L 25/03012 {operating in the time domain (-[H04L 25/03165](#) , [H04L 25/03178](#) take precedence-)}
 - U H04L 25/03019 {adaptive, i.e. capable of adjustment during data reception}
 - H04L 25/03031 {using only passive components (-[H04L 25/03025](#) takes precedence-)}
 - H04L 25/03038 {with a non-recursive structure (-[H04L 25/03031](#) takes precedence-)}
 - H04L 25/03057 {with a recursive structure (-[H04L 25/03031](#) takes precedence-)}
 - U H04L 25/03114 {non-adaptive, i.e. not adjustable, manually adjustable, or adjustable only during the reception of special signals}
 - H04L 25/03127 {using only passive components (-[H04L 25/03121](#) takes precedence-)}
 - H04L 25/03133 {with a non-recursive structure (-[H04L 25/03127](#) takes precedence-)}
 - H04L 25/03146 {with a recursive structure (-[H04L 25/03127](#) takes precedence-)}
 - H04L 25/03159 {operating in the frequency domain (-[H04L 25/03165](#) , [H04L 25/03178](#) take precedence-)}
 - U H04L 25/03178 {Arrangements involving sequence estimation techniques}
 - U H04L 25/03248 {Arrangements for operating in conjunction with other apparatus}
- NOTE**
- This group covers arrangements in which the sequence estimator is specially adapted to provide signals to, or receive signals from, the other apparatus. The group does not cover the mere juxtaposition of elements
- H04L 25/0328 {with interference cancellation circuitry (-adaptations for interference cancellation within a sequence estimator [H04L 25/03305](#) ; interference related aspects of direct sequence spread spectrum [H04B 1/7097](#) ; interference related aspects of frequency hopping spread spectrum [H04B 1/715](#) ; see also [H04B 1/10](#)-)}
 - H04L 25/03305 {Joint sequence estimation and interference removal (-joint detection of several desired signals [H04L 25/03331](#)-)}
 - U H04L 2025/0335 {characterised by the type of transmission}
 - U H04L 2025/03356 {Baseband transmission}
 - H04L 2025/03363 {Multilevel (-[H04L 2025/03369](#) takes precedence-)}

- U H04L 2025/03433 {characterised by equaliser structure}
- U H04L 2025/03439 {Fixed structures}
- U H04L 2025/03445 {Time domain}
- H04L 2025/03471 {Tapped delay lines (**T04L25/0B13F1N** takes precedence)}
- H04L 2025/03509 {fractionally spaced ([H04L 2025/03515](#) takes precedence)}
- U H04L 2025/03592 {Adaptation methods}
- U H04L 2025/03598 {Algorithms}
- U H04L 2025/03611 {Iterative algorithms}
- H04L 2025/03617 {Time recursive algorithms (**-T04L25: 03B15A3C** takes precedence)}
- U H04L 2025/03745 {Timing of adaptation}
- H04L 2025/03751 {only once, at installation (**-T04L25: 03B15M** takes precedence)}
- H04L 25/03828 . . . {Arrangements for spectral shaping; Arrangements for providing signals with specified spectral properties (~~partial response systems [H04L 25/497](#)~~)}
- U H04L 25/03834 {using pulse shaping}
- H04L 25/0384 {Design of pulse shapes (~~pulse shape for impulse radio [H04B 1/7172](#)~~)}
- H04L 25/03891 . . . {Spatial equalizers (~~MIMO diversity systems [H04B 7/0413](#)~~)}
- H04L 25/03898 {codebook-based design (~~selection of codebook or precoding matrix for MIMO diversity systems [H04B 7/0456](#)~~)}
- H04L 25/03929 {with layer mapping, e.g. codeword-to layer design (~~for space-time coding [H04L 1/0618](#)~~)}
- H04L 25/03949 {equalizer selection or adaptation based on feedback (~~multiple signaling inclusive of a precoding command for adapting the transmitter [H04L 1/0031](#) ; feedback for transmit diversity systems [H04B 7/0619](#) ; selection of codebook or precoding matrix for MIMO diversity systems [H04B 7/0456](#)~~)}
- H04L 25/06 . . . Dc level restoring means; Bias distortion correction {decision circuits providing symbol by symbol detection (~~detection of unique words or other known elements [H04L 7/00](#) , [H04J 3/0602](#)~~)}
- H04L 25/061 . . . {providing hard decisions only; arrangements for tracking or suppressing unwanted low frequency components, e.g. removal of dc offset (~~removal of dc offset in coupling arrangements [H04L 25/029](#) , [H04L 25/0296](#)~~)}
- H04L 25/067 . . . {providing soft decisions, i.e. decisions together with an estimate of reliability (~~[H04L 25/068](#) and [H04L 25/069](#) take precedence; sequence estimation techniques [H04L 25/03178](#)~~)}
- H04L 25/10 . . . Compensating for variations in line balance {balancing during the coupling of signals [H04L 25/0282](#)}
- H04L 25/12 . . . Compensating for variations in line impedance {impedance matching in coupling arrangements [H04L 25/0278](#)}
- H04L 25/14 . . . Channel dividing arrangements {in which a single bit stream is divided between several baseband channels and reassembled at the receiver}
- U H04L 25/20 . . . Repeater circuits; Relay circuits
- H04L 25/202 . . . {using mechanical devices (~~[H04L 25/205](#) takes precedence~~)}
- H04L 25/22 . . . Repeaters for converting two wires to four wires (~~in general [H04B](#)~~); Repeaters for converting single current to double current
- H04L 25/24 . . . Relay circuits using discharge tubes or semiconductor devices (~~[H04L 25/22](#) takes precedence~~)}
- U H04L 25/242 {with retiming}
- H04L 25/245 {for start-stop signals (~~detection of start or stop bits [H04J 3/0602](#)~~)}

- U H04L 25/38 • Synchronous or start-stop systems, e.g. for Baudot code
- H04L 25/40 • • Transmitting circuits; Receiving circuits (repeater circuits, relay circuits{
 [H04L 25/20](#) })
- H04L 25/45 • • • using electronic distributors (electronic distributors in general [H03K 17/00](#)-)
- H04L 25/49 • • • using code conversion at the transmitter; using predistortion; using insertion
 of idle bits for obtaining a desired frequency spectrum; using three or
 more amplitude levels; {Baseband coding techniques specific to data
 transmission systems(spectral shaping [H04L 25/03828](#)-)}
- U H04L 25/4906 • • • • {using binary codes}
- H04L 25/4915 • • • • {using pattern inversion or substitution (H04L 25/4908 takes
 precedence-)}
- U H04L 25/4917 • • • • {using multilevel codes}
- H04L 25/4919 • • • • • {using balanced multilevel codes (H04L 25/4927 takes precedence-)}
- H04L 25/4923 • • • • • {using ternary codes (H04L 25/4927 takes precedence-)}
- H04L 25/497 • • • • by correlative coding, e.g. partial response coding or echo
 modulation coding {transmitters and receivers for partial response
 systems(transversal equalizers [H04L 25/03](#) ; partial response continuous
 phase modulation systems [H04L 27/18](#)-)}

- H04L 27/00 Modulated-carrier systems{(code shift keying in combination with
frequency multiplexing [H04L 5/06](#) ; simultaneous bidirectional transmission
of ac signals [H04L 5/143](#) ; code shift keying [H04L 23/02](#) ; polarisation
shift keying [H04B 14/008](#) ; transmission of data during the active part of a
television frame [H04N 7/025](#)-)}**

- H04L 27/0002 • {analog front ends; means for connecting modulators, demodulators or
 transceivers to a transmission line (duplex arrangements [H04L 5/143](#)-)}
- H04L 27/0006 • {Assessment of spectral gaps suitable for allocating digitally modulated signals,
 e.g. for carrier allocation in cognitive radio (for spectrum sharing between
 different networks [H04W 16/14](#)-)}
- H04L 27/0008 • {arrangements for allowing a transmitter or receiver to use more than one type
 of modulation (negotiating modulation type for two-way transmission paths
 [H04L 5/1453](#)-)}
- H04L 27/001 • {using chaotic signals (for secret or secure communication [H04L 9/001](#)-)}
- H04L 27/0014 • {Carrier regulation (of chaotic carriers [H04L 27/001](#) ; for multicarrier receivers
 [H04L 27/2657](#)-)}
- U H04L 2027/0044 • • {Control loops for carrier regulation}
- U H04L 2027/0063 • • • {Elements of loops}
- H04L 2027/0065 • • • • {Frequency error detectors (H04L 2027/0067 takes precedence-)}
- U H04L 2027/0083 • • {Signalling arrangements}
- H04L 2027/0087 • • • {Out-of-band signals, (e.g. pilots)}(e.g. pilots)}
- H04L 27/01 • Equalisers{(baseband equalisers [H04L 25/03](#) ; control of amplification [H03G](#) ;
 in analogue transmission systems [H04B 3/04](#) , [H04B 7/005](#)-)}
- H04L 27/02 • Amplitude-modulated carrier systems, e.g. using on-off keying; Single sideband
 or vestigial sideband modulation (H04L 27/32 takes precedence-)
- H04L 27/04 • • Modulator circuits (in general [H03C](#) { [H03K 7/02](#) }); Transmitter circuits
- H04L 27/06 • • Demodulator circuits (in general [H03D](#) { [H03K 9/02](#) }); Receiver circuits
- H04L 27/066 • • • {Carrier recovery circuits (H04L 27/2271 takes precedence-)}
- H04L 27/10 • Frequency-modulated carrier systems, i.e. using frequency-shift
 keying (H04L 27/32 takes precedence; { continuous phase systems
 [H04L 27/18](#) })

- H04L 27/103
 - • {Chirp modulation (~~for spread spectrum techniques [H04B 1/69](#) ; for spread spectrum using chirp [H04B 2001/6912](#)-)}~~
- H04L 27/12
 - • Modulator circuits (~~in general [H03C](#) { [H03K 7/06](#) }); Transmitter circuits(~~continuous phase modulation [H04L 27/20](#)-}~~)~~
- H04L 27/122
 - • • {using digital generation of carrier signals (~~digital function generators [G06F 1/02](#) , [H04L 17/10](#) ; generating pulses having stepped portions using digital techniques [H03K 4/026](#)-)}~~
- H04L 27/14
 - • Demodulator circuits (~~in general [H03D](#) { [H03K 9/06](#) }); Receiver circuits(~~for continuous phase modulation systems [H04L 27/22](#)-}~~)~~
- H04L 27/18
 - Phase-modulated carrier systems, i.e. using phase-shift keying (~~[H04L 27/32](#) takes precedence-})(includes continuous phase systems)~~
- H04L 27/20
 - • Modulator circuits (~~in general [H03C](#) { [H03K 7/04](#) }); Transmitter circuits~~
- H04L 27/2003
 - • • {for continuous phase modulation (~~frequency shift keying [H04L 27/10](#)-}~~)
- H04L 27/2007
 - • • • {in which the phase change within each symbol period is constrained (~~coset coding [H04L 27/186](#)-}~~)
- H04L 27/2014
 - • • • • {in which the phase changes in a piecewise linear manner during each symbol period, e.g. minimum shift keying, fast frequency shift keying (~~[H04L 27/201](#) takes precedence-}~~)
- H04L 27/2017
 - • • • • {in which the phase changes are non-linear, e.g. generalized and Gaussian minimum shift keying, tamed frequency modulation (~~[H04L 27/201](#) takes precedence-}~~)
- U H04L 27/2032
 - • • {for discrete phase modulation, e.g. in which the phase of the carrier is modulated in a nominally instantaneous manner}
- U H04L 27/2053
 - • • • {using more than one carrier, e.g. carriers with different phases}
- U H04L 27/206
 - • • • • {using a pair of orthogonal carriers, e.g. quadrature carriers}
- H04L 27/2067
 - • • • • • {with more than two phase states (~~[H04L 27/2064](#) takes precedence-}~~)}
- H04L 27/2078
 - • • • • • • {in which the phase change per symbol period is constrained (~~coset coding [H04L 27/186](#)-}~~)}
- H04L 27/2092
 - • • • • {with digital generation of the modulated carrier (*does not include the modulation of a digitally generated carrier*)}(~~does not include the modulation of a digitally generated carrier~~)}
- H04L 27/2096
 - • • {Arrangements for directly or externally modulating an optical carrier (~~optical modulation [H04B 10/503](#)-}~~)}
- H04L 27/22
 - • Demodulator circuits (~~in general [H03D](#) { [H03K 9/04](#) }); Receiver circuits~~
- H04L 27/223
 - • • {Demodulation in the optical domain (~~optical demodulation [H04B 10/676](#)-}~~)}
- U H04L 27/227
 - • • using coherent demodulation
- U H04L 27/2271
 - • • • {wherein the carrier recovery circuit uses only the demodulated signals}
- H04L 27/2272
 - • • • • {using phase locked loops (~~[H04L 27/2273](#) takes precedence-}~~)}
- U H04L 27/233
 - • • using non-coherent demodulation
- H04L 27/2338
 - • • • {using sampling (~~[H04L 27/2331](#) to [H04L 27/2335](#) take precedence-}~~)}
- H04L 27/26
 - Systems using multi-frequency codes (~~[H04L 27/32](#) takes precedence-~~)
- U H04L 27/2601
 - • {Multicarrier modulation systems}
- U H04L 27/2602
 - • • {Signal structure}
- H04L 27/2604
 - • • • {Multiresolution systems (~~by means of multiresolution subcarriers [H04L 27/183](#) , [H04L 27/3488](#)-}~~)}
- H04L 27/261
 - • • • {Details of reference signals (~~[H04L 27/262](#) takes precedence-}~~)}
- U H04L 27/2626
 - • • {Arrangements specific to the transmitter}
- U H04L 27/2627
 - • • • {Modulators}

- H04L 27/2628 {Inverse Fourier transform modulators, e.g. IFFT/IDFT (~~DFT or FFT computation methods or devices in general G06F 17/141~~ *DFT or FFT computation methods or devices in general G06F 17/141*)}
- H04L 27/2634 {IFFT/IDFT in combination with other circuits for modulation (~~DFT or FFT computation methods or devices in general G06F 17/141~~ *DFT or FFT computation methods or devices in general G06F 17/141*)}
- H04L 27/2642 {Wavelet transform modulators (~~wavelets in general H04L 27/0004 ; wavelet-division H04L 5/0008~~)}
- H04L 27/2647 . . . {Arrangements specific to the receiver (~~equalisation H04L 25/03006 , H04L 27/01~~)}
- U H04L 27/2655 {Synchronisation arrangements}
- U H04L 27/2668 {Details of algorithms}
- U H04L 27/2673 {characterised by synchronisation parameters}
- H04L 27/2675 {Pilot or known symbols (~~structure of pilot symbols H04L 27/2613 ; cell search in orthogonal multiplex systems H04J 11/0069 ; allocation of pilot signals H04L 5/0048~~)}
- U H04L 27/2689 {Link with other circuits, i.e. special connections between synchronisation arrangements and other circuits for achieving synchronisation}
- H04L 27/2691 {involving interference determination or cancellation (~~interference mitigation or coordination in orthogonal multiplex systems in general H04J 11/0023~~)}
- H04L 27/2695 {with channel estimation, e.g. determination of delay spread, derivative or peak tracking (~~channel estimation per se H04L 25/0202~~)}
- H04L 27/32 Carrier systems characterised by combinations of two or more of the types covered by groups [H04L 27/02](#) , [H04L 27/10](#) , [H04L 27/18](#) or [H04L 27/26](#)
- U H04L 27/34 Amplitude- and phase-modulated carrier systems, e.g. quadrature-amplitude modulated carrier systems
- H04L 27/3494 {using non - square modulating pulses, e.g. using raised cosine pulses; Partial response QAM, i.e. with partial response pulse shaping (~~QAM over partial response channels H04L 25/497~~)}
- U H04L 27/36 Modulator circuits; Transmitter circuits
- H04L 27/362 {Modulation using more than one carrier, e.g. with quadrature carriers, separately amplitude modulated (~~H04L 27/366 takes precedence~~)}
- H04L 27/363 {using non - square modulating pulses, modulators specifically designed for this (~~transmission of non - square QAM H04L 27/3494~~)}
- H04L 27/365 {Modulation using digital generation of the modulated carrier (*not including modulation of a digitally generated carrier*) (~~not including modulation of a digitally generated carrier~~)}
- U H04L 27/38 Demodulator circuits; Receiver circuits
- H04L 27/3818 {using coherent demodulation, i.e. using one or more nominally phase synchronous carriers (~~H04L 27/227 and H04L 27/389 take precedence~~)}
- H04L 29/00 Arrangements, apparatus, circuits or systems, not covered by a single one of groups [H04L 1/00](#) to [H04L 27/00](#) (~~interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units G06F 13/00~~) {contains provisionally no documents}**
- H04L 29/02 Communication control (~~in satellite networks H04B 7/185~~); Communication processing (~~H04L 29/12 , H04L 29/14 take precedence~~) {contains provisionally no documents}

- H04L 29/04
- • for plural communication lines {contains provisionally no documents}
- U H04L 29/06
- • characterised by a protocol
- H04L 29/06013
- • • {Protocol definition or specification (-protocol conformance testing [H04L 1/244-](#))}
- H04L 29/0602
- • • {Protocols characterised by their application ([H04L 29/0801](#) takes precedence-)}
- H04L 29/0604
- • • • {Protocols for data compression (-compression in general [H03M 7/30-](#))}
- H04L 29/06095
- • • {Special adaptations or provisions of the transmission control protocol/internet protocol [TCP/IP]} or the user datagram protocol [UDP] (-network layer protocol adaptations for supporting mobility, e.g. mobile IP [H04W 80/04-](#); flow control in data switching networks in general [H04L 12/569-](#); adapting video multiplex streams to a specific network [H04N 21/2381+](#))}
- H04L 29/06102
- • • • {Implementation details of TCP/IP or UDP/IP stack architecture; specification of modified or new header fields (-protocols engines in general [H04L 29/06081](#) ; OSI stack based layering aspects [H04L 29/08009](#) ; protocol header analysis in general [H04L 29/0653-](#))}
- H04L 29/06108
- • • • • {involving adaptations of sockets based mechanisms (-secure socket layer [H04L 29/06965-](#))}
- H04L 29/06115
- • • • {Adaptation of TCP data exchange control procedures (-generic OSI layer 4 protocols, e.g. SCTP [H04L 29/08045](#) ; TCP or UDP flow control procedures [H04L 47/19](#) ; error control procedures in general [H04L 1/18-](#))}
- H04L 29/06129
- • • • {involving combined use or selection criteria between TCP and UDP protocols (-multi-protocol arrangements in general [H04L 29/06163](#) ; multilink protocols in general [H04L 29/06088-](#))}
- H04L 29/06136
- • • • {IP fragmentation or TCP segmentation aspects (-evaluation of maximum transfer unit [H04L 47/36](#) ; assembly or disassembly of packets in wireless networks [H04W 28/065-](#))}
- H04L 29/06142
- • • • {Transitional provisions between IPv4 and IPv6 (-address translation between IPv4 and IPv6 [H04L 29/12358](#) ; involvement of different protocol versions in wireless network layer protocols, e.g. MIPv4 and MIPv6, [H04W 80/045-](#))}
- H04L 29/06149
- • • • {Special adaptations of TCP, UDP or IP to match specific link layer protocols, e.g. ATM, SONET or PPP (-IP over ATM [H04Q 11/0478](#) ; special adaptation of TCP protocol for wireless media [H04W 80/06-](#))}
- H04L 29/06156
- • • • {Special adaptations of TCP, UDP or IP for interworking of IP based networks with other networks (-protocols for interworking in general [H04L 29/06068-](#))}
- H04L 29/06176
- • • {Arrangements for real-time multimedia communications (-data switching systems for broadcast or conference [H04L 12/18](#) ; message switching systems [H04L 12/58](#) ; television systems [H04N 7/00](#) ; interconnection arrangements between switching centres for working between exchanges having different types of switching equipment where the types of switching equipment comprise PSTN/ISDN equipment and equipment of networks other than PSTN/ISDN [H04M 7/1205](#) ; systems providing special services to telephonic subscribers [H04M 3/42](#) ; network applications in general [H04L 29/08081-](#))}

NOTE

[N: Notes (1) This group covers: • only communications which fulfil the following two conditions: 1. they are based on packet data; 2. there is real-time or pseudo-real-time temporal association between source and destination, or source and network, or destination and network; • provided that the above two conditions are met, this group covers arrangements relating to 1. the transmission of the multimedia data itself, 2. the user-to-

user, user-to-network, inter-network or intra-network signalling supporting:
a. the establishment of a session for the subsequent transmission of the multimedia data, or b. the maintenance of the session or c. the application services available to the user during the session (unless explicitly excluded in certain cases). (2) This group does not cover: • non-real-time multimedia file transfer, which is covered by [H04L 29/08117](#) . • multimedia store or forward messaging as in e-mail, MMS or the like, which is covered by [H04L 12/58](#) • analogue multimedia streaming, as in analogue television systems, which is covered by [H04N 7/00](#) and [H04N 5/00](#) • bit streaming, i.e. not packet-based, as in ISDN which is covered by [H04Q 11/04](#) • instant messaging, which is covered by [H04L 12/581](#) • any other multimodal data communications which do not meet the conditions of being packet-based and real-time or pseudo-real-time. (3) In this group the following terms or expressions are used with the meaning indicated: • H.323 means International Telecommunication Union Recommendation no. 323, series H, entitled "Packet-based multimedia communications systems" • IP means Internet Protocol • IMS means IP Multimedia Subsystem • ISDN means Integrated Services Digital Network • MGC means Media Gateway Control/ Controller • MGCP means Media Gateway Control Protocol • MMS means Multimedia Messaging Service • PBX means Private Branch Exchange • PSTN means Public Switched Telephone Network • QoS means Quality of Service • RTP means Real Time Protocol • RTCP means Real Time Control Protocol • SIP means Session Initiation Protocol • SPAM means unsolicited electronic mail • SPIT means SPAM Prevention in IP Telephony] [N: WARNING [Group [H04L 29/06176](#) or subgroups are not complete pending reorganisation. See also [H04L 29/06027](#)]

- H04L 29/06183 {Signalling, control or architecture (-selecting or control in telephonic networks [H04Q 3/00](#) ; data network management [H04L 12/24](#) ; data network testing or monitoring [H04L 12/26](#)-)}
- U H04L 29/0619 {Signalling or session protocols}
- H04L 29/06197 {SIP [*Session Initiation Protocol*]}(~~Session Initiation Protocol~~)}
- U H04L 29/0621 {Network architectures, gateways, control or user entities}
- H04L 29/06217 {IMS [*IP multimedia subsystem*]}(~~IP multimedia subsystem~~)(wireless communication networks [H04W](#))}
- H04L 29/06224 {Gateways (-protocols for interworking or protocol conversion [H04L 29/06068](#) ; interconnection between PSTN/ISDN networks and networks other than PSTN/ISDN [H04M 7/1205](#) ; arrangements for connecting between networks having differing types of switching systems [H04L 12/66](#)-)}
- H04L 29/06272 {~~MGC(media gateway control)~~{*MGC [media gateway control]*, MGCP or Megaco (-decomposed PSTN/ISDN-IP gateways [H04M 7/1255](#)-)}
- H04L 29/06292 {Arrangements providing PBX functionality, e.g. IP PBX (-circuit switched PBXs [H04M 3/42314](#) ; PBX networks [H04M 7/009](#)-)}
- H04L 29/06306 {End-user terminal functionality (-substation equipment for use by subscribers [H04M 1/00](#) ; terminal profiles [H04L 29/08927](#) ; terminal emulation [H04L 29/08126](#) ; adaptation for terminals with limited resources or for terminal portability [H04L 29/08108](#)-)}
- H04L 29/06312 {Application servers (-systems providing special services to telephonic subscribers [H04M 3/42](#)-)}
- U H04L 29/06319 {Session control}
- H04L 29/06326 {Setup (-connection or session management in network applications [H04L 29/08576](#) ; arrangements for peer-to-peer networking in network applications [H04L 29/08306](#) ; negotiation of communication capabilities [H04L 29/06537](#)-)}

- H04L 29/06333 {Registration (-arrangements for addressing or naming in data networks [H04L 29/12009](#)-)}
- H04L 29/0634 {Screening (-arrangements for screening incoming telephone calls [H04M 3/436](#) ; arrangements for network security [H04L 29/06551](#)-)}
- H04L 29/06346 {of unsolicited session attempts, e.g. SPIT [[SPAM prevention in IP telephony](#)](~~SPAM prevention in IP telephony~~)(-message switching systems [H04L 12/58](#)-)}
- H04L 29/0638 {Features, e.g. call-forwarding or call hold (-systems providing special services to telephonic subscribers [H04M 3/42](#)-)}
- H04L 29/06387 {Services or applications (-systems providing special services to telephonic subscribers [H04M 3/42](#) ; contact center services [H04M 3/51](#) ; information services comprising voice [H04M 3/487](#)-)}
- H04L 29/06394 {Services involving a main real time session and one or more additional parallel sessions (-multichannel or multilink protocols [H04L 29/06088](#) ; services and arrangements where telephone services are combined with data services [H04M 7/0024](#)-)}
- H04L 29/06401 {where at least one of the additional parallel sessions is real time or time sensitive, e.g. white board sharing, collaboration, spawning of a subconference (-telewriting, virtual reality or network gaming [H04L 29/06034](#)-)}
- H04L 29/06408 {where none of the additional parallel sessions is real time or time sensitive, e.g. downloading a file in a parallel FTP session, initiating an email, combinational services (-file transfer [H04L 29/08117](#) ; WEB based applications [H04L 29/0809](#) ; message switching systems [H04L 12/58](#) ; instant messaging [H04L 12/581](#)-)}
- H04L 29/06414 {Arrangements for multiparty communication e.g. conference (-television conferencing systems [H04N 7/15](#) ; telephonic conference systems [H04M 3/56](#) ; data switching systems for broadcast or conference [H04L 12/18](#)-)}
- H04L 29/06442 {"Push-to-X" services (-Push-to-Talk services in wireless networks [H04W 4/025](#)-)}
- U H04L 29/06448 {Services related to one way streaming}
- H04L 29/06455 {Multicast or broadcast (-data switching systems for broadcast or conference [H04L 12/18](#) ; television systems in general [H04N 5/00](#) , [H04N 7/00](#) ; arrangements for broadcast or distribution combined with broadcast [H04H 20/00](#) ; arrangements for broadcast applications with a direct linkage of broadcast information [H04H 60/00](#) ; arrangements for push based network services [H04L 29/08693](#)-)}
- H04L 29/06462 {Content on demand (-television systems using two way working [H04N 7/173](#)-)}
- H04L 29/06469 {Control of source by destination, e.g. user controlling streaming rate of server (-television systems using two way working [H04N 7/173](#)-)}
- U H04L 29/06476 {Media handling, encoding, streaming or conversion}
- H04L 29/06482 {Media manipulation, adaptation or conversion (-transmission of television signals using pulse code modulation [H04N 7/24](#) ; adaptation for terminals or networks with limited resources or for terminal portability [H04L 29/08108](#) ; data reduction or adaptation [H04L 29/08792](#) ; network application being adapted for the location of the user terminal [H04L 29/08657](#)-)}
- H04L 29/0651 {Stream encoding details (-transmission of television signals using pulse code modulation [H04N 7/24](#) ; protocols for data compression [H04L 29/0604](#) ; header parsing or analysis [H04L 29/0653](#)-)}

- H04L 29/06523 {Quality of Service (QoS) aspects (-arrangements for scheduling or organising the servicing of requests whereby quality of service or priority requirements are taken into account [H04L 29/08954](#) ; adaptation for terminals and/or networks with limited resources or for terminal portability [H04L 29/08108](#) ; data reduction and/or adaptation [H04L 29/08792](#) ; network application is adapted for the location of the user terminal [H04L 29/08657](#)-)}
- H04L 29/06544 {Special purpose or proprietary protocols or architectures (-[H04L 29/08558](#) takes precedence-)}
- H04L 29/06551 {Arrangements for network security (-security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#) ; arrangements for secret or secure communication [H04L 9/00](#) ; security arrangements specially adapted for wireless communication networks [H04W 12/00](#)-)}
- H04L 29/06986 {Security management; Security policies in general (-filtering policies [H04L 29/06578](#)-)}
- U H04L 29/08 Transmission control procedure, e.g. data link level control procedure
- U H04L 29/08009 {Open systems interconnection (OSI) architecture, e.g. layering, entities, standards; Interface between layers; Software aspects}
- H04L 29/08072 {Application layer, i.e. layer seven (not used)}
WARNING
 from 01.01.2006 onwards, documents relating to the application layer, and in particular to protocols for network applications are classified in [H04L 29/08081](#) and subgroups. All documents previously classified in [H04L 29/08072](#) are reclassified in these groups
- H04L 29/08081 {Protocols for network applications (-message switching systems [H04L 12/58](#) ; protocols for multimedia communication [H04L 29/06027](#) ; protocols for telewriting [H04L 29/06034](#)-)}
- H04L 29/0809 {involving the use of web-based technology, e.g. Hyper Text Transfer Protocol (HTTP),(-information retrieval from the Internet [G06F 17/30861](#)-)}
- H04L 29/08099 {for remote control or remote monitoring (-Network management using Internet technology [H04L 12/2408](#) ; Network monitoring [H04L 12/2602](#)-)}
- H04L 29/08108 {adapted for terminals or networks with limited resources and for terminal portability, e.g. Wireless Application Protocol [WAP](-services or facilities specially adapted for wireless communication networks [H04W 4/00](#)-)}
- H04L 29/08126 {adapted for terminal emulation, e.g. telnet (-protocols for telewriting or protocols for networked simulations, virtual reality or games [H04L 29/06034](#)-)}
- H04L 29/08135 {in which application tasks are distributed across nodes in the network (-multiprogramming arrangements [G06F 9/46](#)-)}

- H04L 29/08144 {Network arrangements or communication protocol arrangements for accessing one among a plurality of replicated servers, e.g. load balancing (-rebalancing the processing load in a distributed system [G06F 9/5083](#) ; arrangements for peer-to-peer networking [H04L 29/08306](#) ; wireless network traffic load balancing [H04W 28/08](#) ; network load balancing, traffic engineering [H04L 47/125](#) ; video servers using load balancing strategies [H04N 21/23103](#)-)}[M1111]
- NOTE
In this group and its subgroups, the term "servers" includes non-dedicated servers, such as peer nodes in a peer-to-peer architecture
- H04L 29/08153 {Server selection in load balancing (-allocation of processing resources to service a request in a distributed system [G06F 9/5027](#)-)}
- H04L 29/08162 {with static server selection, e.g. the same server being selected for a specific client (-allocation of processing resources considering data affinity [G06F 9/5033](#)-)}
- H04L 29/08171 {based on parameters of servers, e.g. available memory or workload (-allocation of processing resources considering the load [G06F 9/505](#)-)}
- H04L 29/08288 {Load balancing of requests to servers for services different from user content provisioning, e.g. load balancing to DNS servers or firewalls (-internet service provider selection [H04L 12/5691](#)-)}
- H04L 29/08306 {Arrangements for peer-to-peer networking [P2P]; functionalities, architectural details or applications of P2P networks (-provisions for file transfer, upload, download [H04L 29/08117](#) ; provisions for accessing replicated servers [H04L 29/08144](#) ; security provisions [H04L 29/06551](#) ; addressing provisions [H04L 29/12009](#) ; scheduling provisions [H04L 29/08945](#) ; presence management provisions [H04L 29/08684](#) ; multimedia provisions [H04L 29/06176](#) ; information retrieval provisions, file indexing, file systems [G06F 17/30](#) ; wireless interfaces between terminal devices [H04W 92/18](#) ; small scale hierarchical wireless network topologies [H04W 84/10](#) ; peer-to-peer connection between video clients [H04N 21/632](#) ; peer-to-peer connection between video game machines [A63F 13/34](#)-)}
- U H04L 29/08315 {involving topology management mechanisms}
- U H04L 29/08324 {Group management mechanisms}
- H04L 29/08342 {Departure and maintenance mechanisms (-counter-measures to a fault [H04L 29/14](#)-)}
- U H04L 29/0836 {with pre-configuration of logical or physical connections with a determined number of other peers}
- H04L 29/08369 {involving connection limits (-involving dynamic management of active down/uploading connections [H04L 29/08495](#)-)}
- H04L 29/08396 {involving resource based peer discovery mechanisms (-access to replicated servers [H04L 29/08144](#) ; arrangements for service discovery [H04L 29/08648](#) ; topology discovery for routing [H04L 45/02](#)-)}
- H04L 29/08414 {Discovery involving distributed pre-established resource-based relationships among peers; e.g. based on DHTs (-pre-configuration of logical or physical connections [H04L 29/0836](#)-)}

- H04L 29/08558 {adapted for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car (-digital computing or data processing equipment or methods, specially adapted for specific applications [G06F 19/00](#) ; home automation networks [H04L 12/2803](#); total factory control characterised by the network communication [G05B 19/4185](#); games involving transmission [A63F 13/30](#)-)}
- H04L 29/08567 {involving the management of devices over a network (-network management [H04L 12/24](#) ; device management using web-based technology [H04L 29/08099](#)-)}
- H04L 29/08576 {Arrangements for session management (-real-time session management for multimedia connections [H04L 29/06176](#) ; negotiation of communication capabilities [H04L 29/06537](#) ; packet switching or routing [H04L 12/56](#) ; connection management in wireless networks, e.g. connection set-up, manipulation or release [H04W 76/00](#) ; session management for telephonic communication and services [H04M 7/00](#) ; intertask communications in multiprogramming arrangements [G06F 9/54](#)-)}
- NOTE**
This group covers session signaling at higher OSI layers to support networked applications.
- H04L 29/08621 {markers provided for unambiguous identification of a particular session, e.g. session identifier, session cookie or URL-encoding (-verifying the identity or authority of a user or a system, ID-based authentication [H04L 9/32](#) ; ID-based key exchange [H04L 9/08](#)-)}
- H04L 29/08648 {Arrangements for service discovery, e.g. Service Location Protocol [SLP](-address allocation to terminals or nodes connected to a network [H04L 29/12009](#)-)}
- H04L 29/08657 {in which the network application is adapted for the location of the user terminal (-services specially adapted for wireless communication networks making use of the location of users or terminals [H04W 4/02](#)-)}
- H04L 29/08666 {involving third party service providers (-e-commerce [G06Q 30/00](#)-)}
- H04L 29/08675 {Arrangements for tracking the activity of the application user (-monitoring arrangements in general [H04L 12/2602](#); e-commerce [G06Q 30/00](#)-)}
- H04L 29/08684 {Arrangements for presence management (-instant messaging [H04L 12/581](#)-)}
- H04L 29/08693 {Arrangements for push based network services (-broadcast and multicast push services [H04L 12/1859](#)-)}
- H04L 29/08702 {involving intermediate processing or storage in the network, e.g. proxy (-billing provisions [H04L 12/14](#) ; network management provisions [H04L 12/24](#) ; monitoring provisions [H04L 12/2602](#) ; multimedia network architectures; gateways and control entities [H04L 29/0621](#) ; multimedia handling; encoding and conversion [H04L 29/06476](#) ; security provisions [H04L 29/06551](#) ; addressing provisions [H04L 29/12009](#)-)}

WARNING

The subgroups [H04L 29/08711](#) , [H04L 29/08738](#) to [H04L 29/08783](#) , and [H04L 29/08801](#) to [H04L 29/08855](#) are not complete pending reorganisation. See also [H04L 29/0872](#) , [H04L 29/08729](#) and [H04L 29/08792](#))

- H04L 29/0872 m {Arrangements for brokering(-protocols for client-server architecture [H04L 29/06047](#) ; negotiation of communication capabilities [H04L 29/06537](#) ; e-commerce [G06Q 30/00](#)-)}
- WARNING
This group is no longer used for the classification of new documents as from December 1, 2009. The backlog of this group is being continuously reclassified to the subgroups [H04L 29/08711](#) to [H04L 29/08909](#)
- H04L 29/08729 {Arrangements for intermediate storage, e.g. caching (-browsing optimisation of access to content [G06F 17/30902](#)-)}
- WARNING
This group is no longer used for the classification of new documents as from December 1, 2009. The backlog of this group is being continuously reclassified to the subgroups [H04L 29/08711](#) to [H04L 29/08909](#)
- H04L 29/08738 {Arrangements for data redirection(-load balancing [H04L 29/08144](#) ; access network selection [H04L 12/5691](#) ; routing path selection [H04L 12/5689](#) ; context based routing [H04L 29/08972](#) ; addressing aspects [H04L 29/12009](#)-)}
- H04L 29/08756 {Arrangements for conversion or adaptation of application content or format (-[H04L 29/08783](#) takes precedence; protocol conversion [H04L 29/06068](#)-)}
- H04L 29/08801 {Arrangements for storing temporarily data at an intermediate stage, e.g. caching (-browsing optimization of access to content by caching [G06F 17/30902](#)-)}
- H04L 29/08837 {Arrangements for providing operational support to end devices when they are unavailable, e.g. being off-line; off-loading of end devices (-counter-measures to a fault [H04L 29/14](#)-)}
- H04L 29/08846 {Arrangements to globally emulate or virtualize the functionalities of an end device (-[H04L 29/08837](#) takes precedence-)}
- H04L 29/08945 {Arrangements for scheduling and organising the servicing of requests, e.g. requests for data transmissions involving the analysis and optimisation of the requires network resources (-broadcast or conference with schedule organisation [H04L 12/1881](#))}
- H04L 29/08981 {involving the movement of software and/or configuration parameters, e.g. applets,(-programme loading or initiating [G06F 9/445](#)-)}
- H04L 29/0899 {involving the display to the application user of network conditions affecting the network application(-graphical user interfaces for network management [H04L 12/2458](#) ; terminal emulation [H04L 29/08126](#)-)}
- H04L 29/10 . . characterised by an interface, e.g. the interface between the data link level and the physical level {contains provisionally no documents}
- H04L 29/12 . . characterised by the data terminal {contains provisionally no documents}
- U H04L 29/12009 . . {Arrangements for addressing and naming in data networks}
- NOTE
(1) [H04L 61/00](#) covers aspects of data networks, excluding pure telephone solutions ([H04M 7/00](#)) or addressing within a device, e.g. process, memory etc. ([G06F 13/42](#) or [G06F 12/00](#)) . (2) Aspects relating to switching and routing are classified in [H04L 12/56](#) . (3) Main aspects covered by this groups are: address resolution; directories and name-to-address resolution;

allocation of addresses; conversion of addresses; logical names and non-standard use of addresses

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/00](#)

- H04L 29/12047 • • • {Directories; name-to-address mapping (-telephone directories in user terminals [H04M 1/27-](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/15](#)

- H04L 29/12103 • • • • {using an address exchange platform which sets up a session between two nodes, e.g. Rendezvous server (-[H04L 29/12094](#) takes precedence for address exchange for Voice over IP-)}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/1535](#)

- H04L 29/12113 • • • • {for service discovery (-network applications for service discovery [H04L 29/08648-](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/1541](#)

- H04L 29/12132 • • • • {Mechanisms for table lookup, also between directories; Directory data structures; Synchronization of directories (-information retrieval in file systems [G06F 17/30067](#) ; information retrieval in structured data stores [G06F 17/30286-](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/1552](#)

- H04L 29/1215 • • • • {Directories for electronic mail or instant messaging (-message switching systems per se [H04L 12/58-](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/1564](#)

- H04L 29/12198 • • • • {Address books, i.e. directories containing contact information about correspondents, e.g. on a user device (-directories providing the best way to reach a correspondent [H04L 29/12122-](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/1594](#)

- U H04L 29/12207 . . . {Address allocation}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/20](#)
- U H04L 29/12216 {Internet Protocol (IP) addresses}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/2007](#)
- H04L 29/12245 {using an authentication, authorization and accounting [AAA]} protocol, e.g. remote authentication dial-in user service [RADIUS] or diameter (-authentication mechanisms [H04L 29/06755-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/203](#)
- H04L 29/12254 {for local use, e.g. on Local Area Networks [LAN] or on Universal Serial Bus (USB) networks (-bus addresses inside a computer [G06F 13/42-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/2038](#)
- H04L 29/12311 {involving portability aspects (-mobility data transfer in wireless communication networks [H04W 8/26](#) ; mobile IP, network layer protocols in wireless communication networks [H04W 80/04-](#))}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/2084](#)
- U H04L 29/1233 . . . {Mapping of addresses of the same type; Address translation}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/25](#)
- U H04L 29/12339 {Internet Protocol (IP) address translation}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/2503](#)
- U H04L 29/1249 {NAT-Traversal}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/256](#)

- H04L 29/12566 {over a relay server, e.g. traversal using relay NAT [TURN];}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 61/2589](#)
- H04L 29/12575 {involving tunneling or encapsulation (-protecting information from access by third parties [H04L 29/06632](#)-)}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 61/2592](#)
- H04L 29/12594 . . . {Arrangements for managing names, e.g. use of aliases or nicknames (-retrieval from the Internet by using information identifiers, e.g. URLs [G06F 17/30876](#) ; name-to-address mapping [H04L 29/12047](#)-)}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/30](#)
- U H04L 29/12622 {Name registration, generation or assignment}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 61/3015](#)
- H04L 29/12632 {Administrative registration, e.g. for domain names at internet corporation for assigned names and numbers [ICANN];(-data processing for administration [G06Q 10/00](#)-)}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 61/302](#)
- U H04L 29/1265 {Name structure}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 61/303](#)
- H04L 29/12669 {containing protocol addresses or telephone numbers (-address type involved [H04L 29/1283](#)-)}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 61/304](#)
- U H04L 29/12707 {Name types}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012.
 The backlog of this subgroup is being continuously reclassified to
[H04L 61/306](#)

- H04L 29/12726 {E-mail addresses (-message switching systems [H04L 12/58-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 61/307](#)
- H04L 29/12735 {Access point names [APN]}, i.e. name of a gateway GPRS support node [GGSN] connecting a mobile user to a packet data network [PDN]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 61/3075](#)
- H04L 29/12754 {Session initiation protocol [SIP] URI}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 61/3085](#)
- H04L 29/12764 {Globally routable user-agent URI [GRUU] for SIP}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 61/309](#)
- H04L 29/12773 {IP multimedia private identity [IMPI] or IP multimedia public identity [IMPU]}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 61/3095](#)
- U H04L 29/12792 . . . {Details}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/60](#)
- U H04L 29/1283 {about address types}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 61/6018](#)
- H04L 29/12849 {Control Area Network [CAN] identifiers (-vehicle networks [B60R 16/0315-](#))}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to [H04L 61/6027](#)

- U H04L 41/00 {Arrangements for maintenance or administration or management of packet switching networks}**
- WARNING**
Groups [H04L 41/00](#) - [H04L 41/5096](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows:- [H04L 41/00](#) - [H04L 41/5096](#) : [H04L 12/24](#)
- U H04L 41/02 • {involving integration or standardization}
- H04L 41/024 • • {using relational databases for representation of network management data, e.g. managing via structured query language [SQL](-information retrieval in structured data stores [G06F 17/30286](#)-)}
- H04L 41/0246 • • {exchanging or transporting network management information using Internet , e.g. aspects relating to embedding network management web servers in network elements, web service for network management purposes, aspects related to Internet applications or services or web-based protocols, simple object access protocol [SOAP](-web-based network application protocols [H04L 67/02](#) ; web-based network application protocols for remote control of end-devices or monitoring of remote application data [H04L 67/025](#) ; proprietary application protocols for remote control of end-devices in special networking environments [H04L 67/125](#) ; retrieval from the Internet [G06F 17/30861](#)-)}
- H04L 41/0253 • • • {involving a browser or web-pages for accessing management information (-graphical user interface for network management [H04L 41/22](#)-)}
- U H04L 41/0273 • • • {involving the use of web services for network management, e.g. SOAP}
- H04L 41/0286 • • • • {for search or classification or discovery of web services providing management functionalities (-network applications and protocols for service discovery [H04L 67/16](#)-)}
- H04L 41/0293 • • • • {for accessing web services by means of a binding identification of the management service or element (-aspects of naming and addressing in general [H04L 61/00](#)-)}
- U H04L 41/06 • {involving management of faults or events or alarms}
- H04L 41/0654 • • {Network fault recovery (-backup route selection [H04L 45/22](#) ; route fault recovery [H04L 45/28](#) ; techniques for recovering from a failure of a protocol instance or entity [H04L 69/40](#)-)}
- H04L 41/08 • {Configuration management of network or network elements (-proprietary application protocols for remote control of end-devices in special networking environments [H04L 67/125](#) ; automatic configuration specially adapted for wireless networks [H04W 24/02](#)-)}
- H04L 41/0803 • • {Configuration setting of network or network elements (-communication protocols supporting networked applications involving the movement of software or networked applications configuration parameters [H04L 67/34](#)-)}
- U H04L 41/0813 • • • {Changing of configuration}
- H04L 41/082 • • • • {due to updating or upgrading of network functionality, e.g. firmware (-topology update or discovery for routing purposes [H04L 45/02](#)-)}
- H04L 41/0896 • • {Bandwidth or capacity management, i.e. automatically increasing or decreasing capacities, e.g. bandwidth on demand (-reallocation of resources, renegotiation of resources, e.g. in-call [H04L 47/76](#)-)}
- H04L 41/12 • {network topology discovery or management (-topology discovery for routing [H04L 45/02](#)-)}
- H04L 41/14 • {involving network analysis or design, e.g. simulation, network model or planning (-network monitoring [H04L 43/00](#)-)}

- H04L 41/28
 - {Security in network management, e.g. restricting network management access (-network architectures or network communication protocols for network security [H04L 63/00](#) ; cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#) ; network architectures or network communication protocols for wireless network security [H04W 12/00](#) ; security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#)-)}
- U H04L 41/50
 - {Network service management, i.e. ensuring proper service fulfillment according to an agreement or contract between two parties, e.g. between an IT-provider and a customer}
- U H04L 41/5003
 - • {Managing service level agreement [SLA] or interaction between SLA and quality of service [QoS]}
- H04L 41/5006
 - • • {Defining or negotiating SLA contracts, guarantees or penalties (-SLA negotiation in wireless networks [H04W 28/24](#)-)}
- H04L 41/5009
 - • • {Determining service level performance, e.g. measuring SLA quality parameters, determining contract or guarantee violations, response time or mean time between failure [MTBF](-monitoring performance metrics on a simple network level [H04L 43/08](#)-)}
- H04L 41/5019
 - • {Ensuring SLA (-flow or congestion control at network level [H04L 12/569](#)-)}
- H04L 41/5025
 - • • {by proactively reacting to service quality change, e.g. degradation or upgrade, by reconfiguration (-mere recovery after a network faults [H04L 41/0654](#)-)}
- H04L 41/5029
 - • {Service quality level based billing, e.g. dependent on measured service level customer is charged more or less (-general charging or billing for transport of data packets [H04L 12/14](#)-)}
- H04L 41/5035
 - • {Measuring contribution of individual network components to actual service level (-alarm or event correlation [H04L 41/0631](#)-)}
- U H04L 41/5041
 - • {Service implementation}
- H04L 41/5054
 - • • {Automatic provisioning of the service triggered by the service manager, e.g. concrete service implementation by automatic configuration of network components (-for initializing configuration, i.e. provisioning of network or devices [H04L 41/0806](#)-)}
- H04L 41/5058
 - • {Service discovery by the service manager (-automatically determining the actual topology of a network [H04L 41/12](#) ; topology discovery for routing [H04L 45/02](#) ; arrangements for service discovery, e.g. service location protocol [H04L 67/16](#)-)}
- U H04L 41/5061
 - • {Customer care}
- H04L 41/5064
 - • • {Customer relationship management (-arrangements involving customer network management, i.e. giving the customer access to network management functions [H04L 41/18](#)-)}
- U H04L 41/508
 - • {based on type of value added network service under agreement}
- H04L 41/5083
 - • • {wherein the managed service relates to web hosting (-web-based network application protocols [H04L 67/02](#) ; web site content organization and management [G06F 17/3089](#) ; video-hosting [H04N 21/2743](#)-)}
- H04L 41/5087
 - • • {wherein the managed service relates to voice services (-protocols for real-time multimedia communications [H04L 65/00](#) ; management of telephonic communication services [H04M 3/22](#) ; management of VoIP services [H04M 7/0081](#)-)}
- H04L 41/509
 - • • {wherein the managed service relates to media content delivery, e.g. audio / video / TV (-protocols for real-time multimedia communications [H04L 65/00](#) ; interactive television or VoD [H04N 21/00](#)-)}

- H04L 41/5093
 - • {wherein the managed service relates to messaging or chat services (-messaging, such as e-mail in packet-switching networks [H04L 12/58](#) ; conducting a computer conference [H04L 12/1822](#) ; instant messaging [H04L 12/581](#)-)}
- H04L 41/5096
 - • {wherein the managed service relates to distributed or central networked applications (-management of file systems [G06F 17/30067](#) ; management of structured data stores [G06F 17/30286](#)-)}

H04L 43/00 **{Arrangements for monitoring or testing packet switching networks (-networking arrangements or communications protocols for supporting networked applications for tracking the activity of the application user [H04L 67/22](#) ; monitoring of computing systems [G06F 11/30](#) ; monitoring of computer activity [G06F 11/34](#)-)}**

WARNING

Groups [H04L 43/00](#) - [H04L 43/50](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows:- [H04L 43/00](#) - [H04L 43/50](#) : [H04L 12/26](#)

- U H04L 43/02
 - {involving a reduction of monitoring data}
- H04L 43/028
 - • {using filtering (-alarm or event filtering [H04L 41/0604](#)-)}
- U H04L 43/04
 - {Processing of captured monitoring data}
- H04L 43/045
 - • {for graphical visualization of monitoring data (-graphical user interfaces [H04L 41/22](#) ; display of network or application conditions affecting the network application to the application user [H04L 67/36](#) ; visual indication of the functioning of a computing machine [G06F 11/32](#)-)}
- U H04L 43/06
 - {Report generation}
- H04L 43/065
 - • {for device related reporting (-reporting of sensed information of home appliances [H04L 12/2803](#)-)}
- U H04L 43/08
 - {Monitoring based on specific metrics}
- U H04L 43/0805
 - • {Availability}
- H04L 43/0817
 - • • {functioning (-networked applications tracking the activity of users [H04L 67/22](#) ; monitoring appliance functionality of home appliances [H04L 12/2803](#)-)}
- H04L 43/0823
 - • {Errors (-management of events, faults or alarms in networks or network elements [H04L 41/06](#)-)}
- H04L 43/14
 - {using software, i.e. software packages (-network security related monitoring [H04L 63/1408](#)-)}

H04L 45/00 **{Routing or path finding of packets in data switching networks (-specially adapted for wireless routing [H04W 40/00](#)-)}**

WARNING

Groups [H04L 45/00](#) - [H04L 45/74](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for this groups is as follows: - [H04L 45/00](#) - [H04L 45/74](#) : [H04L 12/56](#)

- H04L 45/02
 - {Topology update or discovery (-topology discovery for network management [H04L 41/12](#) ; LAN interconnection over a backbone network [H04L 12/4604](#) ; node-based peer discovery mechanisms in peer-to-peer networks [H04L 67/1061](#)-)}
- U H04L 45/12
 - {Shortest path evaluation}
- H04L 45/123
 - • {Evaluation of link metrics (-techniques for monitoring network metrics [H04L 43/08](#)-)}
- H04L 45/16
 - {Multipoint routing (-arrangements for multicast or broadcast in data networks [H04L 12/18](#)-)}

- H04L 45/28
 - U H04L 45/30
 - H04L 45/306
 - H04L 45/32
 - U H04L 45/56
 - H04L 45/563
 - H04L 45/62
 - H04L 45/64
 - H04L 45/70
 - H04L 47/00**
- {Route fault recovery (-network fault recovery [H04L 41/0654](#)-)}
 - {Special provisions for routing multiclass traffic}
 - • {Route determination based on the nature of the carried application (-communications protocols whereby the routing of a service request to a node providing the service depends on the content or context of the request, e.g. profile, connectivity status [H04L 67/327](#)-)}
 - {Flooding (-denial of service attacks [H04L 63/1458](#)-)}
 - {Routing software}
 - • {Software download or update (-software deployment in general [G06F 8/60](#)-)}
 - {Wavelength based (-optical switching [H04Q 11/0062](#)-)}
 - {using an overlay routing layer (-Peer-to-Peer networks [H04L 67/104](#)-)}
 - {Routing based on monitoring results (-techniques for monitoring network metrics [H04L 43/08](#)-)}
- {Traffic regulation in packet switching networks (-arrangements for detecting or correcting errors in the information received [H04L 1/00](#)-)}**
- NOTE
- This group covers:1. Flow control or congestion control
2. Queue scheduling 3. Admission control or resource allocation
- WARNING
- Groups [H04L 47/00](#) -[H04L 47/829](#) do not correspond to former or current IPC groups.
Concordance CPC : IPC for this groups is as follows:
- [H04L 47/00](#) - [H04L 47/829](#) : [H04L 12/56](#)
- U H04L 47/10
 - U H04L 47/12
 - H04L 47/125
 - H04L 47/15
 - H04L 47/19
 - H04L 47/24
 - H04L 47/2416
 - H04L 47/2425
 - U H04L 47/50
 - U H04L 47/62
 - U H04L 47/622
 - H04L 47/623
 - H04L 47/70
- {Flow control or congestion control}
 - • {Congestion avoidance or recovery}
 - • • {Load balancing, e.g. traffic engineering (-load balancing among servers [H04L 67/1002](#)-)}
 - • {in relation to multipoint traffic (-arrangements for broadcast or multicast in data networks [H04L 12/18](#)-)}
 - • {at layers above network layer (-general aspects of TCP [H04L 69/16](#) ; network arrangements for networked applications for scheduling or organising the servicing of application requests [H04L 67/32](#)-)}
 - • {depending on the type of traffic, e.g. priority or quality of service [QoS] (-Network arrangements for networked applications for scheduling or organising the servicing of application requests whereby quality of service or priority requirements are taken into account [H04L 67/322](#)-)}
 - • • {Real time traffic (-arrangements for real-time multimedia communications [H04L 65/00](#)-)}
 - • • {Service specification, e.g. SLA (-general aspects of SLA management [H04L 12/2417](#)-)}
 - {Queue scheduling}
 - • {General aspects}
 - • • {Queue service order}
 - • • • {weighted service order (-[H04L 47/52](#) , [H04L 47/54](#) , [H04L 47/56](#) take precedence-)}
 - {Admission control or resource allocation (-medium access in wavelength-division multiplex systems [H04J 14/0227](#)-)}

H04L 49/00 {Packet switching elements (-selecting arrangements for multiplex arrangements using optical switching [H04Q 11/0001](#)-)}

WARNING

Groups [H04L 49/00](#) - [H04L 49/9057](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 49/00](#) - [H04L 49/9057](#) : [H04L 12/56](#)

U H04L 51/00 {Arrangements for user-to-user messaging in packet-switching networks, e.g. e-mail or instant messages}

WARNING

Groups [H04L 51/00](#) - [H04L 51/38](#) do not correspond to former or current IPC groups.

Concordance CPC : IPC for these groups is as follows:

- [H04L 51/00](#) - [H04L 51/38](#) : [H04L 12/58](#)

- H04L 51/04 • {Real-time or near real-time messaging, e.g. instant messaging [IM](-network arrangements or protocols for real-time communications [H04L 65/00](#)-)}
- H04L 51/06 • {Message adaptation based on network or terminal capabilities (-networked arrangements for intermediate processing of conversion or adaptation of application content or format [H04L 67/2823](#)-)}
- H04L 51/10 • {Messages including multimedia information (-network arrangements or protocols for real-time communication [H04L 65/00](#) ; voice messaging in telephonic communication using automatic or semi-automatic exchanges with non-audio components [H04M 3/5307](#)-)}
- H04L 51/18 • {Messages including commands or codes to be executed either at an intermediate node or at the recipient to perform message-related actions (-computer aided management of electronic mail [G06Q 10/10](#) ; networked applications for remote control or remote monitoring of the application [H04L 67/025](#) ; networked applications involving the movement of software or configuration parameters [H04L 67/34](#)-)}
- H04L 51/20 • {Messaging using geographical location information (-protocols for adapting network applications to user terminal location [H04L 67/18](#); services specially adapted for wireless communication networks making use of the location of users or terminals [H04W 4/02](#))}
- H04L 51/22 • {Mailbox-related details (-computer aided management of electronic mail [G06Q 10/10](#)-)}
- H04L 51/26 • {Prioritized messaging (-networked applications for intermediate processing whereby quality of service or priority requirements are taken into account [H04L 67/322](#)-)}
- H04L 51/28 • {Details regarding addressing issues (-arrangements and protocols for addressing and naming [H04L 61/00](#)-)}
- H04L 51/38 • {in combination with wireless systems (-mobile application service signalling using messaging, e.g. SMS, [H04W 4/12](#)-)}

U H04L 61/00 {Network arrangements or network protocols for addressing or naming}

NOTE

This group does not cover:

Aspects relating to switching or routing which are classified in [H04L 12/56](#)
 .Aspects relating to configuration management of data networks or network elements in general which are classified in [H04L 12/2424](#).Aspects of addressing in telephony which are classified in [H04M 7/00](#) .Aspects of

addressing within devices, e.g. process or memory, which are classified in [G06F 13/42](#) or [G06F 12/00](#).

WARNING

Groups [H04L 61/00](#) - [H04L 61/6095](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows:

- [H04L 61/00](#) - [H04L 61/6095](#) :
[H04L 61/6095](#) - [H04L 61/6095](#) : [H04L 29/12](#)

- H04L 61/15
 - {Directories; Name-to-address mapping (-telephone directories in user terminals [H04M 1/27-](#))}
- U H04L 61/1505
 - {involving standard directories or standard directory access protocols}
- H04L 61/1529
 - • {using voice over internet protocol [VoIP] directories, e.g. session initiation protocol [SIP] registrar or H.323 gatekeeper (-SIP for real-time communications [H04L 65/1006-](#))}
- H04L 61/1535
 - {using an address exchange platform which sets up a session between two nodes, e.g. "rendezvous" server (-address exchange for voice over internet protocol [VoIP] [H04L 61/1529-](#))}
- H04L 61/1541
 - {for service discovery (-network applications for service discovery [H04L 67/16](#) ; discovery of network devices in wireless communication networks [H04W 8/005-](#))}
- H04L 61/1552
 - {Mechanisms for table lookup, e.g. between directories; Directory data structures; Synchronization of directories (-information retrieval in file systems [G06F 17/30067](#) ; information retrieval in structured data stores [G06F 17/30286-](#))}
- H04L 61/1564
 - {Directories for electronic mail or instant messaging (-message switching systems per se [H04L 12/58-](#))}
- H04L 61/1594
 - {Address books, i.e. directories containing contact information about correspondents, e.g. on a user device (-directories providing the best way to reach a correspondent [H04L 61/1547-](#))}
- H04L 61/20
 - {Address allocation (-configuration management of network or network elements [H04L 12/2424-](#))}
- U H04L 61/2007
 - {internet protocol [IP] addresses}
- H04L 61/203
 - • {using an authentication, authorization and accounting [AAA] protocol, e.g. remote authentication dial-in user service [RADIUS] or diameter (-supporting authentication of entities communicating through a packet data network [H04L 63/08](#) ; cryptographic mechanisms or cryptographic arrangements for entity authentication [H04L 9/32-](#))}
- H04L 61/2038
 - {for local use, e.g. on local area networks [LAN] or on universal serial bus [USB] networks (-bus addresses inside a computer [G06F 13/42-](#))}
- H04L 61/2069
 - {for group-, multicast- and broadcast-communication (-broadcast or conference [H04L 12/18-](#))}
- H04L 61/2084
 - {involving portability aspects (-network addressing or numbering for mobility support [H04W 8/26](#) ; wireless network layer protocols, e.g. mobile IP [H04W 80/04-](#))}
- H04L 61/25
 - {mapping of addresses of the same type; address translation (-arrangements for maintenance or administration involving network analysis [H04L 12/2414-](#))}
- U H04L 61/2503
 - {Internet protocol [IP] address translation}
- U H04L 61/256
 - • {Network address translation [NAT] traversal}
- H04L 61/2564
 - • • {for a higher-layer protocol, e.g. for session initiation protocol [SIP](-SIP for real-time communications [H04L 65/1006-](#))}

- H04L 61/2571 . . . {for identification, e.g. for authentication or billing (-charging arrangements [H04L 12/14-](#))}
- H04L 61/2592 . . . {involving tunnelling or encapsulation (-protecting information from access by third parties [H04L 63/04-](#))}
- H04L 61/30 . {Arrangements for managing names, e.g. use of aliases or nicknames (-retrieval from the Internet by using information identifiers, e.g. uniform resource locators [URLs] [G06F 17/30876](#) ; name-to-address mapping [H04L 61/15-](#))}
- U H04L 61/3015 . . {Name registration, generation or assignment}
- H04L 61/302 . . . {Administrative registration, e.g. for domain names at internet corporation for assigned names and numbers [ICANN](-data processing specially adapted for administration or management [G06Q 10/00-](#))}
- U H04L 61/303 . . {Name structure}
- H04L 61/304 . . . {containing protocol addresses or telephone numbers (-address type involved [H04L 61/6018-](#))}
- U H04L 61/306 . . {Name types}
- H04L 61/307 . . . {E-mail addresses (-message switching systems [H04L 12/58-](#))}
- U H04L 61/60 . {Details}
- H04L 61/6009 . . {Caching of addresses (-caching data temporarily at an intermediate stage in general [H04L 67/2842-](#))}
- U H04L 61/6018 . . {Address types}
- H04L 61/6027 . . . {Control area network [CAN] identifiers (-vehicle networks [B60R 16/0315-](#))}
- H04L 61/6063 . . . {Transport layer addresses, e.g. aspects of transmission control protocol [TCP] or user datagram protocol [UDP] ports (-TCP/IP or UDP protocol aspects or techniques [H04L 69/16-](#))}
- H04L 61/6081 . . {involving addresses for wireless personal area networks and wireless sensor networks, e.g. Zigbee addresses (-network addressing or numbering for mobility support [H04W 8/26-](#))}
- H04L 61/6086 . . {involving dual-stack hosts, e.g. in internet protocol version 4 [IPv4]/ internet protocol version 6 [IPv6] networks (-implementation details of transmission control protocol [TCP]/internet protocol [IP] or user datagram protocol [UDP]/ internet protocol [IP] stack architecture [H04L 69/161-](#))}
- H04L 63/00** **{Network architectures or network communication protocols for network security (-cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#) ; network architectures or network communication protocols for wireless network security [H04W 12/00](#) ; security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00-](#))}**
- WARNING
- [N: WARNING Groups [H04L 63/00](#) - [H04L 63/20](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 63/00](#) - [H04L 63/20](#) : [H04L 29/06](#)
- U H04L 63/02 . . {for separating internal from external traffic, e.g. firewalls}
- H04L 63/0227 . . {Filtering policies (-mail message filtering [H04L 12/585-](#))}
- U H04L 63/04 . . {for providing a confidential data exchange among entities communicating through data packet networks}
- H04L 63/0407 . . {wherein the identity of one or more communicating identities is hidden (-cryptographic mechanisms or cryptographic arrangements for anonymous credentials or for identity based cryptographic systems [H04L 9/00-](#))}

- U H04L 63/0428 • • {wherein the data content is protected e.g. by encrypting or encapsulating the payload}
- H04L 63/0435 • • • {wherein the sending and receiving network entities apply symmetric encryption, i.e. same key used for encryption and decryption (-cryptographic mechanisms or cryptographic arrangements for symmetric key encryption [H04L 9/06-](#))}
- H04L 63/0442 • • • {wherein the sending and receiving network entities apply asymmetric encryption, i.e. different keys for encryption and decryption (-cryptographic mechanisms or cryptographic arrangements for public-key encryption [H04L 9/30-](#))}
- H04L 63/045 • • • {wherein the sending and receiving network entities apply hybrid encryption, i.e. combination of symmetric and asymmetric encryption (cryptographic mechanisms or cryptographic arrangements using a plurality of keys or algorithms **H0L9/14**)}
- H04L 63/0457 • • • {wherein the sending and receiving network entities apply dynamic encryption, e.g. stream encryption (-cryptographic mechanisms or cryptographic arrangements for stream encryption [H04L 9/065-](#))}
- H04L 63/0478 • • • {applying multiple layers of encryption, e.g. nested tunnels or encrypting the content with a first key and then with at least a second key (-cryptographic mechanisms or cryptographic arrangements using a plurality of keys or algorithms [H04L 9/14-](#))}
- H04L 63/06 • • {for supporting key management in a packet data network (-cryptographic mechanisms or cryptographic arrangements for key management [H04L 9/08-](#))}
- H04L 63/061 • • {for key exchange, e.g. in peer-to-peer networks (-cryptographic mechanisms or cryptographic arrangements for key agreement [H04L 9/0838-](#))}
- H04L 63/062 • • {for key distribution, e.g. centrally by trusted party (-cryptographic mechanisms or cryptographic arrangements for key distribution involving a central third party [H04L 9/0819-](#))}
- H04L 63/065 • • {for group communications (-cryptographic mechanisms or cryptographic arrangements for key management involving conference or group key [H04L 9/0833-](#))}
- H04L 63/067 • • {using one-time keys (-cryptographic mechanisms or cryptographic arrangements for generation of one-time passwords [H04L 9/0863-](#))}
- H04L 63/068 • • {using time-dependent keys, e.g. periodically changing keys (-cryptographic mechanisms or cryptographic arrangements for controlling usage of secret information [H04L 9/088-](#))}
- H04L 63/08 • • {for supporting authentication of entities communicating through a packet data network (-cryptographic mechanisms or cryptographic arrangements for entity authentication [H04L 9/32-](#))}
- H04L 63/0807 • • {using tickets, e.g. Kerberos (-cryptographic mechanisms or cryptographic arrangements for entity authentication using tickets or tokens [H04L 9/3213-](#))}
- H04L 63/0823 • • {using certificates (-cryptographic mechanisms or cryptographic arrangements for entity authentication involving certificates [H04L 9/3263-](#))}
- H04L 63/083 • • {using passwords (-cryptographic mechanisms or cryptographic arrangements for entity authentication using a predetermined code [H04L 9/3226-](#))}
- H04L 63/0853 • • {using an additional device, e.g. smartcard, SIM or a different communication terminal (-cryptographic mechanisms or cryptographic arrangements for entity authentication involving additional secure or trusted devices [H04L 9/3234-](#))}
- H04L 63/0861 • • {using biometrical features, e.g. fingerprint, retina-scan (-cryptographic mechanisms or cryptographic arrangements for entity authentication using biological data [H04L 9/3231-](#))}

- H04L 63/0869 • {for achieving mutual authentication}(-cryptographic mechanisms or cryptographic arrangements for mutual authentication [H04L 9/3273-](#))}
- H04L 63/10 • {for controlling access to network resources}(-restricting network management access [H04L 12/2461-](#))}
- H04L 63/12 • {Applying verification of the received information}(-cryptographic mechanisms or cryptographic arrangements for data integrity or data verification [H04L 9/32-](#))}
- U H04L 63/14 • {for detecting or protecting against malicious traffic}
- H04L 63/1408 • {by monitoring network traffic}(-monitoring network traffic per se [H04L 12/2602-](#))}
- H04L 63/1441 • {Countermeasures against malicious traffic}(-countermeasures against attacks on cryptographic mechanisms [H04L 9/002-](#))}
- H04L 63/1483 • • {service impersonation, e.g. phishing, pharming or web spoofing}(-detection of rogue wireless access points [H04W 12/12-](#))}
- H04L 63/18 • {using different networks or paths for security, e.g. using out of band channels}(-cryptographic mechanisms or cryptographic arrangements for key distribution involving distinctive intermediate devices or communication paths [H04L 9/0827](#) ; cryptographic mechanisms or cryptographic arrangements for authentication using a plurality of channels [H04L 9/3215-](#))}
- H04L 63/20 • {for managing network security; network security policies in general}(-filtering policies [H04L 63/0227-](#))}
- H04L 63/205 • {involving negotiation or determination of the one or more network security mechanisms to be used, e.g. by negotiation between the client and the server or between peers or by selection according to the capabilities of the entities involved}(-negotiation of communication capabilities [H04L 69/24-](#))}
- H04L 63/30 • {for supporting lawful interception, monitoring or retaining of communications or communication related information}(-circuit switched telephony call monitoring [H04M 3/2281-](#))}
- H04L 63/304 • {intercepting circuit switched data communications}(-lawful interception of wireless network communications [H04W 12/02-](#))}
- H04L 65/00** **{Network arrangements or protocols for real-time communications}(-computer conference [H04L 12/1813](#) ; real time or near real time messaging in message switching systems e.g. instant messaging [H04L 12/581](#) ; television systems [H04N 7/00](#) ; selective video distribution [H04N 21/00](#); interconnection arrangements between switching centres for working between exchanges having different types of switching equipment where the types of switching equipment comprise PSTN/ISDN equipment and equipment of networks other than PSTN/ISDN [H04M 7/1205](#) ; systems providing special services to telephonic subscribers [H04M 3/42](#) ; network applications in general [H04L 67/00-](#))}**

NOTEWARNING

Groups [H04L 65/00](#) - [H04L 65/80](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 65/00](#) - [H04L 65/80](#) : [H04L 29/06](#)] Notes 1. This group covers: - only communications which fulfill the following two conditions: i. they are based on packet data; ii. there is real-time or pseudo-real-time temporal association between source and destination, or source and network, or destination and network; - provided that the above two conditions are met, this group covers arrangements relating to a. the transmission of the multimedia data itself, b. the user-to-user, user-to-network, inter-network or intra-network signalling supporting: b1. the establishment of a session for the subsequent transmission of the multimedia data, or b2. the maintenance of the session or b3. the application services available to the user during the session (unless explicitly excluded in certain

cases). 2. This group does not cover: - non-real-time multimedia file transfer, which is covered by [H04L 67/06](#) - multimedia store or forward messaging as in e-mail, MMS or the like, which is covered by [H04L 12/58](#) - analogue video streaming, as in analogue television systems, which is covered by [H04N 7/00](#) - selective distribution of MPEG elementary or transport streams, containing video and additional data, which is covered by [H04N 21/00](#) - bit streaming, i.e. not packet-based, as in ISDN which is covered by [H04Q 11/0428](#) - instant messaging, which is covered by [H04L 12/581](#) - any other multimodal data communications which do not meet the conditions of being packet-based and real-time or pseudo-real-time - flow control in packet switching networks, which is covered by [H04L 12/569](#). 3. In this group the following terms or expressions are used with the meaning indicated: - H.323 means International Telecommunication Union Recommendation no. 323, series H, entitled "Packet-based multimedia communications systems" - IP means Internet Protocol - IMS means IP Multimedia Subsystem - ISDN means Integrated Services Digital Network - MGC means Media Gateway Control/Controller - MGCP means Media Gateway Control Protocol - MMS means Multimedia Messaging Service - PBX means Private Branch Exchange - PSTN means Public Switched Telephone Network - QoS means Quality of Service - RTP means Real Time Protocol - RTCP means Real Time Control Protocol - RTSP means Real Time Streaming Protocol. - SIP means Session Initiation Protocol - SPAM means unsolicited electronic mail - SPIT means SPAM Prevention in IP Telephony]

- H04L 65/10
 - {Signalling, control or architecture} (-selecting or control in telephonic networks [H04Q 3/00](#) ; data network management [H04L 12/24](#) ; data network testing or monitoring [H04L 12/26](#) ; admission control or resource reservation in packet switching networks [H04L 12/5695](#) ; control signalling related to video distribution [H04N 21/63](#)-)}
- U H04L 65/1013
 - • {Network architectures, gateways, control or user entities}
- H04L 65/1016
 - • • {IMS (wireless communication networks [H04W](#))}
- H04L 65/102
 - • • {Gateways} (-arrangements for connecting between networks having differing types of switching systems, e.g. gateways [H04L 12/66](#)-)}
- H04L 65/1043
 - • • {MGC, MGCP or Megaco} (-decomposed PSTN/ISDN-IP gateways [H04M 7/1255](#)-)}
- H04L 65/1053
 - • • {Arrangements providing PBX functionality, e.g. IP PBX} (-circuit switched PBXs [H04M 3/42314](#) ; PBX networks [H04M 7/009](#)-)}
- H04L 65/1059
 - • • {End-user terminal functionality} (-substation equipment for use by subscribers [H04M 1/00](#) ; terminal profiles [H04L 67/303](#) ; terminal emulation [H04L 67/08](#) ; adaptation for terminals with limited resources or for terminal portability [H04L 67/04](#) ; management of video client characteristics [H04N 21/258](#) , [H04N 21/4516](#)-)}
- H04L 65/1063
 - • • {Application servers} (-systems providing special services to telephonic subscribers [H04M 3/42](#)-)}
- H04L 65/1066
 - • {Session control} (-conducting a computer conference e.g. admission, detection, selection or grouping of participants, correlating users to one or more conference session or prioritising transmission [H04L 12/1822](#) ; admission control/resource reservation in packet switching networks [H04L 12/5695](#)-)}
- H04L 65/1069
 - • • {Setup} (-computer conference organisation arrangements, e.g. handling schedules, setting up parameters needed by nodes to attend a conference, booking network resources or notifying involved parties [H04L 12/1818](#) ; session management in network applications [H04L 67/14](#) ; arrangements for peer-to-peer networking in network applications [H04L 67/104](#) ; negotiation of communication capabilities [H04L 69/24](#) ; admission control or resource reservation in packet switching networks [H04L 12/5695](#)-)}

- H04L 65/1073 . . . {Registration (-arrangements for addressing or naming in data networks [H04L 61/00-](#))}
- H04L 65/1076 . . . {Screening (-arrangements for screening incoming telephone calls [H04M 3/436](#) ; arrangements for network security [H04L 63/00-](#))}
- H04L 65/1079 {of unsolicited session attempts, e.g. SPIT (-message switching systems, e.g. electronic mail systems, with filtering and selective blocking capabilities [H04L 12/585-](#))}
- H04L 65/1083 . . . {In-session procedures (-computer conferences, network arrangements for conference optimisation or adaptation [H04L 12/1827](#) ; reactions to resource unavailability in packet switching networks [H04L 47/74](#) ; reallocation or renegotiation of resources in packet switching networks [H04L 47/76-](#))}
- H04L 65/1096 . . . {Features, e.g. call-forwarding or call hold (-systems providing special services to telephonic subscribers [H04M 3/42-](#))}
- H04L 65/40 . {Services or applications (-systems providing special services to telephonic subscribers [H04M 3/42](#) ; contact center services [H04M 3/51](#) ; information services comprising voice [H04M 3/487](#) ; network service management for ensuring proper service fulfilment [H04L 12/2464-](#))}
- H04L 65/4007 . . {Services involving a main real-time session and one or more additional parallel sessions (-real time messaging, e.g. instant messaging, interacting with other applications or services [H04L 12/582](#) ; multichannel or multilink protocols [H04L 69/14](#) ; services and arrangements where telephone services are combined with data services [H04M 7/0024-](#))}
- H04L 65/4015 . . . {where at least one of the additional parallel sessions is real time or time sensitive, e.g. white board sharing, collaboration or spawning of a subconference (-telewriting, virtual reality or network gaming [H04L 67/38-](#))}
- H04L 65/4023 . . . {where none of the additional parallel sessions is real time or time sensitive, e.g. downloading a file in a parallel FTP session, initiating an email or combinational services (-file transfer [H04L 67/06](#) ; WEB based applications [H04L 67/02](#) ; message switching systems [H04L 12/58](#) ; instant messaging [H04L 12/581-](#))}
- H04L 65/403 . . {Arrangements for multiparty communication, e.g. conference (-television conferencing systems [H04N 7/15](#) ; telephonic conference systems [H04M 3/56](#) ; data switching systems for computer conference [H04L 12/1813-](#))}
- H04L 65/4038 . . . {with central floor control (-data switching systems for conducting a computer conference, e.g. admission, detection, selection or grouping of participants [H04L 12/1822-](#))}
- H04L 65/4061 . . {"Push-to-X" services (-push-to-talk services in wireless networks [H04W 4/10](#) ; connection management, e.g. connection set-up, manipulation or release for push-to-talk or push-on-call services in wireless communication networks [H04W 76/005-](#))}
- U H04L 65/4069 . . {Services related to one way streaming}
- H04L 65/4076 . . . {Multicast or broadcast (-data switching systems for broadcast or conference [H04L 12/18](#) ; analog television systems in general [H04N 7/00](#) ; creating video channels for a dedicated end-user group [H04N 21/2668](#) ; arrangements for broadcast or distribution combined with broadcast [H04H 20/00](#) ; arrangements for broadcast applications with a direct linkage of broadcast information [H04H 60/00](#) ; arrangements for push based network services [H04L 67/26-](#))}
- H04L 65/4084 . . . {Content on demand (-analog television systems using two way working [H04N 7/173](#) ; end-user applications for requesting content, additional data or services [H04N 21/472-](#))}

- H04L 65/4092
 - • {Control of source by destination, e.g. user controlling streaming rate of server (-explicit feedback from the destination to the source to modify data rate for flow control or congestion control in packet switching networks, e.g. choke packet [H04L 47/26](#) ; end-to-end flow control in packet switching networks [H04L 47/18](#) ; analog television systems using two way working [H04N 7/173](#) ; control signals to video servers issued by video clients [H04N 21/6377](#)-)}
- U H04L 65/60
 - {Media handling, encoding, streaming or conversion}
- H04L 65/601
 - • {Media manipulation, adaptation or conversion (-transmission of television signals using pulse code modulation [H04N 7/24](#) ; adaptation for terminals or networks with limited resources or for terminal portability [H04L 67/04](#) ; involving intermediate processing or storage in the network [H04L 67/28](#) ; network application being adapted for the location of the user terminal [H04L 67/18](#) ; computer conferences, network arrangements for conference optimisation or adaptation [H04L 12/1827](#) ; message switching systems, e.g. electronic mail systems, with message adaptation based on network or terminal capabilities [H04L 12/5825](#) ; flow control or congestion control in packet switching networks [H04L 12/569](#)-)}
- H04L 65/602
 - • {at the source (-reformatting of video signals in video distribution servers [H04N 21/2343](#) ; reformatting of additional data in video distribution servers [H04N 21/2355](#)-)}
- H04L 65/604
 - • {at the destination (-reformatting of video signals in video clients [H04N 21/4402](#) ; reformatting of additional data in video clients [H04N 21/4355](#)-)}
- H04L 65/607
 - • {Stream encoding details (-interfacing the downstream path of a video distribution network [H04N 21/238](#) , [H04N 21/438](#) ; controlling the complexity of a video stream [H04N 21/2662](#) , [H04N 21/4621](#) , [H04N 21/64792](#) ; protocols for data compression [H04L 69/04](#) ; header parsing or analysis [H04L 69/22](#)-)}
- H04L 65/80
 - {QoS aspects (-traffic-type related flow control in packet switching networks, e.g. priorities or QoS [H04L 47/24](#) ; admission control/resource reservation in packet switching networks based on QoS or priority awareness [H04L 47/805](#) , monitoring arrangements, testing arrangements, with monitoring of QoS metrics [H04L 12/2634](#) ; arrangements for scheduling or organising the servicing of requests whereby quality of service or priority requirements are taken into account [H04L 67/322](#) ; network service management, ensuring proper service fulfillment according to an agreement or contract between two parties, e.g. between an IT-provider and a customer [H04L 12/2464](#) ; adaptation for terminals or networks with limited resources, or for terminal portability [H04L 67/04](#) ; reducing the amount or size of exchanged application data [H04L 67/2828](#) ; network application adapted for the location of the user terminal [H04L 67/18](#) ; monitoring of the downstream path of a video distribution network [H04N 21/2402](#) , [H04N 21/44209](#)-)}

H04L 67/00 {Network-specific arrangements or communication protocols supporting networked applications (-message switching systems [H04L 51/00](#) ; network management protocols [H04L 41/00](#) ; routing or path finding of packets in data switching networks [H04L 45/00](#) ; protocols for real-time multimedia communication [H04L 65/00](#) ; information retrieval [G06F 17/30](#) ; services or facilities specially adapted for wireless communication networks [H04W 4/00](#) ; network structures or processes for video distribution between server and client or between remote clients [H04N 21/00](#) ; exchange systems providing special services or facilities to subscribers involving telephonic communications [H04M 3/42](#) ; distributed information systems [G06F 9/00](#) , [G06F 17/00](#) ; lower layer network functionalities which support application layer provisions [H04L 12/00](#)-)}

NOTE

This group covers: (1) Networking arrangements or communication protocols to support networked applications which occur at the abstract network layers 5 to 7 of the OSI layer model. The higher layers constitute the interface between the network and the computer applications that use the network to communicate.

(2) Network-specific aspects of client-server applications as well as of networking arrangements supporting networked/distributed applications, e.g. data transport, scheduling. This group also covers specific networked application layer protocols, e.g. FTP, WAP, HTTP. This group does not cover:

(1) Distributed applications which are network-agnostic, i.e. distributed information systems for which the network functions are transparent. These field are covered, e.g. by [G06F 9/00](#)

, [G06F 17/00](#) . Data switching network provisions in general and the lower layer network functionalities which support application layer provisions are covered by [H04L 12/00](#)

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WARNING

Groups [H04L 67/00](#) - [H04L 67/42](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 67/00](#) - [H04L 67/36](#) : [H04L 29/08](#) - [H04L 67/38](#) - [H04L 67/42](#) : [H04L 29/06](#)]

- H04L 67/02 • {involving the use of web-based technology, e.g. hyper text transfer protocol [HTTP](-information retrieval from the Internet [G06F 17/30861](#)-)}
- H04L 67/025 • {for remote control or remote monitoring of the application (-management of end-device applications over a special purpose or proprietor network [H04L 67/125](#) ; network management using Internet technology [H04L 12/2408](#) ; network monitoring [H04L 12/2602](#)-)}
- H04L 67/08 • {adapted for terminal emulation, e.g. telnet (-protocols for telewriting or protocols for networked simulations, virtual reality or games [H04L 67/38](#) ; emulation or software simulation [G06F 9/455](#)-)}
- H04L 67/10 • {in which an application is distributed across nodes in the network(-multiprogramming arrangements [G06F 9/46](#)-)}
- U H04L 67/1002 • {for accessing one among a plurality of replicated servers, e.g. load balancing (arrangements or protocols for peer-to-peer networking [H04L 67/104](#); protocols for client-server architectures [H04L 67/42](#); allocation of processing resources to service requests in a distributed system [G06F 9/5027](#); rebalancing the processing load in a distributed system [G06F 9/5083](#); wireless network traffic load balancing [H04W 28/08](#); network load balancing, traffic engineering [H04L 47/125](#); video servers using load balancing strategies [H04N 21/23103](#); error detection or correction of the data by redundancy in hardware [G06F 11/16](#))}
- U H04L 67/1004 • • {Server selection in load balancing}

- H04L 67/1006
 - • • {with static server selection, e.g. the same server being selected for a specific client (-allocation of processing resources considering data affinity [G06F 9/5033](#)-)}
- H04L 67/1008
 - • • {based on parameters of servers, e.g. available memory or workload (-allocation of processing resources to a machine considering the load [G06F 9/505](#)-)}
- H04L 67/1029
 - • • {using data related to the state of servers by a load balancer (-server selection based on server parameters [H04L 67/1008](#) ; performance measurement for load balancing [G06F 11/3433](#) ; information retrieval in structured data stores [G06F 17/30286](#)-)}
- H04L 67/1034
 - • • {Reaction to server failures by a load balancer (-techniques for recovering from a failure of a protocol instance or entity [H04L 69/40](#) ; departure or maintenance mechanisms in Peer-to-Peer networks [H04L 67/1048](#) ; intermediate processing providing operational support to end devices by emulation or by off-loading in the network [H04L 67/2861](#) ; network fault restoration [H04L 12/2422](#) ; error detection or correction of the data by redundancy in hardware [G06F 11/16](#) ; failing over workload from one server to another one [G06F 11/202](#)-)}
- H04L 67/1036
 - • • {Load balancing of requests to servers for services different from user content provisioning, e.g. load balancing to DNS servers or firewalls (-internet service provider selection [H04L 12/5691](#)-)}
- H04L 67/104
 - • {for peer-to-peer [P2P] networking; Functionalities or architectural details of P2P networks (-file transfer, upload, download [H04L 67/06](#) ; accessing replicated servers [H04L 67/1002](#) ; presence management [H04L 67/24](#) ; scheduling provisions [H04L 67/32](#) ; real-time communications [H04L 65/00](#) ; information retrieval using distributed database systems [G06F 17/30283](#) ; small scale hierarchical wireless network topologies [H04W 84/10](#) ; wireless interfaces between terminal devices [H04W 92/18](#) ; P2P connections between video clients [H04N 21/632](#) ; P2P connections between video game machines [A63F 13/34](#)-)}
- U H04L 67/1042
 - • • {involving topology management mechanisms}
- H04L 67/1044
 - • • • {Group management mechanisms (-user group management in wireless communication networks [H04W 4/08](#) ; management of multicast group membership [H04L 12/185](#) ; reconfiguring of node membership in a computing system to eliminate errors [G06F 11/1425](#)-)}
- H04L 67/1048
 - • • • • {Departure or maintenance mechanisms (-methods for recovering from a failure of a protocol instance or entity [H04L 69/40](#) ; intermediate processing providing operational support to end devices by emulation or by off-loading in the network [H04L 67/2861](#) ; reactions to server failures by a load balancer [H04L 67/1034](#) ; error detection or correction of the data by redundancy in operation [G06F 11/14](#)-)}
- U H04L 67/1053
 - • • • • {with pre-configuration of logical or physical connections with a determined number of other peers}
- H04L 67/1055
 - • • • • • {involving connection limits (-involving dynamic management of active down- or uploading connections [H04L 67/1085](#)-)}
- H04L 67/1061
 - • • {involving node-based peer discovery mechanisms (-access to replicated servers [H04L 67/1002](#) ; service discovery [H04L 67/16](#) ; topology discovery for routing [H04L 45/02](#) ; information retrieval in distributed file systems [G06F 17/30067](#) ; information retrieval in structured data stores, indexing, querying [G06F 17/30286](#)-)}
- H04L 67/1065
 - • • • • {Discovery involving distributed pre-established resource-based relationships among peers, e.g. based on distributed hash tables [DHT] (-pre-configuration of logical or physical connections [H04L 67/1053](#)-)}

- H04L 67/1074
 - • {for supporting resource transmission mechanisms (-routing over an overlay routing layer [H04L 45/64](#) ; file transfer [H04L 67/06](#)-)}
- H04L 67/1095
 - {for supporting replication or mirroring of data, e.g. scheduling or transport for data synchronisation between network nodes or user terminals or syncML (-synchronisation in information retrieval in file systems [G06F 17/30067](#) ; synchronisation in structured data stores [G06F 17/30575](#) ; mass storage redundancy by mirroring for error detection or correction of data [G06F 11/2056](#)-)}
- H04L 67/1097
 - {for distributed storage of data in a network, e.g. network file system [NFS], transport mechanisms for storage area networks [SAN] or network attached storage [NAS](-temporary storage of data at an intermediate stage [H04L 67/2842](#) ; dedicated interfaces to storage systems [G06F 3/0601](#)-)}
- H04L 67/12
 - {adapted for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car or remote metering networks (-digital computing or data processing equipment or methods, specially adapted for specific applications in healthcare or life sciences [G06F 19/00](#) ; home automation networks [H04L 12/2803](#) ; total factory control characterised by the network communication [G05B 19/4185](#) ; games involving transmission systems [A63F 13/30](#)-)}
- H04L 67/125
 - {involving the control of end-device applications over a network (-end-device control or monitoring using web-based technology [H04L 67/025](#) ; network management of network elements [H04L 12/24](#)-)}
- H04L 67/14
 - {for session management (-session control for real-time communications [H04L 65/1066](#) ; session initiation protocol [H04L 65/1006](#) ; negotiation of communication capabilities [H04L 69/24](#) ; computer conference arrangements [H04L 12/1813](#) ; connection management in wireless networks [H04W 76/00](#) ; session management for telephonic communication and services [H04M 7/00](#) ; intertask communications in multiprogramming arrangements [G06F 9/54](#)-)}
- H04L 67/141
 - {provided for setup of an application session (-session setup for real-time communications [H04L 65/1069](#)-)}
- H04L 67/146
 - {Markers provided for unambiguous identification of a particular session, e.g. session identifier, session cookie or URL-encoding (-IP multimedia subsystem [H04L 65/1016](#) ; cryptographic mechanisms for verifying the identity or authority of a user or a system, ID based authentication [H04L 9/32](#) ; cryptographic mechanisms for ID based key exchange [H04L 9/08](#)-)}
- H04L 67/148
 - {provided for migration or transfer of sessions (-in-session procedures in real-time communications [H04L 65/1083](#) ; control or signalling for completing the hand-off in wireless networks [H04W 36/0005](#)-)}
- H04L 67/16
 - {Service discovery or service management, e.g. service location protocol [SLP] or Web services (-address allocation to terminals or nodes connected to a network [H04L 61/30](#) ; mobile application services specially adapted for wireless communication networks [H04W 4/00](#) ; network service management for ensuring proper service fulfilment according to an agreement or contract between two parties [H04L 12/2464](#)-)}
- H04L 67/18
 - {in which the network application is adapted for the location of the user terminal (-wireless application services making use of the location of users or terminals [H04W 4/02](#) takes precedence; location based Web retrieval [G06F 17/3087](#)-)}
- H04L 67/20
 - {involving third party service providers (-e-commerce [G06Q 30/00](#)-)}
- H04L 67/22
 - {Tracking the activity of the user (-recording of computer activity [G06F 11/34](#) ; network monitoring arrangements [H04L 12/2602](#) ; e-commerce [G06Q 30/00](#)-)}
- H04L 67/24
 - {Presence management (-use and manipulation of presence information in instant messaging [H04L 12/5815](#)-)}

- H04L 67/26 • {Push based network services (-broadcast or multicast push services [H04L 12/1859](#)-)}
- H04L 67/28 • {for the provision of proxy services, e.g. intermediate processing or storage in the network (-network management provisions [H04L 12/24](#) ; network monitoring provisions [H04L 12/2602](#) ; media manipulation, adaptation or conversion in real-time communications [H04L 65/601](#) ; protocol conversion [H04L 69/08](#) ; proxies for network security [H04L 63/0281](#)-)}
- H04L 67/2809 • • {for brokering (-negotiation of communication capabilities [H04L 69/24](#) ; e-commerce [G06Q 30/00](#)-)}
- H04L 67/2814 • • {for data redirection (-load balancing of replicated servers [H04L 67/1002](#) ; access network selection [H04L 12/5691](#) ; routing or path finding of packets [H04L 45/00](#) ; content or context based routing [H04L 67/327](#) ; network addressing or naming provisions [H04L 61/00](#)-)}
- H04L 67/2823 • • {for conversion or adaptation of application content or format (-protocol conversion [H04L 69/08](#) ; media manipulation, adaptation or conversion in real-time communications [H04L 65/601](#) ; message adaptation based on network or terminal capabilities [H04L 12/5825](#) ; optimising visualization of content for web browsing [G06F 17/30905](#)-)}
- H04L 67/2833 • • {for grouping or aggregating service requests, e.g. for unified processing of service requests (-networking arrangements or communication protocols for scheduling or organising the servicing of application requests [H04L 67/32](#)-)}
- H04L 67/2838 • • {for integrating service provisioning from a plurality of service providers (-web site content organization and management [G06F 17/3089](#)-)}
- H04L 67/2842 • • {for storing data temporarily at an intermediate stage, e.g. caching (-distributed storage of data in a network [H04L 67/1097](#) ; browsing optimization of access to content by caching [G06F 17/30902](#) ; addressing of a cache within a hierarchically structured memory system [G06F 12/0802](#) ; disk caching [G06F 12/0866](#)-)}
- H04L 67/2847 • • • {involving pre-fetching or pre-delivering data based on network characteristics (-cache prefetching within a hierarchical structured memory system [G06F 12/0862](#)-)}
- H04L 67/2852 • • • {involving policies or rules for updating, deleting or replacing the stored data based on network characteristics (-replacement control in memory systems [G06F 12/12](#)-)}
- H04L 67/2861 • • {for providing operational support to end devices by emulation, e.g. when they are unavailable, or by off-loading in the network (-techniques for recovering from a failure of a protocol instance or entity [H04L 69/40](#) ; reactions to server failures by a load balancer [H04L 67/1034](#) ; departure or maintenance mechanisms in peer-to-peer networks [H04L 67/1048](#) ; terminal emulation [H04L 67/08](#) ; disconnected operation in file systems [G06F 17/30067](#) ; emulation or software simulation [G06F 9/455](#) ; input/output emulation function for peripheral devices [G06F 13/105](#)-)}
- U H04L 67/30 • {involving profiles}
- H04L 67/306 • • {User profiles (-configuring for programme initiating [G06F 9/44505](#) ; information retrieval by personalized querying [G06F 17/30867](#)-)}
- H04L 67/32 • • {for scheduling or organising the servicing of application requests, e.g. requests for application data transmissions involving the analysis and optimisation of the required network resources (-intermediate grouping or aggregating of service requests [H04L 67/2833](#) ; broadcast or conference with schedule organisation [H04L 12/1881](#) ; computer conference arrangements [H04L 12/1813](#) ; network service management, ensuring proper service fulfilment according to an agreement or contract between two parties [H04L 12/2464](#)-)}

- H04L 67/322 · {whereby quality of service [QoS] or priority requirements are taken into account (-QoS aspects in real-time communications [H04L 65/80](#) ; monitoring of QoS metrics [H04L 12/2634](#)-)}
- H04L 67/34 · {involving the movement of software or configuration parameters (-programme loading or initiating [G06F 9/445](#) ; remote booting [G06F 9/4416](#) ; configuration management of network or network elements [H04L 12/2424](#)-)}
- H04L 67/36 · {involving the display of network or application conditions affecting the network application to the application user (-graphical user interfaces for network management [H04L 12/2458](#)-)}
- H04L 67/38 · {Protocols for telewriting; Protocols for networked simulations, virtual reality or games (-games using an electronically generated display [A63F 13/00](#) ; remote windowing or X-Windows [G06F 9/4445](#)-)}
- H04L 67/40 · {Protocols for remote procedure calls [RPC](-remote procedure calls [G06F 9/547](#)-)}
- H04L 67/42 · {Protocols for client-server architectures (-access to replicated servers [H04L 67/1002](#)-)}

H04L 69/00 {Application independent communication protocol aspects or techniques in packet data networks (-interconnection arrangements between CPUs, memories, or peripherals within a single computer [G06F 13/00](#) ; data switching networks [H04L 12/00](#); flow control [H04L 12/569](#) ; routing of packets [H04L 12/5689](#) ; network management [H04L 12/24](#) ; network monitoring or testing [H04L 12/26](#) ; network topologies, i.e. networks characterized by the path configuration, media access control [H04L 12/28](#) ; intermediate storage or scheduling [H04L 12/5694](#) ; packet switches and switching fabrics [H04L 12/5696](#) ; message switching systems, e.g. email, [H04L 12/58](#) ; broadcast or multicast [H04L 12/18](#) ; hybrid switching systems [H04L 12/64](#) ; gateways [H04L 12/66](#) ; networks specially adapted for wireless communication [H04W](#); transmission systems [H04B](#)-)}

WARNING

Groups [H04L 69/00](#) - [H04L 69/40](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 69/00](#) -
[H04L 69/28](#) : [H04L 29/06](#) - [H04L 69/30](#)
- [H04L 69/329](#) : [H04L 29/08](#) -
[H04L 69/40](#) : [H04L 29/14](#)]

- H04L 69/03 · {Protocol definition or specification (-protocol conformance testing [H04L 1/244](#) ; specification techniques [G06F9/44G4S](#)-)}
- H04L 69/04 · {Protocols for data compression (-compression in general [H03M 7/30](#) ; reduction of the amount or size of exchanged application data at an intermediate network processing stage [H04L 67/2828](#) ; optimizing, e.g. header compression, information sizing in wireless communication networks [H04W 28/06](#)-)}
- H04L 69/08 · {Protocols for interworking or protocol conversion (-arrangements for connecting between networks having differing types of switching systems, e.g. gateways, [H04L 12/66](#) ; network management protocols conversion [H04L 12/2405](#)-)}
- H04L 69/16 · {Transmission control protocol/internet protocol [TCP/IP] or user datagram protocol [UDP](-transport layer addressing aspects [H04L 61/6063](#) ; network layer protocol adaptations for supporting mobility, e.g. mobile IP, [H04W 80/04](#) ; flow control or congestion control in data switching networks [H04L 12/569](#) ; adapting video multiplex streams to a specific network [H04N 21/2381](#) ; special adaptations of TCP, UDP or IP for interworking of IP based networks with other networks [H04L 69/169](#)-)}

- H04L 69/161
 - {Implementation details of TCP/IP or UDP/IP stack architecture; Specification of modified or new header fields (-protocols engines in general [H04L 69/12](#) ; OSI stack based layering aspects [H04L 69/32](#) ; protocol header analysis in general [H04L 69/22](#) ; addressing aspects in multiple interfaces involving dual-stack hosts [H04L 61/6086](#)-)}
- H04L 69/162
 - • {involving adaptations of sockets based mechanisms (-secure socket layer [H04L 63/168](#)-)}
- H04L 69/163
 - {Adaptation of TCP data exchange control procedures (-generic OSI layer 4 protocols, e.g. SCTP [H04L 69/326](#) ; TCP or UDP flow control procedures [H04L 47/19](#) ; error control procedures in general [H04L 1/18](#)-)}
- H04L 69/165
 - {involving combined use or selection criteria between TCP and UDP protocols (-multi-protocol arrangements in general [H04L 69/18](#) ; multilink protocols in general [H04L 69/14](#)-)}
- H04L 69/166
 - {IP fragmentation or TCP segmentation aspects (-evaluation of maximum transfer unit [MTU] [H04L 47/36](#) ; assembly or disassembly of packets in wireless networks [H04W 28/065](#)-)}
- H04L 69/167
 - {Transitional provisions between IPv4 and IPv6 (-address translation between IPv4 and IPv6 [H04L 61/251](#) ; involvement of different protocol versions in wireless network layer protocols, e.g. MIPv4 and MIPv6 [H04W 80/045](#)-)}
- H04L 69/168
 - {Special adaptations of TCP, UDP or IP to match specific link layer protocols, e.g. ATM, SONET or PPP (-IP over ATM [H04L 2012/5667](#) ; special adaptation of TCP protocol for wireless media [H04W 80/06](#)-)}
- H04L 69/169
 - {Special adaptations of TCP, UDP or IP for interworking of IP based networks with other networks (-protocols for interworking in general [H04L 69/08](#)-)}
- H04L 69/18
 - {Multi-protocol handler, e.g. single device capable of handling multiple protocols (-multilayer or multiprotocol switches [H04L 49/602](#)-)}
- H04L 69/22
 - {Header parsing or analysis (-traffic monitoring by flow aggregation or filtering [H04L 12/2605](#) ; flow identification in packet switching networks [H04L 47/2483](#)-)}
- H04L 69/26
 - {Special purpose or proprietary protocols or architectures (-network applications for proprietary or special purpose networking environments [H04L 67/12](#)-)}
- U H04L 69/30
 - {Definitions, standards or architectural aspects of layered protocol stacks}
- U H04L 69/32
 - {High level architectural aspects of 7-layer open systems interconnection [OSI] type protocol stacks}
- U H04L 69/322
 - • {Aspects of intra-layer communication protocols among peer entities or protocol data unit [PDU] definitions}
- H04L 69/323
 - • • {in the physical layer, i.e. layer one (-arrangements for detecting or preventing errors in the information received [H04L 1/00](#) ; baseband systems [H04L 25/00](#) ; modulated-carrier systems [H04L 27/00](#)-)}
- H04L 69/324
 - • • {in the data link layer, i.e. layer two, e.g. HDLC (-arrangements for detecting or preventing errors in the information received [H04L 1/00](#) ; bus networks [H04L 12/40](#)-)}
- H04L 69/325
 - • • {in the network layer, i.e. layer three, e.g. X.25 (-packet switching systems, packet routing [H04L 12/5689](#) ; TCP/IP [H04L 69/16](#)-)}
- H04L 69/326
 - • • {in the transport layer, i.e. layer four (-TCP/IP [H04L 69/16](#) ; streaming protocols, e.g. RTP, [H04L 65/608](#)-)}
- H04L 69/327
 - • • {in the session layer, i.e. layer five (-session initiation protocol [H04L 65/1006](#) ; session control in real time communications [H04L 65/1066](#) ; arrangements for session management [H04L 67/14](#)-)}
- H04L 69/328
 - • • {in the presentation layer, i.e. layer six (-graphical user interfaces [G06F 3/048](#) ; terminal emulation, e.g. telnet, [H04L 67/08](#)-)}

- H04L 69/329
- • • {in the application layer, i.e. layer seven (-network arrangements or network communication protocols for networked applications [H04L 67/00](#) ; digital computing or data processing equipment or methods, specially adapted for specific applications [G06F 19/00](#) ; data processing systems and methods specially adapted for administrative, commercial, financial or managerial purposes [G06Q](#)-)}
- H04L 69/40
- {Techniques for recovering from a failure of a protocol instance or entity, e.g. failover routines, service redundancy protocols, protocol state redundancy or protocol service redirection in case of a failure or disaster recovery (-reactions to failures of replicated servers by a load balancer [H04L 67/1034](#) ; departure or maintenance mechanisms in peer-to-peer networks [H04L 67/1048](#) ; intermediate processing of operational support to end devices when they are unavailable, [H04L 67/2861](#) ; network fault management [H04L 12/2419](#) ; route fault recovery in network routing [H04L 45/28](#) ; fault recovery in packet switches [H04L 49/557](#)-)}
- U H04L 2201/00 Algorithms used for the adjustment of time-domain equalizers**
- H04L 2201/06
- using the output of a maximum likelihood decoder ([Viterbi detector](#)) ([Viterbi detector](#))
- H04L 2201/08
- Algorithms not covered by groups **T04L200:02** to **T04L200:06**
- H04L 2209/00 {-Additional information or applications relating to cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#)-}**
- H04L 2209/76
- {Proxy, i.e. using intermediary entity to perform cryptographic operations (-network architectures or network communication protocols using hop-by-hop encryption [H04L 63/0464](#)-)}
- H04L 2209/80
- {Wireless (-network architectures or network communication protocols for wireless network security [H04W 12/00](#)-)}
- H04L 2463/00 Additional details relating to network architectures or network communication protocols for network security covered by [H04L 63/00](#)**
- H04L 2463/061
- applying further key derivation, e.g. deriving traffic keys from a pair-wise master key (-cryptographic mechanisms or cryptographic arrangements for generation of secret information including derivation or calculation of cryptographic keys or passwords [H04L 9/0861](#)-)
- H04L 2463/062
- applying encryption of the keys (-cryptographic mechanisms or cryptographic arrangements for key distribution using key encryption key [H04L 9/0822](#)-)
- H04L 2463/081
- applying self-generating credentials, e.g. instead of receiving credentials from an authority or from another peer, the credentials are generated at the entity itself (-cryptographic mechanisms or cryptographic arrangements for generation of secret information including derivation or calculation of cryptographic keys or passwords [H04L 9/0861](#)-)
- H04L 2463/082
- applying multi-factor authentication (-cryptographic mechanisms or cryptographic arrangements including means for verifying the identity or authority of a user of the system or for message authentication [H04L 9/32](#)-)
- H04L 2463/101
- applying security measures for digital rights management (-data processing systems or methods, specially adapted for commerce, e.g. marketing, shopping, billing, auctions or e-commerce [G06Q 30/00](#)-)
- H04L 2463/102
- applying security measure for e-commerce (-data processing systems or methods, specially adapted for e-commerce [G06Q 30/00](#)-)

- H04L 2463/103
 - applying security measure for protecting copy right (~~protecting software against unauthorised usage in a vending or licensing environment, e.g. protection the software providers copyright [G06F 21/10](#) ; data processing systems or methods, specially adapted for payment schemes, architectures or protocols [G06Q 20/00](#) ; secrecy systems or subscription systems [H04N 7/16](#)~~)
- H04L 2463/121
 - Timestamp (~~cryptographic mechanisms or cryptographic arrangements involving time stamps [H04L 9/3297](#)~~)

Project: N/A (H04M)

- U H04M 1/00
 - Substation equipment, e.g. for use by subscribers; Analogous equipment at exchanges (prepayment telephone coin boxes [H04M 17/00](#); current supply arrangements [H04M 19/00](#); {telephone sets particularly adapted for data transmission [H04M 11/066](#); network interface devices [H04Q 1/028](#)})**
- U H04M 1/02
 - Constructional features of telephone sets
- H04M 1/0202
 - ~~{Portable telephone sets, e.g. cordless phones, mobile phones or bar type handsets (constructional features of telephone transmitters or receivers, e.g. of speakers or microphones [H04M 1/03](#); mounting of the dialing module [H04M 1/23](#); with protection against RF exposure [H04B 1/3838](#))}~~
 - WARNING
 - Groups [H04M 1/0249](#) to [H04M 1/0285](#) are not complete pending a reorganisation. See also group [H04M 1/0202](#)
- H04M 1/0206
 - . . {Portable telephones comprising a plurality of mechanically joined movable body parts, e.g. hinged housings}
- H04M 1/0208
 - . . . {characterized by the relative motions of the body parts}
- H04M 1/021
 - {using combined folding and rotation motions (combined with translation movement [H04M 1/0235](#))}
- H04M 1/0212
 - {with a two degrees of freedom mechanism, i.e. folding around a first axis and rotating around a second axis perpendicular to the first}
- H04M 1/0214
 - {Foldable telephones, i.e. with body parts pivoting to an open position around an axis parallel to the plane they define in closed position (combined with translation movement [H04M 1/0235](#))}
- H04M 1/0216
 - {Foldable in one direction, i.e. using a one degree of freedom hinge}
- H04M 1/0218
 - {The hinge comprising input and/or output user interface means}
- H04M 1/022
 - {The hinge comprising two parallel pivoting axes}
- H04M 1/0222
 - {Foldable in two directions, i.e. using a two degree of freedom hinge}
- H04M 1/0225
 - {Rotatable telephones, i.e. the body parts pivoting to an open position around an axis perpendicular to the plane they define in closed position (combined with translation movement [H04M 1/0235](#))}
- H04M 1/0227
 - {Rotatable in one plane, i.e. using a one degree of freedom hinge}
- H04M 1/0229
 - {The hinge comprising input and/or output user interface means}
- H04M 1/0231
 - {Including a rotatable keypad body part}
- H04M 1/0233
 - {Including a rotatable display body part}
- H04M 1/0235
 - {Slidable or telescopic telephones, i.e. with a relative translation movement of the body parts; Telephones using a combination of translation and other relative motions of the body parts}
- H04M 1/0237
 - {Sliding mechanism with one degree of freedom}
- H04M 1/0239
 - {Sliding mechanism with two degree of freedom, e.g. translation in two different directions}
- H04M 1/0241
 - {using relative motion of the body parts to change the operational status of the telephone set, e.g. switching on/off, answering incoming call}

- H04M 1/0243 {-using the relative angle between housings}
- H04M 1/0245 {-using open/close detection}
- H04M 1/0247 {-comprising more than two body parts}
- H04M 1/0249 . . . {-Details of the mechanical connection between the housing parts or relating to the method of assembly}
- H04M 1/0252 {-by means of a snap-on mechanism}
- H04M 1/0254 . . . {-comprising one or a plurality of mechanically detachable modules}
- H04M 1/0256 {-wherein the modules are operable in the detached state, e.g. one module for the user interface and one module for the transceiver}
- H04M 1/0258 {-for a headset device (constructional features of headsets [H04M 1/05](#); headsets for handsfree use [H04M 1/6058](#))}
- H04M 1/026 . . . {-Details of the structure or mounting of specific components}
- H04M 1/0262 {-for a battery compartment}
- H04M 1/0264 {-for a camera module assembly (photo or video cameras per se [G03B](#); television cameras per se [H04N 5/225](#))}
- H04M 1/0266 {-for a display module assembly (for fixed telephones [H04M 1/0295](#))}
- H04M 1/0268 {-including a flexible display panel}
- H04M 1/027 {-including magnifying means}
- H04M 1/0272 {-for a projector or beamer module assembly (constructional features of projectors per se [G03B 21/00](#); constructional details of projectors using electronic spatial light modulators per se [H04N 9/31](#))}
- H04M 1/0274 {-for an electrical connector module}
- H04M 1/0277 {-for a printed circuit board assembly}
- H04M 1/0279 {-Improving the user comfort or ergonomics}
- H04M 1/0281 {-for providing single handed use or left/right hand conversion}
- H04M 1/0283 {-for providing a decorative aspect, e.g. customization of casings, exchangeable faceplate}
- H04M 1/0285 {-Pen-type handsets}
- H04M 1/0287 {-being disposable or recyclable }
- H04M 1/0295 . . . {-mechanical mounting details of display modules (for portable telephones [H04M 1/0266](#))}
- H04M 1/0297 . . . {-Telephone sets adapted to be mounted on a desk or on a wall}
- U H04M 1/03 Constructional features of telephone transmitters or receivers, e.g. telephone handsets, { speakers or microphones}(transducers in general [H04R 1/00](#))
- H04M 1/035 {-Improving the acoustic characteristics by means of constructional features of the housing, e.g. ribs, walls, resonating chambers or cavities}
- U H04M 1/18 Telephone sets modified for use in ships, mines, or other places exposed to adverse environment ([H04M 1/19](#) takes precedence; telephone cabinets per se [E04H 1/14](#))
- H04M 1/185 {-Improving the rigidity of the casing or resistance to shocks}
- U H04M 1/23 Construction or mounting of dials or of equivalent devices; Means for facilitating the use thereof (by improving visibility [H04M 1/22](#))
- H04M 1/233 {-including a pointing device, e.g. roller key, track ball, rocker switch or joystick (constructional details of pointing devices per se [G06F 3/033](#))}
- H04M 1/236 {-including keys on side or rear faces}
- U H04M 1/247 Telephone sets including user guidance or features selection means facilitating their use; { Fixed telephone terminals for accessing a variety of communication services via the PSTN network}

- H04M 1/2471
 - • {Configurable and interactive telephone terminals with subscriber controlled features modifications, e.g. with ADSI capability }~~[Analog Display Services Interface]~~ ~~(Analog-Display-Services-Interface)~~ (systems providing special services or facilities to subscribers [H04M 3/42](#); administration or customization of services [H04M 3/42136](#); by downloading data to substation equipment [H04M 3/42178](#))}
- H04M 1/2472
 - • • {-with programmable function keys}
- H04M 1/2473
 - • {-Telephone terminals interfacing a personal computer, e.g. using an API ~~(Application Programming Interface)~~ ~~(Application-Programming Interface)~~ (details of API [H04M 7/0021](#))}
- H04M 1/2474
 - • {-Telephone terminals specially adapted for disabled people ([H04M 1/72588](#) takes precedence; network based special services or facilities for hearing-impaired persons [H04M 3/42391](#); devices for conversing with the deaf-blind [G09B 21/04](#))}
- H04M 1/2475
 - • • {-for a hearing impaired user (hearing-aids per se [H04R 25/00](#))}
- H04M 1/2476
 - • • {-for a visually impaired user ([H04M 1/22](#) takes precedence)}
- H04M 1/2478
 - • {-Telephone terminals specially adapted for non-voice services, e.g. email, internet access (centralized arrangements where telephones services are combined [H04M 7/0024](#); for recording text messages [H04M 3/5322](#); for accessing Internet [H04M 3/4938](#))}
- U H04M 1/253
 - Telephone sets using digital voice transmission (simultaneous speech and data transmission [H04M 11/06](#); {ISDN terminal access circuits [H04Q 11/0471](#)})
- H04M 1/2535
 - • {-adapted for voice communication over an Internet Protocol [IP] network (Voice over Internet Protocol (VoIP) network equipment and services [H04M 7/006](#); internet protocols [H04L 29/06095](#))}
- U H04M 1/26
 - Devices for signalling identity of wanted subscriber (constructional features [H04M 1/23](#))
- U H04M 1/27
 - • Devices whereby a plurality of signals may be stored simultaneously {(devices disposed in the exchange [H04M 3/424](#), [H04M 3/44](#))}
- U H04M 1/274
 - • • with provision for storing more than one subscriber number at a time, e.g. using toothed disc
- U H04M 1/2745
 - • • • using static electronic memories, i.e. memories whose operation does not require relative movement between storage means and a transducer, e.g. chip; {(Fax machines [H04N 1/32037](#))}
- H04M 1/274508
 - • • • • {-Telephone number directory allowing to store a plurality of information regarding one subscriber}
- H04M 1/274533
 - • • • • {-Telephone number directory management, e.g. manually editing, erasing or modifying data stored in the directory}
- U H04M 1/57
 - Arrangements for indicating or recording the number of the calling subscriber at the called subscriber's set (at the operator set in a manual exchange [H04M 5/20](#))
- H04M 1/571
 - • {-Blocking transmission of caller identification to called party}
- U H04M 1/64
 - Automatic arrangements for answering calls; Automatic arrangements for recording messages for absent subscribers; Arrangements for recording conversations (centralised dictation systems [H04M 11/10](#))
- H04M 1/65
 - • Recording arrangements {for recording a message from the calling party-(in the exchange [H04M 3/50](#))}
- U H04M 1/72
 - Substation extension arrangements; Cordless telephones, i.e. devices for establishing wireless links to base stations without route selecting {(constructional features of cordless telephones [H04M 1/0202](#))}
- U H04M 1/725
 - • Cordless telephones {(for handsfree use [H04M 1/6041](#))}
- U H04M 1/72502
 - • • {with one base station connected to a single line}

- H04M 1/72516 {-including out-of-range alerting means}
- U H04M 1/72519 . . . {Portable communication terminals with improved user interface to control a main telephone operation mode or to indicate the communication status}
- U H04M 1/72522 {With means for supporting locally a plurality of applications to increase the functionality (for selecting a function in a menu [H04M 1/2477](#))}
- H04M 1/72536 {-for supporting an emergency service (alarm systems [G08B](#); telephonic communication systems in combination with alarm systems [H04M 11/04](#); telephone sets for disabled persons [H04M 1/2474](#))}
- H04M 1/72538 {-with automatic feature activation, e.g. upon sensing of an alarm condition}
- H04M 1/72541 {-with manual feature activation}
- H04M 1/72558 {-for playing back music files (portable music players per se [G11B 27/00](#))}
- H04M 1/72563 {-with means for adapting by the user the functionality or the communication capability of the terminal under specific circumstances}
- H04M 1/72566 {-according to a schedule or a calendar application (network applications for presence management [H04L 29/08684](#))}
- H04M 1/72569 {-according to context or environment related information}
- H04M 1/72572 {-according to a geographic location (user location related services provided by wireless communication networks [H04W 4/02](#); network applications adapted for the location of the user terminal [H04L 29/08657](#))}
- H04M 1/72575 {-by connection of an exchangeable housing part}
- H04M 1/72577 {-to restrict the functionality or the communication capability of the terminal (network access restriction [H04W 48/02](#))}
- H04M 1/72583 {-for operating the terminal by selecting telephonic functions from a plurality of displayed items, e.g. menus, icons (interaction techniques for Graphical User Interfaces per se [G06F 3/048](#))}
- H04M 1/72586 {-wherein the items are sorted according to a specific criteria, e.g. frequency of use}
- H04M 1/72588 {-specially adapted for disabled people (devices for conversing with the deaf-blind [G09B 21/04](#))}
- H04M 1/72591 {-for a hearing impaired user (hearing-aids per se [H04R 25/00](#))}
- H04M 1/72594 {-for a visually impaired user ([H04M 1/22](#) takes precedence)}
- H04M 1/72597 {-wherein handling of applications is triggered by incoming communication events (changing user alerting upon occurrence of events [H04M 19/04](#))}
- U H04M 3/00 Automatic or semi-automatic exchanges {(constructional details of telephone exchanges [H04Q 1/02](#))}**
- U H04M 3/20 . . with means for interrupting existing connections; with means for breaking-in on conversations
- H04M 3/205 . . {-Eavesdropping prevention - indication of insecurity of line or network}
- U H04M 3/22 . . Supervisory, monitoring, {management, i.e. operation, administration, maintenance} or testing arrangements
- H04M 3/2209 . . {-for lines also used for data transmission}
- H04M 3/2245 . . {-Management of the local loop plant}
- H04M 3/2281 . . {-Call monitoring, e.g. for law enforcement purposes; Call tracing; Detection or prevention of malicious calls}
- U H04M 3/26 . . with means for applying test signals {or for measuring}

- U H04M 3/28
 - • • Automatic routine testing {; Fault testing; Installation testing; Test methods, test equipment or test arrangements therefor}
- U H04M 3/30
 - • • • for subscriber`s lines {, for the local loop}
- H04M 3/307
 - • • • • {-using ringback}
- H04M 3/308
 - • • • • {-Craftsperson test terminals}
- U H04M 3/32
 - • • • for lines between exchanges
- H04M 3/323
 - • • • • {for the arrangements providing the connection (*test connection, test call, call simulation*)}~~{test connection, test call, call simulation}~~
- U H04M 3/36
 - • Statistical metering, e.g. recording occasions when traffic exceeds capacity of trunks (digital computers for evaluating statistical data [G06F 17/18](#))
- H04M 3/367
 - • • {-Traffic or load control }
- U H04M 3/38
 - Graded-service arrangements, i.e. some subscribers prevented from establishing certain connections (queueing arrangements {[H04M 3/523](#)}, [H04Q 3/64](#))
- U H04M 3/382
 - • {using authorisation codes or passwords}
- H04M 3/385
 - • • {-using speech signals}
- H04M 3/387
 - • {-using subscriber identification cards}
- U H04M 3/42
 - Systems providing special services or facilities to subscribers
- H04M 3/42008
 - • {-Systems for anonymous communication between parties, e.g. by use of disposal contact identifiers}
- H04M 3/42017
 - • {-Customized ring-back tones}
- H04M 3/42025
 - • {-Calling or Called party identification service (not used)}
- U H04M 3/42034
 - • • {Calling party identification service (not used)}
- H04M 3/42059
 - • • • {-Making use of the calling party identifier}
- H04M 3/42068
 - • • • • {-where the identifier is used to access a profile}
- H04M 3/42076
 - • • • • {-where the identifier is a Uniform Resource Locator}
- U H04M 3/42085
 - • • {Called party identification service (not used)}
- H04M 3/42093
 - • • • {-Notifying the calling party of information on the called or connected party}
- H04M 3/42102
 - • • • • {-Making use of the called party identifier}
- H04M 3/4211
 - • • • • {-where the identifier is used to access a profile}
- H04M 3/42119
 - • • • • {-where the identifier is a Uniform Resource Locator}
- U H04M 3/42136
 - • {Administration or customisation of services}
- U H04M 3/42153
 - • • {by subscriber}
- H04M 3/42161
 - • • • {-via computer interface}
- H04M 3/42187
 - • {-Lines and connections with preferential service}
- H04M 3/42195
 - • {Arrangements for calling back a calling subscriber (when the wanted subscriber ceases to be busy [H04M 3/48](#))}
- H04M 3/42212
 - • {-Call pickup (comprising simultaneous alerting [H04M 3/46](#))}
- H04M 3/42221
 - • {-Conversation recording systems (at the subscriber`s set [H04M 1/656](#))}
- H04M 3/42229
 - • {-Personal communication services, i.e. services related to one subscriber independent of his terminal and/or location (diverting calls from one subscriber to another subscriber, i.e. two different subscriptions [H04M 3/54](#); selecting arrangements in intelligent networks [H04Q 3/005](#))}
- H04M 3/42238
 - • • {-in systems with telephone lines with multiple users}

- H04M 3/42246
 - . . . {where the subscriber uses a multi-mode terminal which moves and accesses different networks with at least one network having a wireline access including cordless PBX}
- H04M 3/42255
 - {with the subscriber having a personal network-independent number}
- H04M 3/42263
 - . . . {where the same subscriber uses different terminals, i.e. nomadism}
- H04M 3/42272
 - {whereby the subscriber registers to the terminals for personalised service provision}
- U H04M 3/4228
 - . . {in networks}
- H04M 3/42289
 - . . . {with carrierprovider selection by subscriber}
- H04M 3/42297
 - . . . {with number portability}
- H04M 3/42306
 - . . . {Number translation services, e.g. premium-rate, freephone or vanity number services}
- U H04M 3/42314
 - . . {in private branch exchanges}
- H04M 3/42331
 - . . . {Direct inward dialling}
- H04M 3/4234
 - . . . {Remote access to features of PBX or home telephone systems-teleworking in a PBX}
- H04M 3/42348
 - . . {Location-based services which utilize the location information of a target}
- H04M 3/42357
 - . . . {where the information is provided to a monitoring entity such as a potential calling party or a call processing server}
- H04M 3/42365
 - . . {Presence services providing information on the willingness to communicate or the ability to communicate in terms of media capability or network connectivity}
- H04M 3/42374
 - . . . {where the information is provided to a monitoring entity such as a potential calling party or a call processing server}
- H04M 3/42382
 - . . {Text-based messaging services in telephone networks such as PSTN/ISDN, e.g. User-to-User Signalling or Short Message Service for fixed networks}
- H04M 3/436
 - . . Arrangements for screening incoming calls, { i.e. evaluating the characteristics of a call before deciding whether to answer it-(based on the calling party profile [H04M 3/42059](#); based on location [H04M 3/42348](#); based on presence [H04M 3/42365](#); diversion [H04M 3/54](#))}
- H04M 3/4365
 - . . . {based on information specified by the calling party, e.g. priority or subject}
- U H04M 3/46
 - . . Arrangements for calling a number of substations in a predetermined sequence until an answer is obtained
- H04M 3/465
 - . . . {Arrangements for simultaneously calling a number of substations until an answer is obtained}
- U H04M 3/487
 - . . Arrangements for providing information services, e.g. recorded voice services, time announcement
- H04M 3/493
 - . . . Interactive information services, e.g. directory enquiries; {Arrangements therefor, e.g. interactive voice response [IVR]} systems or voice portals}
- U H04M 3/4931
 - {Directory assistance systems}
- H04M 3/4933
 - {with operator assistance}
- H04M 3/4935
 - {Connection initiated by DAS system}
- H04M 3/4938
 - {comprising a voice browser which renders and interprets e.g. VoiceXML}
- U H04M 3/50
 - . . Centralised arrangements for answering calls; Centralised arrangements for recording messages for absent or busy subscribers ([H04M 3/487](#) takes precedence; Centralised dictation systems [H04M 11/10](#)); {Centralised arrangements for recording messages}
- U H04M 3/51
 - . . . Centralised call answering arrangements requiring operator intervention, { e.g. call or contact centers for telemarketing}

- H04M 3/5116 {-for emergency applications}
- H04M 3/5133 {-Operator terminal details}
- H04M 3/5141 {-Details of processing calls and other types of contacts in an unified manner (unified messaging in packet-switching networks [H04L 12/589](#))}
- H04M 3/5166 {-in combination with interactive voice response systems or voice portals e.g. as front-ends}
- H04M 3/5175 {-Call or contact centers supervision arrangements}
- H04M 3/5183 {-Call or contact centers with computer-telephony arrangements}
- U H04M 3/523 with call distribution or queueing
- H04M 3/5231 {-with call back arrangements}
- U H04M 3/5232 {Call distribution algorithms}
- H04M 3/5234 {-Uniform load distribution}
- H04M 3/5235 {-Dependent on call type or called number (DNIS)}
- H04M 3/5236 {-Sequential or circular distribution}
- H04M 3/5238 {-with waiting time or load prediction arrangements}
- U H04M 3/53 . . . Centralised arrangements for recording incoming messages {i.e. mailbox systems}
- U H04M 3/533 Voice mail systems
- U H04M 3/53333 {Message receiving aspects}
- H04M 3/53341 {-Message reply}
- H04M 3/5335 {-Message type or category, e.g. priority, indication}
- H04M 3/53358 {-Message preview}
- U H04M 3/53366 {Message disposing or creating aspects}
- H04M 3/53375 {-Message broadcasting}
- H04M 3/53383 {-Message registering commands or announcements; Greetings}
- H04M 3/53391 {-dependent on calling party}
- U H04M 3/54 . . . Arrangements for diverting calls for one subscriber to another predetermined subscriber {(based on the calling party profile [H04M 3/42059](#); based on location [H04M 3/42348](#); based on presence [H04M 3/42365](#); to voice mail [H04M 3/53308](#))}
- H04M 3/541 . . . {-based on information specified by the calling party}
- H04M 3/543 . . . {-Call deflection }
- H04M 3/545 . . . {-with loop avoiding arrangements}
- H04M 3/548 . . . {-with remote control}
- U H04M 3/56 . . . Arrangements for connecting several subscribers to a common circuit, i.e. affording conference facilities ({ computer conferences [H04L 12/1813](#)}; video conference systems [H04N 7/15](#))
- H04M 3/562 . . . {-where the conference facilities are distributed}
- H04M 3/563 . . . {-User guidance or feature selection}
- H04M 3/564 {-whereby the feature is a sub-conference}
- H04M 3/565 {-relating to time schedule aspects}
- H04M 3/566 {-relating to a participants right to speak (protocols for floor control [H04L 29/06421](#), [H04L 29/06428](#), [H04L 29/06435](#))}
- H04M 3/568 . . . {-audio processing specific to telephonic conferencing, e.g. spatial distribution, mixing of participants (echo suppression in two-way loud-speaking telephone systems [H04M 9/02](#); sound field processing per se [H04S 7/30](#))}

- U H04M 7/00** **Interconnection arrangements between switching centres (transmission arrangements in general [H04B](#); { interconnection arrangements between PSTN/ISDN switching centres [H04Q 3/00](#)})**
- H04M 7/0003 · {-Interconnection between telephone networks and data networks}
WARNING
 This group is no longer used for the classification of new documents as from February 1, 2007. The backlog of this group is being continuously reclassified to subgroups of [H04M 7/0024](#) or [H04M 7/1205](#)
- H04M 7/0006 · · {-where voice calls cross both networks}
WARNING
 This group is no longer used for the classification of new documents as from February 1, 2007. The backlog of this group is being continuously reclassified to subgroups of [H04M 7/0024](#) or [H04M 7/1205](#)
- H04M 7/0009 · · {-where voice calls remain entirely in the telephone network}
WARNING
 This group is no longer used for the classification of new documents as from February 1, 2007. The backlog of this group is being continuously reclassified to subgroups of [H04M 7/0024](#) or [H04M 7/1205](#)
- H04M 7/0012 · {-Details of application programming interfaces [API] for telephone networks; · -Arrangements which combine a telephonic communication equipment and a computer, i.e. computer telephony integration [CPI] arrangements}
- H04M 7/0015 · · {-First party call control architectures}
- H04M 7/0018 · · {-Computer Telephony Resource Boards}
- H04M 7/0021 · · {-Details of Application Programming Interfaces}
- H04M 7/0024 · {-Services and arrangements where telephone services are combined with data services (arrangements which combine a telephonic equipment and a computer [H04M 7/0012](#))}
- H04M 7/0027 · · {-Collaboration services where a computer is used for data transfer and the telephone is used for telephonic communication}
- H04M 7/003 · · {-Click to dial services}
- H04M 7/0033 · · {-Notification or handling of incoming calls by a computer}
- H04M 7/0036 · · {-where the data service is an information service}
- H04M 7/0039 · · {-where the data service is provided by a stream of packets which are rendered in real time by the receiving terminal (audio streaming or audio streaming details of combined audio and video streaming [H04L 29/06476](#))}
- H04M 7/0042 · · {-where the data service is a text-based messaging service ([H04M 7/0054](#) takes precedence)}
- H04M 7/0045 · · · {-where the text-based messaging service is an instant messaging service}
- H04M 7/0048 · · · {-where the text-based messaging service is a Short Message Service}
- H04M 7/0051 · · {-where the data service is a multimedia messaging service}
- H04M 7/0054 · · {-where the data service is an electronic mail service}
- H04M 7/0057 · · {-Services where the data services network provides a telephone service in addition or as an alternative, e.g. for backup purposes, to the telephone service provided by the telephone services network}
- H04M 7/006 · {-Networks other than PSTN/ISDN providing telephone service, e.g. Voice over Internet Protocol (VoIP) , including next generation networks with a packet-switched transport layer ([H04L 65/00](#) takes precedence; aspects not specific to the type of network [H04M 3/00](#); special services in those networks [H04M 3/42](#))}

- H04M 7/0063
- H04M 7/0066
- H04M 7/0069
- H04M 7/0072
- H04M 7/0075
- H04M 7/0078
- H04M 7/0081
- H04M 7/0084
- H04M 7/0087
- H04M 7/0093
- U H04M 7/06
 - using auxiliary connections for control or supervision { , e.g. where the auxiliary connection is a signalling system number 7 link}

WARNING
Not complete, see also other subgroups of [H04M 7/00](#)
- H04M 7/063
- H04M 7/066
- U H04M 7/12
 - for working between exchanges having different types of switching equipment, e.g. power-driven and step by step, decimal and non-decimal, { circuit-switched and packet-switched, i.e. gateway arrangements}

WARNING
Not complete, see also other subgroups of [H04M 7/00](#)
- H04M 7/1205
- H04M 7/121
- H04M 7/1215
- H04M 7/122
- H04M 7/1225
- H04M 7/123
- H04M 7/1235
- H04M 7/124
- H04M 7/1245
- H04M 7/125
- H04M 7/1255
- H04M 7/126
- H04M 7/1265
- H04M 7/127

- H04M 7/1275
 - • • {Methods and means to improve the telephone service quality, e.g. reservation, prioritisation or admission control}
- H04M 7/128
 - • • {Details of addressing, directories or routing tables}
- H04M 7/1285
 - • • {Details of finding and selecting a gateway for a particular call}
- H04M 7/129
 - • • {Details of providing call progress tones or announcements}
- H04M 7/1295
 - • • {Details of dual tone multiple frequency signalling}
- H04M 7/14
 - {in systems involving main and subordinate switching centres}

WARNING

Not complete, see also other subgroups of [H04M 7/00](#)

U H04M 15/00 Arrangements for metering, time-control or time indication { ; Metering, charging or billing arrangements for voice wireline or wireless communications, e.g. VoIP}

- H04M 15/07
 - {Split billing, i.e. both A-party and B-party charged for the communication}
- H04M 15/09
 - {Third party charged communications}
- H04M 15/31
 - {Distributed metering or calculation of charges}
- H04M 15/32
 - {Charging, billing or} metering arrangements for satellites or concentrators which connect one or more exchange lines with a group of local lines
- H04M 15/34
 - {Charging, billing or} metering arrangements for private branch exchanges
- H04M 15/36
 - {Charging, billing or} metering arrangements for party-lines
- H04M 15/38
 - {Charging, billing or} metering by apparatus other than mechanical step-by-step counter type
- H04M 15/39
 - {Arrangements for preventing metering, charging or billing}
- H04M 15/41
 - {Billing record details, i.e. parameters, identifiers, structure of call data record [CDR]}
- H04M 15/42
 - {Dynamic individual rates per user}
- H04M 15/43
 - {Billing software details}
- H04M 15/44
 - {Augmented, consolidated or itemized billing statement or bill presentation}
- H04M 15/46
 - {Real-time negotiation between users and providers or operators}
- H04M 15/47
 - {Fraud detection or prevention means}
- H04M 15/48
 - {Secure or trusted billing, e.g. trusted elements or encryption}
- H04M 15/49
 - {Connection to several service providers}
- H04M 15/50
 - {for cross-charging network operators}
- H04M 15/51
 - {for resellers, retailers or service providers}
- H04M 15/52
 - {for operator independent billing system}
- H04M 15/53
 - {using mediation}
- H04M 15/54
 - {for revenue sharing}
- H04M 15/55
 - {for hybrid networks}
- H04M 15/56
 - {for VoIP communications }
- H04M 15/57
 - {for integrated multimedia messaging subsystem [IMS]}
- H04M 15/58
 - {based on statistics of usage or network monitoring}
- H04M 15/59
 - {based on real time}
- H04M 15/60
 - {based on actual use of network resources}
- H04M 15/61
 - {based on the service used}
- H04M 15/62
 - {based on trigger specification}

- H04M 15/63 · {-based on the content carried by the session initiation protocol [SIP] messages}
- H04M 15/64 · {-On-line charging system [OCS]}
- H04M 15/65 · {-Off-line charging system}
- H04M 15/66 · {-Policy and charging system}
- H04M 15/67 · {-Transmitting arrangements for sending billing related information}
- H04M 15/68 · {-Payment of value-added services}
- H04M 15/70 · {-Administration or customization aspects; Counter-checking correct charges}
- H04M 15/705 · · {-Account settings, e.g. limits or numbers or payment}
- H04M 15/71 · · {-Modifying recharging resources}
- H04M 15/715 · · {-Activating new subscriber or card}
- H04M 15/72 · · {-by the user}
- H04M 15/721 · · · {-using the Internet}
- H04M 15/723 · · · {-using the user's device}
- H04M 15/725 · · {-by the operator}
- H04M 15/73 · · {-Validating charges}
- H04M 15/735 · · {-Re-crediting user}
- H04M 15/74 · · {-Backing up}
- H04M 15/745 · · {-Customizing according to wishes of subscriber, e.g. friends or family}
- H04M 15/75 · · {-Account location specifications}
- H04M 15/751 · · · {-Card based account, e.g. smart card, SIM card or USIM}
- H04M 15/752 · · · {-Terminal based account}
- H04M 15/753 · · · {-Network based account}
- H04M 15/755 · · {-Account identification}
- H04M 15/7553 · · · {-via service number, e.g. calling card}
- H04M 15/7556 · · · {-by SIM, e.g. smart card account in SCP, SDP or SN}
- H04M 15/76 · · {-Synchronization of distributed accounts}
- H04M 15/765 · · {-Linked or grouped accounts, e.g. of users or devices}
- H04M 15/7652 · · · {-shared by users}
- H04M 15/7655 · · · {-shared by technologies}
- H04M 15/7657 · · · {-for closed subscriber group [CSG]}
- H04M 15/77 · · {-involving multiple accounts per user}
- H04M 15/771 · · · {-per terminal or location, e.g. mobile device with multiple directory numbers}
- H04M 15/772 · · · {-per service, e.g. prepay or post-pay}
- H04M 15/773 · · · {-per technology, e.g. PSTN or wireless}
- H04M 15/774 · · · {-per card}
- H04M 15/775 · · {-Account specifications on parallel communications}
- H04M 15/78 · · {-Redistributing amount between accounts}
- H04M 15/781 · · · {-dynamically}
- H04M 15/783 · · · {-by user request}
- H04M 15/785 · · {-Reserving amount on the account}
- H04M 15/79 · · {-Virtual purses}
- H04M 15/80 · · {-Rating or billing plans; Tariff determination aspects}
- H04M 15/8005 · · {-Flat-fee}

- H04M 15/8011 . . {using class of subscriber}
- H04M 15/8016 . . {based on quality of service [QoS]}
- H04M 15/8022 . . {Determining tariff or charge band}
- H04M 15/8027 . . {based on network load situation}
- H04M 15/8033 . . {location-dependent, e.g. business or home}
- H04M 15/8038 . . {Roaming or handoff}
- H04M 15/8044 . . {Least cost routing}
- H04M 15/805 . . . {Bidding}
- H04M 15/8055 . . . {Selecting cheaper transport technology for a given service}
- H04M 15/8061 . . . {Selecting least cost route depending on origin or type of service}
- H04M 15/8066 . . {According to the number of recipients}
- H04M 15/8072 . . . {Group, conference or multi-party call}
- H04M 15/8077 . . . {Group MMS or SMS; Point-to-multi-point services or broadcast services}
- H04M 15/8083 . . {involving reduced rates or discounts, e.g. time-of-day reductions or volume discounts}
- H04M 15/8088 . . {involving increased rates, e.g. spam messaging billing differentiation}
- H04M 15/8094 . . {Trial service, i.e. free of charge service for trial purposes}
- H04M 15/81 . {Dynamic pricing, e.g. change of tariff during call}
- H04M 15/82 . {Criteria or parameters used for performing billing operations}
- H04M 15/8207 . . {Time based data metric aspects, e.g. VoIP or circuit switched packet data}
- H04M 15/8214 . . {Data or packet based}
- H04M 15/8221 . . {Message based}
- H04M 15/8228 . . {Session based}
- H04M 15/8235 . . {Access based}
- H04M 15/8242 . . {Transaction based}
- H04M 15/825 . . {based on the number of used channels, e.g. bundling channels, frequencies or CDMA codes}
- H04M 15/8257 . . {Unit based}
- H04M 15/8264 . . {Pulse based}
- H04M 15/8271 . . {Based on the number of used services, e.g. call forwarding or call barring}
- H04M 15/8278 . . {Event based}
- H04M 15/8285 . . {Money or currency based}
- H04M 15/8292 . . {Charging for signaling or unsuccessful connection}
- H04M 15/83 . {Notification aspects}
- H04M 15/835 . . {Time or frequency of notifications, e.g. Advice of Charge [AoC]}
- H04M 15/8351 . . . {before establishing a communication}
- H04M 15/8353 . . . {during the communication}
- H04M 15/8355 . . . {after the end of the communication}
- H04M 15/8356 . . . {in regular intervals}
- H04M 15/8358 . . . {Dynamic change of the length or frequency of the notification interval }
- H04M 15/84 . . {Types of notifications}
- H04M 15/842 . . . {Announcement, e.g. IVR dialogue}
- H04M 15/844 . . . {Message, e.g. SMS}
- H04M 15/846 . . . {optical, e.g. icon}
- H04M 15/848 . . . {Tone, e.g. beeper}

- H04M 15/85
- H04M 15/851
- H04M 15/852
- H04M 15/853
- H04M 15/854
- H04M 15/855
- H04M 15/856
- H04M 15/857
- H04M 15/858
- H04M 15/86
- H04M 15/863
- H04M 15/866
- H04M 15/88
- H04M 15/881
- H04M 15/882
- H04M 15/883
- H04M 15/885
- H04M 15/886
- H04M 15/887
- H04M 15/888
- H04M 15/90
- H04M 15/93

U H04M 17/00**Prepayment { of wireline communication systems, wireless communication systems or} telephone systems (using a coded card to authorise calls from a telephone set [H04M 1/675](#))**

- H04M 17/005
- H04M 17/01
- H04M 17/10
- H04M 17/103
- H04M 17/106
- H04M 17/20
- H04M 17/201
- H04M 17/202
- H04M 17/203
- H04M 17/204
- H04M 17/205
- H04M 17/206
- H04M 17/207
- H04M 17/208
- H04M 17/30
- H04M 17/301
- H04M 17/302

- H04M 17/303
 - H04M 17/304
 - H04M 17/305
 - H04M 17/306
 - H04M 17/307
 - H04M 17/308
 - H04M 17/35
- • • {from material cards, i.e. magnetic stripe card}
 - • • {Optical code recognition [OCR], e.g. bar code reader }
 - • • {Wireless codes, e.g. Bluetooth or RFID}
 - • • {using public code readers, e.g. public payment or recharge point}
 - • {Code type e.g. alphanumeric code, bar code.}
 - • {Code management}
 - {Pay as you go }
- U H04M 19/00** **Current supply arrangements for telephone systems (for selecting-equipment [H04Q 1/28](#))**
- U H04M 19/02
 - U H04M 19/04
 - H04M 19/041
 - H04M 19/042
 - H04M 19/044
 - H04M 19/045
 - H04M 19/047
 - H04M 19/048
- providing ringing current or supervisory tones, e.g. dialling tone, busy tone
 - • ringing-current generated at substation
 - • • {Encoding the ringing signal, i.e. providing distinctive or selective ringing capability}
 - • • {with variable loudness of the ringing tone, e.g. variable envelope or amplitude of ring signal}
 - • • • {according to the level of ambient noise}
 - • • {Call privacy arrangements, e.g. timely inhibiting the ring signal}
 - • • {Vibrating means for incoming calls}
 - • • {Arrangements providing optical indication of the incoming call, e.g. flasher circuits}
- U H04M 2242/00** **Special services or facilities**
- H04M 2242/24
- Detection or indication of type terminal or call, (e.g. fax, broadband)(e.g. fax; broadband)

Project: N/A (H04N)**H04N**

PICTORIAL COMMUNICATION, e.g. TELEVISION (measuring, testing [G01](#); systems for autographic writing, e.g. writing telegraphy, which involve following an outline{ [G08C 21/00](#) }; information storage based on relative movement between record carrier and transducer [G11B](#); coding, decoding or code conversion, in general [H03M](#); broadcast distribution or the recording of use made thereof [H04H](#))

NOTE

1. This subclass covers :

{generation, recording or} transmission of pictures or their transient or permanent reproduction either locally or remotely {and the corresponding electronic image capture and reproduction process employing image representative electric signals,} by methods or arrangements {involving at least one of} the following steps:

step (a): the {electronic acquisition or} scanning of a picture {or scene} , i.e. resolving the whole picture-containing area into individual picture-elements and the derivation of picture-representative electric signals related thereto, simultaneously or in sequence {, e.g. by reading an electronic solid-state image sensor [SSIS] pickup device (e.g. CCD or CMOS image sensor) as electronic image sensor converting optical image information into said electrical signals;}

step (b): the reproduction of the whole picture-containing area {or scene} by the reproduction of individual picture-elements into which the picture is resolved by means of picture representative electric signals derived therefrom, simultaneously or in sequence by converting an electric image signal into light e.g. with an electronic spatial light modulator;

concerning cameras or projectors:

video cameras or TV cameras, e.g. in studios, CCTV cameras, surveillance cameras, camcorders; constructional or mechanical details related to such cameras even when not peculiar to the presence of an electronic image sensor [EIS] e.g. housings; arrangements or methods for image capture using an EIS or image projection using an electronic spatial light modulator [ESLM], i.e.

(i) sensor read-out;

(ii) processing of electrical image signals from the EIS or provided to the ESLM for the generation of respective camera or projector control signals,

for controlling the EIS or its read-out for e.g. exposure, scene selection for auto focussing, or electronic image enhancement or processing of the image signals captured by the EIS, e.g. white balance, electronic motion blur correction, noise suppression [H04N 5/00](#) ,

for controlling the ESLM, e.g. control of the light source based on electronic image signal, light conditioning specially adapted for the ESLM, or

for controlling other camera functions, e.g. exposure, shaking by influencing optical parts of the camera (generation of control signals for focussing for optical elements [G02B 7/28](#) ; using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. [G03B](#), [G03F](#), [H04N](#));

electronic image data storage (data storage in general [G11B](#), [G11C](#)); in-camera image processing e.g. correction of lens distortion, defect pixel correction, noise suppression, removal of motion blur, improving of the dynamic range of the image, in-projector image processing, electronic image data manipulation, e.g. during display or projection (image processing per se [G06T](#));

electronic viewfinders e.g. control of image pickup devices based on information indicated by the electronic viewfinder displaying an image signal generated by the EIS ;

electrical or mechanical aspects of camera modules using electronic image sensors, as well as related constructional details as in webcams or mobile phones (see [H04M 1/0264](#) for mounting structure in mobile phones);

details of projectors peculiar to the use of an ESLM, e.g. dichroic or polarizing arrangements specially adapted for the ESLM (dichroic or polarizing arrangements in general [G02B](#), [G03B](#));

remote control of cameras or projectors peculiar to the EIS or the ESLM, e.g. affecting their operation, or based on a generated image signal;

adaptations peculiar to the use of a EIS or ESLM and/or the display, the transmission, recording or other use of electrical image data and related circuitry, e.g. mounting of EIS or ESLM, integrated cleaning system for the EIS, dust mapping, cooling of the EIS, controlling the operation of the EIS by external input signals;

systems or apparatus wherein the inventive contribution lies in the interaction between features covered in Notes 1 above, concerning cameras and projectors, when interacting with those covered in Note 1 of [G03B](#), e.g. switch-over between electronic motion-blur correction of electronic viewfinder during focussing and optical motion-blur correction of the lens during exposure, electronic motion blur correction of the electronic image sensor based on output signals of additional sensor, or interaction between mechanical shutter and electronic control of the charge accumulation period of the EIS;]

(in group [H04N 1/00](#)) systems for the transmission or the reproduction of arbitrarily composed pictures or patterns in which the local light variations composing a picture are not subject to variation with time, e.g. documents (both written and printed), maps, charts, photographs (other than cinematograph films);

circuits specially designed for dealing with pictorial communication signals, e.g. television signals, as distinct from merely signals of a particular frequency range.

2. This subclass does not cover :

circuits or other parts of systems which form the subject of other subclasses, which are covered by the corresponding subclasses, e.g. [H03C](#), [H03F](#), [H03J](#), [H04B](#), [H04H](#);

systems in which legible alphanumeric or like character forms are analysed according to step (a) of Note (1) to derive an electric signal from which the character is recognised by comparison with stored information, which are covered by subclass [G06K](#);

systems for the direct photographic copying of an original picture in which an electric signal representative of the picture is derived according to the said step (a) of and employed to modify the operation of the system, e.g. to control exposure, which are covered by class [G03](#);

systems for the reproduction according to step (b) of Note (1) of pictures comprising alphanumeric or like character forms but involving the production of the equivalent of a signal which would be derived according to the abovementioned step (a), e.g. by cams, punched card or tape, coded control signal, or other means, which are covered by the subclass for the application, e.g. [G01D](#), [G06T](#), [H04L](#);

systems for the reproduction to the above-mentioned step (b) of pictures comprising alphanumeric or like character forms and involving the generation according to the abovementioned step (a) of picture-representative electric signals from a pre-arranged assembly of such characters, or records thereof, forming an integral part of the systems, which are covered by the subclass for the application, e.g. [B41B](#), [G06K](#), subject to those applications which are covered by this subclass; printing, duplication or marking methods, or materials or processes therefor, which are covered by the relevant subclasses, e.g. [B41C](#), [B41M](#), [G03C](#), [G03F](#), [G03G](#);

apparatus or methods for taking photographs using light sensitive film for image capture, apparatus/methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, and their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;

aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus methods for taking photographs using light sensitive film, i.e. insofar as not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, and their related controls insofar as they are not peculiar to the presence or use of the EIS, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake);

aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus/ methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, and their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystone correction;

- (opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;
optical viewfinders;
remote control of cameras and projectors insofar not peculiar to the EIS or ESLM, e.g. not affecting their operation, or being based on a generated image signal;
optical aspects of camera modules using electronic image sensors and related constructional details (optical elements or arrangements associated with solid state imager structures [H01L 27/14625](#));
constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM;]
3. In this subclass, the following expression is used with the meaning indicated: "television systems" means those systems for the {electronic generation} , transmission and reproduction of arbitrarily composed pictures in which the local light variations composing a picture may change with time, e.g. natural "live" scenes, {electronic} recordings of such scenes such as cinematograph films].
4. In this subclass, as in subclass [G03B](#), the following terms are used with the meaning indicated:
- "camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;
- "projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an electric image signal into an optical signal using an electronic spatial light modulator;
- "electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;
- "additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;
- "electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.]

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups :

- [H04N 5/31](#) covered by [G01S 7/52](#), [G01S 15/89](#)
- [H04N 5/761](#) covered by [H04N 5/782](#)
- [H04N 5/7613](#) covered by [H04N 5/782](#)
- [H04N 5/7617](#) covered by [H04N 5/782](#)
- [H04N 5/922](#) covered by [H04N 5/92](#)
- [H04N 5/924](#) covered by [H04N 5/92](#)
- ~~[H04N 7/40](#) covered by [H04N 19/00](#)~~
- ~~[H04N 7/42](#) covered by [H04B 14/06](#)~~
- ~~[H04N 7/44](#) covered by [H04B 14/06](#)~~
- ~~[H04N 9/815](#) covered by [H04N 9/81](#)~~

- [H04N 11/24](#) covered by [H04N 11/002](#)
- [H04N 15/00](#) covered by [H04N 13/00](#)

- H04N 1/00** **Scanning, transmission or reproduction of documents or the like, e.g. facsimile transmission; Details thereof**~~{(-recording arrangements for measuring instruments [G01D](#) ; sensing record carriers [G06K 7/00](#) ; character or pattern recognition [G06K 9/00](#) ; mosaic printer telegraph systems [H04L 21/00](#)-)}~~
- H04N 1/00002 · {Diagnosis, testing or measuring; Detecting, analysing or monitoring not otherwise provided for ~~(-error detection, error correction or monitoring in digital computers or digital computer components [G06F 11/00](#)-)}~~
- U H04N 1/00026 · · {Methods therefor}
- H04N 1/00031 · · · {Testing, i.e. determining the result of a trial ~~(-[H04N 1/00029](#) takes precedence; using test signals for transmission mode changing [H04N 2201/33371](#)-)}~~
- H04N 1/00034 · · · {Measuring, i.e. determining a quantity by comparison with a standard ~~(-[H04N 1/00031](#) takes precedence-)}~~
- H04N 1/00037 · · · {Detecting, i.e. determining the occurrence of a predetermined state ~~(-[H04N 1/00031](#) takes precedence-)}~~
- H04N 1/00042 · · · {Monitoring, i.e. observation ~~(-[H04N 1/00029](#) to [H04N 1/00039](#) take precedence-)}~~
- U H04N 1/00058 · · · {using a separate apparatus}
- H04N 1/00061 · · · · {using a remote apparatus ~~(-[H04N 1/00066](#) takes precedence-)}~~
- U H04N 1/00071 · · {characterised by the action taken}
- H04N 1/00074 · · · {Indicating or reporting ~~(-details of user-machine interface [H04N 1/0035](#)-)}~~
- H04N 1/00082 · · · {Adjusting or controlling ~~(-interrupting an operation [H04N 1/00915](#) ; inhibiting an operation [H04N 1/00925](#)-)}~~
- H04N 1/00087 · · · · {Setting or calibrating ~~(-picture signal circuits [H04N 1/40](#)-)}~~
- H04N 1/00092 · · {relating to the original or to the reproducing medium, e.g. imperfections or dirt ~~(-detecting properties of a sheet [H04N 1/00681](#)-)}~~
- U H04N 1/00095 · {Systems or arrangements for the transmission of the picture signal}
- H04N 1/001 · · {specially adapted for transmission via digital wireline networks ~~(-[H04N 1/00098](#) takes precedence-)}~~
- H04N 1/00103 · · {specially adapted for radio transmission, e.g. via satellites ~~(-[H04N 1/00098](#) takes precedence-)}~~
- H04N 1/00114 · · {with transmission of additional information signals ~~(-for control or supervision between transmitter and receiver [H04N 1/32101](#)-)}~~
- U H04N 1/00127 · {Connection or combination of a still picture apparatus with another apparatus, e.g. for storage, processing or transmission of still picture signals or of information associated with a still picture}
- H04N 1/00129 · · {with a display device, e.g. CRT or LCD monitor ~~(-with a television apparatus [H04N 1/00283](#) ; arrangements for control of display devices [G09G](#)-)}~~
- U H04N 1/00132 · · {in a digital photofinishing system, i.e. a system where digital photographic images undergo typical photofinishing processing, e.g. printing ordering}
- H04N 1/00148 · · · {Storage ~~(-information retrieval [G06F 17/30](#)-)}~~
- H04N 1/00167 · · · {Processing or editing ~~(-[H04N 1/00196](#) to [H04N 1/00201](#) take precedence-)}~~
- U H04N 1/00169 · · · {Digital image input}
- H04N 1/00172 · · · · {directly from a still digital camera or from a storage medium mounted in a still digital camera ~~(-[H04N 1/0018](#) takes precedence-)}~~
- H04N 1/00175 · · · · {from a still image storage medium ~~(-[H04N 1/00172](#) , [H04N 1/0018](#) take precedence-)}~~
- H04N 1/00185 · · · {Image output (for details of particular output arrangements see the relevant sub-class, e.g. [B41J](#), [G03B](#), [G09G](#), [G11B](#))}

- H04N 1/00188 {Printing, e.g. prints or reprints ([H04N 1/0019](#) , [H04N 1/00196](#) take precedence-)}
- H04N 1/00196 {Creation of a photo-montage, e.g. photoalbum ([H04N 1/0019](#) takes precedence-)}
- H04N 1/00204 . . {with a digital computer or a digital computer system, e.g. an internet server (-programmed control between transmitter and receiver or between image input and image output device [H04N 1/32561](#)-)}
- H04N 1/00206 . . . {Transmitting or receiving computer data via an image communication device, e.g. a facsimile transceiver ([H04N 1/00236](#) takes precedence-)}
- U H04N 1/00209 . . . {Transmitting or receiving image data, e.g. facsimile data, via a computer, e.g. using e-mail, a computer network, the internet, I-fax}
- U H04N 1/00214 {details of transmission}
- H04N 1/00217 {only involving computer data transmission protocols, e.g. SMTP, WAP or HTTP (-communication protocol aspects and techniques in packet data networks [H04L 69/00](#) ; network-specific arrangements or communication protocols supporting networked applications [H04L 67/00](#)-)}
- U H04N 1/00222 {details of image data generation or reproduction, e.g. scan-to-email or network printing}
- H04N 1/00225 {details of image data generation, e.g. scan-to-email or network scanners (-using an image reading device as a local input to a computer [H04N 1/00241](#)-)}
- H04N 1/00228 {Image push arrangements, e.g. from an image reading device to a specific network destination (-push based network services [H04L 67/26](#)-)}
- H04N 1/00233 {details of image data reproduction, e.g. network printing or remote image display (-using an image reproducing device as a local output from a computer [H04N 1/00238](#) ; digital output from computer to printer unit [G06F 3/12](#)-)}
- H04N 1/00236 . . . {using an image reading or reproducing device, e.g. a facsimile reader or printer, as a local input to or local output from a computer (-image input to or image output from a computer via a network [H04N 1/00209](#)-)}
- H04N 1/00238 {using an image reproducing device as a local output from a computer (-output via network, e.g. network printing [H04N 1/00233](#)-)}
- H04N 1/00241 {using an image reading device as a local input to a computer (-input via network, e.g. network scanners [H04N 1/00225](#)-)}
- H04N 1/00244 . . . {with a server, e.g. an internet server (-fax-servers or the like for store and forward [H04N 1/324](#)-)}
- H04N 1/00249 . . {with a photographic apparatus, e.g. a photographic printer or a projector (photographic apparatus per se [G03B](#), [G03D](#))}
- H04N 1/00267 . . . {with a viewing or projecting apparatus, e.g. for reading image information from a film ([H04N 1/00262](#) takes precedence-)}
- H04N 1/00281 . . {with a telecommunication apparatus, e.g. a switched network of teleprinters for the distribution of text-based information, a selective call terminal (-details of transmission [H04N 1/00095](#) ; establishing a communication with one of a facsimile machine or another apparatus sharing a single line [H04N 1/32704](#) ; interfacing cordless telephone terminals with an accessory to increase the functionality of user interface [H04M 1/72527](#)-)}
- U H04N 1/00283 . . . {with a television apparatus}
- H04N 1/00286 {with studio circuitry, devices or equipment, e.g. television cameras (-television studio circuitry, devices or equipment per se [H04N 5/222](#)-)}

- H04N 1/00291 . . . {with receiver circuitry (~~television receiver circuitry per se [H04N 5/44](#)~~)}
- H04N 1/00297 . . . {with a television signal recorder, e.g. for recording facsimile images on a VCR (~~motion video recording combined with still video recording in a still video camera [H04N 1/212](#)~~)}
- H04N 1/00302 . . . {with a telephonic apparatus, e.g. telephone answering machine or videotex terminal (~~[H04N 1/00307](#) takes precedence; telephonic communication [H04M](#)~~)}
- H04N 1/00307 . . . {with a mobile telephone apparatus (~~constructional features of portable telephone sets [H04M 1/0202](#); mobile radio systems [H04W 84/00](#)~~)}
- H04N 1/0031 . . . {with a selective call apparatus, e.g. a paging device (~~selective call receivers [H04W 88/022](#) ; selective call encoders [H04W 88/185](#)~~)}
- H04N 1/00312 . . . {with a digital transmission apparatus, e.g. a switched network of teleprinters for the distribution of text-based information, SMS or ISDN device (~~transmitting or receiving via a computer e.g. using e-mail, a computer network or the internet [H04N 1/00214](#) ; transmission of digital information [H04L](#)~~)}
- H04N 1/00315 . . . {with a radio transmission apparatus (~~with a cordless telephone [H04N 1/00305](#) ; systems or arrangements for the transmission of a picture signal specially adapted for transmission via radio [H04N 1/00103](#) ; [H04N 1/00307](#) takes precedence; radio transmission systems [H04B 7/00](#) ; wireless communication networks [H04W](#)~~)}
- H04N 1/0032 . . . {with a medium handling apparatus, e.g. a sheet sorter (handling thin or filamentary material, e.g. sheets [B65H](#))}
- H04N 1/00326 . . . {with a data reading, recognizing or recording apparatus, e.g. with a bar-code apparatus (~~arrangements for the associated working of recording or reproducing apparatus with related apparatus [G11B 31/00](#)~~)}
- U H04N 1/00328 . . . {with an apparatus processing optically-read information}
- H04N 1/00331 . . . {with an apparatus performing optical character recognition (~~arrangements for recognising printed or written characters [G06K 9/00](#)~~)}
- H04N 1/00334 . . . {with an apparatus processing barcodes or the like (~~arrangements for sensing record carriers [G06K 7/00](#)~~)}
- H04N 1/00336 . . . {with an apparatus performing pattern recognition, e.g. of a face or a geographic feature (~~arrangements for recognising patterns [G06K 9/00](#)~~)}
- H04N 1/00339 . . . {with an electronic or magnetic storage medium I/O device (~~RFID or the like [H04N 1/00342](#)~~)}
- H04N 1/00342 . . . {with a radio frequency tag transmitter or receiver (~~storage of additional information in an RFID tag attached to an image bearing paper sheet [H04N 1/32138](#)~~)}
- H04N 1/00344 . . . {with a management, maintenance, service or repair apparatus (~~monitoring [H04N 1/00002](#)~~)}
- H04N 1/00347 . . . {with another still picture apparatus, e.g. hybrid still picture apparatus (~~circuits or arrangements for control or supervision between image input and image output device [H04N 1/32](#)~~)}
- H04N 1/0035 . . . {User-machine interface; Control console (~~input or output arrangements for computers [G06F 3/00](#)~~)}
- H04N 1/00352 . . . {Input means (~~[H04N 1/00411](#) takes precedence; input arrangements for computers [G06F 3/00](#)~~)}
- H04N 1/00355 . . . {Mark-sheet input (~~sensing record carriers [G06K 7/00](#) ; recognising printed or written characters [G06K 9/00](#)~~)}
- U H04N 1/00358 . . . {Type of the scanned marks}

- H04N 1/00366 {Marks in boxes or the like, e.g. crosses or blacking out (~~H04N 1/0036 takes precedence~~)}
- H04N 1/00381 . . . {Input by recognition or interpretation of visible user gestures (~~manual input means, e.g. digitisers, writing tablets H04N 1/00392 ; recognition algorithms G06K 9/00335 ; gesture input to computers G06F3/00B8~~)}
- H04N 1/00384 . . . {Key input means, e.g. buttons or keypads (~~electromechanical details of key input means in general H01H 13/00~~)}
- H04N 1/00389 {Programmable function keys, e.g. for one-touch operation (~~H04N 1/00387 takes precedence; for automation of transmitter jobs H04N 1/32058~~)}
- H04N 1/00395 . . . {Arrangements for reducing operator input (~~input arrangements for job or mode instructions or parameters H04N 1/00962 ; intelligent menu interfaces H04N 1/00437~~)}
- H04N 1/00405 . . {Output means (~~output arrangements for computers G06F 3/00~~)}
- U H04N 1/00408 . . . {Display of information to the user, e.g. menus}
- H04N 1/00413 {using menus, i.e. presenting the user with a plurality of selectable options (~~H04N 1/00464 takes precedence~~)}
- U H04N 1/00416 {Multi-level menus}
- U H04N 1/00419 {Arrangements for navigating between pages or parts of the menu}
- H04N 1/00427 {using a menu list (~~H04N 1/00421 , H04N 1/00424 , H04N 1/00429 take precedence~~)}
- H04N 1/00477 . . . {Indicating status, e.g. of a job (~~for control or supervision between transmitter and receiver or between image input and image output device H04N1/3219~~)}
- H04N 1/0049 . . . {providing a visual indication to the user, e.g. using a lamp (~~H04N 1/00408 takes precedence~~)}
- U H04N 1/00519 . {Constructional details not otherwise provided for, e.g. housings, covers}
- H04N 1/00543 . . {Allowing easy access, e.g. for maintenance or in case of paper jam (~~H04N 1/00538 takes precedence~~)}
- H04N 1/00557 . . {Connection or assembly of components or elements (~~H04N 1/00538 takes precedence~~)}
- H04N 1/00559 . . {Mounting or support of components or elements (~~H04N 1/00538 takes precedence~~)}
- U H04N 1/00567 . {Handling of original or reproduction media, e.g. cutting, separating, stacking}
- H04N 1/0057 . . {Conveying sheets before or after scanning (~~arrangements for conveying sheets as part of the scanning operation H04N 1/04 and subgroups~~)}
- H04N 1/00588 . . . {to the scanning position (~~H04N 1/00572 , H04N 1/00594 take precedence~~)}
- H04N 1/00591 . . . {from the scanning position (~~H04N 1/00572 takes precedence~~)}
- H04N 1/00594 {along at least a part of the same path as transport to the scanning position (~~H04N 1/00575 takes precedence~~)}
- H04N 1/00599 . . . {Using specific components (details of components related to handling thin or filamentary material B65H)}
- H04N 1/00612 {Path switches (~~H04N 1/00575 , H04N 1/00623 , H04N 1/00633 take precedence~~)}
- H04N 1/00631 . . {Ejecting or stacking (~~H04N 1/00641 takes precedence~~)}
- H04N 1/00633 . . . {selectively to one of a plurality of output trays (~~H04N 1/00641 takes precedence~~)}
- H04N 1/00641 . . {Sorting, reordering or inverting (postal sorting or sorting individual articles B07C)}

- H04N 1/00649
 - {Control or synchronising different handling operations (~~H04N 1/00657~~ takes precedence)}
- H04N 1/00652
 - • {Control of feeding speed, e.g. fast feeding to scanning position (~~H04N 1/00673~~ takes precedence)}
- H04N 1/00655
 - {Apparatus in common for different handling operations (~~H04N 1/00575~~, ~~H04N 1/00594~~, ~~H04N 1/00596~~, ~~H04N 1/00618~~ take precedence)}
- H04N 1/00681
 - {Detecting the presence, position or size of a sheet or correcting its position before scanning (~~H04N 1/047~~ takes precedence; mode signalling ~~H04N 1/333~~; skew detection or correction in image signals ~~H04N 1/3878~~)}
- H04N 1/00795
 - {Reading arrangements (~~details of scanning heads H04N 1/024~~; scanning arrangements therefor ~~H04N 1/04~~)}
- U H04N 1/00798
 - {Circuits or arrangements for the control thereof, e.g. using a programmed control device or according to a measured quantity}
- H04N 1/00824
 - • {for displaying or indicating, e.g. a condition or state (~~details of displaying or indicating means H04N 1/00405~~)}
- H04N 1/0083
 - {Arrangements for transferring signals between different components of the apparatus, e.g. arrangements of signal lines or cables (~~for control or supervision between image input and output device H04N 1/32~~)}
- U H04N 1/00838
 - {Preventing unauthorised reproduction}
- U H04N 1/0084
 - • {Determining the necessity for prevention}
- H04N 1/00843
 - • • {based on recognising a copy prohibited original, e.g. a banknote (~~recognising characters or patterns G06K 9/00~~; testing paper currency or similar valuable papers for genuineness ~~G07D 7/00~~)}
- U H04N 1/00856
 - • {Preventive measures}
- H04N 1/00864
 - • • {Modifying the reproduction, e.g. outputting a modified copy of a scanned original (~~details of composing or otherwise geometrically modifying originals H04N 1/387~~)}
- H04N 1/00867
 - • • • {with additional data, e.g. by adding a warning message (~~details of embedding additional information in an image H04N 1/32144~~)}
- U H04N 1/00885
 - {Power supply means, e.g. arrangements for the control of power supply to the apparatus or components thereof}
- U H04N 1/00888
 - • {Control thereof}
- H04N 1/00891
 - • • {Switching on or off, e.g. for saving power when not in use (~~H04N 1/00896~~ takes precedence)}
- H04N 1/00901
 - • {Using different supplies or connection to an external supply (~~H04N 1/00893~~, ~~H04N 1/00896~~ take precedence)}
- H04N 1/00904
 - • {Arrangements for supplying power to different circuits or for supplying power at different levels (~~H04N 1/00896~~ takes precedence)}
- H04N 1/00907
 - • {Details of supply connection, e.g. arrangement of power cables (~~H04N 1/00901~~ and ~~H04N 1/00904~~ take precedence)}
- H04N 1/00909
 - {Cleaning arrangements or preventing or counter-acting contamination from dust or the like (cleaning in general, prevention of fouling in general ~~B08B~~)}
- U H04N 1/00912
 - {Arrangements for controlling a still picture apparatus or components thereof not otherwise provided for}
- U H04N 1/00915
 - • {Assigning priority to, or interrupting, a particular operation}
- H04N 1/00923
 - • • {Variably assigning priority (~~H04N 1/0092~~ takes precedence)}
- H04N 1/00933
 - • {Timing control or synchronising (~~H04N 1/00928~~, ~~H04N 1/00931~~, ~~H04N 1/00954~~ and ~~H04N 1/0096~~ take precedence)}
- H04N 1/00938
 - • {Software related arrangements, e.g. loading applications (~~program loading in general G06F 9/445~~)}

- H04N 1/00941
 - • {Interaction of different applications (~~H04N 1/00949~~ takes precedence; multiprogramming arrangements of computers [G06F 9/46](#)-)}
- H04N 1/00949
 - • {Combining applications, e.g. to create workflows (~~allocation of computer machine resources considering the execution order of a plurality of tasks [G06F 9/5038](#)-)}~~
- H04N 1/00954
 - {Scheduling operations or managing resources (~~H04N 1/0096~~ takes precedence; program initiating or switching [G06F 9/48](#) ; allocation of computer resources [G06F 9/50](#)-)}
- H04N 1/00957
 - {Compiling jobs, e.g. for batch processing (~~H04N 1/3208~~ takes precedence; program code compilation [G06F 8/41](#)-)}
- H04N 1/0096
 - {Simultaneous or quasi-simultaneous functioning of a plurality of operations (~~H04N 1/32545~~ takes precedence; multiprogramming arrangements of computers [G06F 9/46](#)-)}
- H04N 1/00962
 - {Input arrangements for operating instructions or parameters, e.g. updating internal software (~~program loading in general [G06F 9/445](#) ; network-specific protocols involving the movement of software or configuration parameters [H04L 67/34](#)-)}~~
- H04N 1/00968
 - {by scanning marks on a sheet (~~mark-sheet input means [H04N 1/00355](#) ; sensing record carriers [G06K 7/00](#)-)}~~
- H04N 1/024
 - Details of scanning heads; {Means for illuminating the original (~~circuit details thereof [H04N 1/40](#)-)}~~
- U H04N 1/02418
 - {for picture information pick up and reproduction}
- H04N 1/02472
 - • {using a single head, i.e. for pick up and reproduction (~~H04N 1/02436~~ takes precedence-)}
- H04N 1/02481
 - {Arrangements for positioning elements within a head (~~H04N 1/02409~~ takes precedence-)}
- H04N 1/0249
 - {Arrangements for mounting or supporting elements within a scanning head (~~H04N 1/02481~~ takes precedence-)}
- U H04N 1/028
 - for picture information pick-up
- H04N 1/0281
 - • {with means for collecting light from a line or an area of the original and for guiding it to only one or a relatively low number of picture element detectors (~~light-guides per se [G02B 6/00](#)-)}~~
- U H04N 1/02815
 - • {Means for illuminating the original, not specific to a particular type of pick-up head}
- U H04N 1/0282
 - • • {Using a single or a few point light sources, e.g. a laser diode}
- H04N 1/02825
 - • • • {in combination with at least one reflector which is fixed in relation to the light source (~~H04N 1/02835~~ and [H04N 1/0284](#) take precedence-)}
- H04N 1/02835
 - • • • {in combination with a light guide, e.g. optical fibre, glass plate (~~light-guides per se [G02B 6/00](#)-)}~~
- U H04N 1/02845
 - • • • {using an elongated light source, e.g. tubular lamp, LED array}
- H04N 1/02855
 - • • • {in combination with a light guide, e.g. optical fibre, glass plate (~~light-guides per se [G02B 6/00](#)-)}~~
- U H04N 1/02885
 - • • • {Means for compensating spatially uneven illumination, e.g. an aperture arrangement}
- H04N 1/0289
 - • • • {Light diffusing elements, e.g. plates or filters (~~optical diffusing elements per se [G02B 5/02](#)-)}~~
- H04N 1/02895
 - • • • {Additional elements in the illumination means or cooperating with the illumination means, e.g. filters (~~H04N 1/02885~~ takes precedence; optical elements other than lenses per se [G02B 5/00](#)-)}
- H04N 1/029
 - • Heads optically focused on only one picture element at a time (~~H04N 1/0281~~ takes precedence-)}

- H04N 1/03
 - • • with photodetectors arranged in a substantially linear array (-scanning of linear arrays [H04N 1/19-](#))
- U H04N 1/031
 - • • • the photodetectors having a one-to-one and optically positive correspondence with the scanned picture elements, e.g. linear contact sensors
- H04N 1/0311
 - • • • {using an array of elements to project the scanned image elements onto the photodetectors ([-H04N 1/0318](#) takes precedence)}
- U H04N 1/032
 - • for picture information reproduction
- H04N 1/034
 - • • using ink, e.g. ink-jet heads([-H04N 1/0323](#) takes precedence)}
- H04N 1/04
 - Scanning arrangements,{i.e. arrangements for the displacement of active reading or reproducing elements relative to the original or reproducing medium, or vice versa} ([-H04N 1/387](#) takes precedence; { scanning by varying the direction of light in general [G02B 26/10](#) })
- H04N 1/0402
 - • {Scanning different formats; Scanning with different densities of dots per unit length, e.g. different numbers of dots per inch (dpi); Conversion of scanning standards ([-H04N 1/00283](#) takes precedence; picture signal circuits for modification of image resolution [H04N 1/3935](#) , [H04N 1/40068-](#))}
- U H04N 1/042
 - • • {Details of the method used}
- H04N 1/044
 - • • • {Tilting an optical element, e.g. a refractive plate ([-H04N 1/0423](#) takes precedence)}
- H04N 1/0461
 - • {part of the apparatus being used in common for reading and reproducing (-simultaneous scanning of the original picture and the reproduced picture with a common scanning device [H04N 1/207-](#))}
- H04N 1/047
 - • Detection, control or error compensation of scanning velocity or position ({ [H04N 1/0402](#) and } [H04N 1/17](#) take precedence)}
- H04N 1/06
 - • using cylindrical picture-bearing surfaces,{i.e. scanning a main-scanning line substantially perpendicular to the axis and lying in a curved cylindrical surface (-for feeding a sheet in the subscanning direction by rotation about its axis only [H04N 1/12-](#))}
- H04N 1/0607
 - • • {Scanning a concave surface, e.g. with internal drum type scanners ([-H04N 1/0657](#) takes precedence)}
- H04N 1/0692
 - • • {Details of the cylindrical surface (-for mounting or holding the sheet [H04N 1/08-](#))}
- H04N 1/10
 - • using flat picture-bearing surfaces({[-H04N 1/113](#) , [H04N 1/195](#) take precedence; arrangements for the main-scanning [H04N 1/12-](#))}
- H04N 1/1004
 - • • {using two-dimensional electrical scanning, e.g. cathode-ray tubes (-using two-dimensional arrays [H04N 1/195-](#))}
- H04N 1/1013
 - • • {with sub-scanning by translatory movement of at least a part of the main-scanning components ([-H04N 1/107](#) takes precedence)}
- U H04N 1/107
 - • • with manual scanning
- H04N 1/1072
 - • • • {Means for guiding the scanning, e.g. rules ([-H04N 1/1077](#) takes precedence)}
- H04N 1/12
 - • using the sheet-feed movement {or the medium-advance or the drum-rotation movement}as the slow scanning component,{e.g. arrangements for the main-scanning}({ sheet-feed movement by translatory movement of a flat picture-bearing surface [H04N 1/1008](#) ; main-scanning using oscillating or rotating mirrors [H04N 1/113](#) ; } using multi-element arrays [H04N 1/19-](#))
- H04N 1/121
 - • • {Feeding arrangements (-transporting sheets to or from the scanning position [H04N 1/0057](#) ; control or error compensation of sub-scanning velocity [H04N 1/0473-](#))}
- H04N 1/122
 - • • • {using a feed belt (-feed belts for transporting to or from the scanning position [H04N 1/0061-](#))}

- H04N 1/14
 - • • using a rotating endless belt carrying the scanning heads {or at least a part of the main scanning components}
- U H04N 1/19
 - • using multi-element arrays
- U H04N 1/191
 - • • the array comprising a one-dimensional array,{or a combination of one-dimensional arrays, or a substantially one-dimensional array, e.g. an array of staggered elements}
- H04N 1/192
 - • • Simultaneously {or substantially simultaneously} scanning picture elements on one main scanning line ({-details of the sub-scanning [H04N 1/10](#) , [H04N 1/12](#)-})
- H04N 1/195
 - • • the array comprising a two-dimensional array {or a combination of two-dimensional arrays}
- H04N 1/203
 - • Simultaneous scanning of two or more separate pictures,{e.g. two sides of the same sheet {-refeeding a sheet for double-sided scanning [H04N 1/00572](#)-}}
- H04N 1/2032
 - • • {of two pictures corresponding to two sides of a single medium {-refeeding a sheet for double-sided scanning [H04N 1/00572](#)-}}
- H04N 1/21
 - Intermediate information storage {-[H04N 1/387](#) , [H04N 1/41](#) take precedence; { for control between transmitter and receiver or between image input and image output device [H04N 1/32358](#) } ; information storage in general [G11](#) ; { indexing, editing [G11B 27/00](#))}
- U H04N 1/2104
 - • {for one or a few pictures}
- U H04N 1/2112
 - • • {using still video cameras}
- H04N 1/2116
 - • • • {Picture signal recording combined with imagewise recording, e.g. photographic recording {-photographic cameras [G03B 19/00](#)-}}
- H04N 1/212
 - • • • {Motion video recording combined with still video recording {-television signal recording [H04N 5/76](#)-}}
- H04N 1/2166
 - • {for mass storage, e.g. in document filing systems {-information retrieval [G06F 17/30](#)-}}
- H04N 1/23
 - Reproducing arrangements {-details of scanning heads [H04N 1/024](#) ; scanning arrangements therefor [H04N 1/04](#)-}{ perforating or marking objects by electrical discharge [B26F 1/28](#)-}
- H04N 1/2307
 - • {Circuits or arrangements for the control thereof, e.g. using a programmed control device, according to a measured quantity {-[H04N 1/27](#) , [H04N 1/29](#) take precedence-}}
- H04N 1/2376
 - • • {Inhibiting or interrupting a particular operation or device {-preventing unauthorised reproduction [H04N 1/00838](#)-}}
- H04N 1/2392
 - • • {for displaying or indicating, e.g. a condition or state {-details of displaying or indicating means [H04N 1/00405](#)-}}
- H04N 1/31
 - • Mechanical arrangements for picture transmission, e.g. adaptation of clutches, gearing, gear transmissions {contains no documents}
- H04N 1/32
 - Circuits or arrangements for control or supervision between transmitter and receiver,{or between image input and image output device {-[H04N 1/38](#) , [H04N 1/387](#) take precedence-}}
- H04N 1/32005
 - • {Automation of particular receiver jobs, e.g. rejecting unwanted calls {-requesting a communication from a transmitter [H04N 1/32771](#) ; with picture signal storage for forwarding messages [H04N 1/32358](#)-}}
- H04N 1/32016
 - • • {according to the caller's identification, e.g. fax number {-[H04N 1/3201](#) takes precedence-}}
- H04N 1/32026
 - • • {Changing the receiver mode of operation, e.g. paper reception to memory reception or vice versa {-[H04N 1/32673](#) takes precedence-}}

- U H04N 1/32037
 - • {Automation of particular transmitter jobs, e.g. multi-address calling, auto-dialing}
- H04N 1/32048
 - • • {Auto-dialling or Auto-calling (~~H04N 1/32053 to H04N 1/32074 take precedence-~~)}
- H04N 1/32053
 - • • {Delayed transmission, e.g. to make use of reduced connection rates (~~H04N 1/32074 takes precedence-~~)}
- U H04N 1/32101
 - • {Display, printing, storage or transmission of additional information, e.g. ID code, date and time or title}
- U H04N 1/32106
 - • • {separate from the image data, e.g. in a different computer file}
- H04N 1/32112
 - • • • {in a separate computer file, document page or paper sheet, e.g. a fax cover sheet (~~H04N 1/32122 takes precedence-~~)}
- H04N 1/32117
 - • • • {in a separate transmission or protocol signal prior to or subsequent to the image data transmission, e.g. in digital identification signal (DIS), in non standard setup (NSS) or in non standard field (NSF)(~~for mode signalling H04N 1/333-~~)}
- H04N 1/32128
 - • • {attached to the image data, e.g. file header, transmitted message header, information on the same page or in the same computer file as the image (~~for information embedded in the image H04N 1/32144-~~)}
- U H04N 1/32144
 - • • {embedded in the image data, i.e. enclosed or integrated in the image, e.g. watermark, super-imposed logo or stamp}
- U H04N 1/32149
 - • • • {Methods relating to embedding, encoding, decoding, detection or retrieval operations}
- H04N 1/32154
 - • • • • {Transform domain methods (~~H04N 1/32309 takes precedence-~~)}
- H04N 1/32203
 - • • • • {Spatial or amplitude domain methods (~~H04N 1/32309 takes precedence-~~)}
- H04N 1/32208
 - • • • • • {involving changing the magnitude of selected pixels, e.g. overlay of information or super-imposition (~~H04N 1/32219 , H04N 1/32224 take precedence-~~)}
- H04N 1/32219
 - • • • • • {involving changing the position of selected pixels, e.g. word shifting, or involving modulating the size of image components, e.g. of characters (~~H04N 1/32224 takes precedence-~~)}
- H04N 1/32229
 - • • • • • {with selective or adaptive application of the additional information, e.g. in selected regions of the image (~~H04N 1/32213 takes precedence-~~)}
- H04N 1/32261
 - • • • • • {in binary data (~~H04N 1/32256 takes precedence-~~)}
- H04N 1/32352
 - • • • {Controlling detectability or arrangements to facilitate detection or retrieval of the embedded information, e.g. using markers (~~for decoding, detection or retrieval operations H04N 1/32149 and subgroups take precedence-~~)}
- H04N 1/32358
 - • {using picture signal storage, e.g. at transmitter (~~H04N 1/17 takes precedence-~~)}
- U H04N 1/324
 - • • {intermediate the transmitter and receiver terminals, e.g. at an exchange}
- H04N 1/32406
 - • • • {in connection with routing or relaying, e.g. using a fax-server or a store-and-forward facility (~~stored and forward data switching systems H04L 12/54-~~)}
- H04N 1/32496
 - • {Changing the task performed, e.g. reading and transmitting, receiving and reproducing, copying (~~facsimile mode changing H04N 1/333-~~)}
- U H04N 1/32609
 - • {Fault detection or counter-measures, e.g. original mis-positioned, shortage of paper}
- U H04N 1/32614
 - • • {related to a single-mode communication, e.g. at the transmitter or at the receiver}

- H04N 1/32619 {with retransmission (-retransmission after changing the mode [H04N 1/3333](#)-)}
- H04N 1/32646 . . . {Counter-measures (-inhibiting an operation [H04N 1/00925](#) , interrupting an operation [H04N 1/00915](#)-)}
- H04N 1/32651 {Indicating or reporting (-details of user-machine interface [H04N 1/0035](#)-)}
- H04N 1/32673 {Adjusting or controlling an operating mode, e.g. from paper reception to memory reception (-[H04N 1/32678](#) takes precedence; Inhibiting an operation [H04N 1/00925](#)-)}
- H04N 1/32678 {Performing substitution, e.g. substitute reception or substituting a corrupted line of data (-[H04N 1/32384](#) takes precedence-)}
- H04N 1/32683 {Preventive counter-measures, e.g. using redundant hardware, or anticipating a fault (-arrangements for keeping a communication line open [H04N 1/32795](#)-)}
- H04N 1/327 . . . Initiating, continuing or ending a single-mode communication; Handshaking therefor{(-[H04N 1/32614](#) takes precedence-)}
- H04N 1/32702 . . . {using digital control signals (-[H04N 1/32704](#) , [H04N 1/32614](#) , [H04N 1/32771](#) take precedence-)}
- U H04N 1/32704 . . . {Establishing a communication with one of a facsimile and another telecommunication apparatus sharing a single line}
- U H04N 1/32715 {Detecting}
- H04N 1/32736 {a state or mode of the facsimile apparatus (-[H04N 1/32728](#) takes precedence-)}
- U H04N 1/32765 . . . {Initiating a communication}
- H04N 1/32767 {in response to a user operation, e.g. actuating a switch (-[H04N 1/32769](#) and [H04N 1/32771](#) take precedence-)}
- U H04N 1/32771 {in response to a request, e.g. for a particular document}
- H04N 1/32776 {using an interactive, user-operated device, e.g. a computer terminal, mobile telephone (-[H04N 1/32782](#) , [H04N 1/32784](#) take precedence-)}
- H04N 1/32786 . . . {Ending a communication (-[H04N 1/32614](#) takes precedence-)}
- H04N 1/32789 . . . {Details of handshaking (-[H04N 1/32793](#) , [H04N 1/32795](#) and [H04N 1/32797](#) take precedence-)}
- H04N 1/32797 . . . {Systems adapted to communicate over more than one channel, e.g. via ISDN (-changing transmission mode according to type of channel [H04N 2201/33364](#) ; multichannel or multilink communication protocols [H04L 69/14](#)-)}
- U H04N 1/333 . . . Mode signalling or mode changing; Handshaking therefor
- H04N 1/33361 {according to characteristics or the state of the communication line (-[H04N 1/33353](#) and [H04N 2201/33371](#) take precedence-)}
- H04N 1/34 . . . for coin-freed systems; {pay systems (-telephonic metering [H04M 15/00](#) , coin-freed or like apparatus per se [G07F](#)-)}
- H04N 1/38 . . . Circuits or arrangements for blanking or otherwise eliminating unwanted parts of pictures (-[H04N 1/387](#) takes precedence-)
- H04N 1/387 . . . Composing, repositioning or otherwise {geometrically}modifying originals (-photoelectronic composing of characters [B41B 19/00](#) ; { image data processing or generation, in general [G06T](#) })
- U H04N 1/3872 . . . {Repositioning or masking}
- U H04N 1/3873 {defined only by a limited number of coordinate points or parameters, e.g. corners, centre; for trimming}
- H04N 1/3875 {combined with enlarging or reducing (-enlarging or reducing per se [H04N 1/393](#)-)}

- H04N 1/40
 - Picture signal circuits (~~H04N 1/387~~ takes precedence-)
- H04N 1/40025
 - • {Circuits exciting or modulating particular heads for reproducing continuous tone value scales (~~H04N 1/401~~ , ~~H04N 1/407~~ take precedence-)}
- H04N 1/40056
 - • {Circuits for driving or energising particular reading heads or original illumination means (~~H04N 1/401~~ , ~~H04N 1/407~~ take precedence-)}
- H04N 1/40068
 - • {Modification of image resolution, i.e. determining the values of picture elements at new relative positions (~~H04N 1/3935~~ takes precedence-)}
- H04N 1/40093
 - • {Modification of content of picture, e.g. retouching (~~geometric modifications H04N 1/387-~~)}
- H04N 1/401
 - • Compensating positionally unequal response of the pick-up or reproducing head (~~H04N 1/403~~ takes precedence-)
- H04N 1/403
 - • Discrimination between the two tones in the picture signal of a two-tone original (~~shaping pulses by limiting or thresholding, in general H03K 5/08-~~)
- U H04N 1/405
 - • Halftoning, i.e. converting the picture signal of a continuous-tone original into a corresponding signal showing only two levels

WARNING
[H04N 1/405](#) and sub-groups, except for [H04N 1/4056](#) are not complete, see [H04N 1/40018](#)
- H04N 1/4051
 - • • {producing a dispersed dots halftone pattern, the dots having substantially the same size (~~different sizes H04N 1/4057-~~)}
- U H04N 1/4055
 - • • {producing a clustered dots or a size modulated halftone pattern}
- H04N 1/4057
 - • • • {the pattern being a mixture of differently sized sub-patterns, e.g. spots having only a few different diameters (~~multi-toning H04N 1/40087-~~)}
- H04N 1/4058
 - • • • {with details for producing a halftone screen at an oblique angle (~~H04N 1/4056~~ takes precedence-)}
- H04N 1/41
 - Bandwidth or redundancy reduction (~~by scanning H04N 1/17~~ ; { [H04N 19/00](#) takes precedence; for data acquisition [G06F 17/40](#) ; coding for image data processing in general [G06T 9/00](#) ; data compression in general [H03M 7/30](#) })
- H04N 1/411
 - • for the transmission {or storage}or reproduction of two-tone pictures, e.g. black and white pictures
- U H04N 1/413
 - • • Systems or arrangements allowing the picture to be reproduced without loss or modification of picture-information
- H04N 1/419
 - • • • in which encoding of the length of a succession of picture-elements of the same value along a scanning line is the only encoding step{ [H04N 1/4135](#) to [H04N 1/417](#) take precedence-}
- H04N 1/42
 - Systems for two-way working {e.g. conference systems (~~H04N 1/32~~ takes precedence-)}
- U H04N 1/44
 - Secrecy systems
- H04N 1/4406
 - • {Restricting access, e.g. according to user identity (~~mechanisms actuated y cards, PIN or the like in apparatus for dispensing G07F 7/08-~~)}
- H04N 1/46
 - Colour picture communication systems{(~~colorimetry G01J 3/46-~~)}
- H04N 1/48
 - • Picture signal generators (~~for halftone screening H04N 1/52-~~)
- H04N 1/50
 - • Picture reproducers (~~for halftone screening H04N 1/52-~~)
- H04N 1/56
 - • Processing of colour picture signals (~~H04N 1/52~~ takes precedence-)
- H04N 1/58
 - • • Edge or detail enhancement; Noise or error suppression, e.g. colour misregistration correction (~~H04N 1/62~~ takes precedence-)
- H04N 1/60
 - • • Colour correction or control{(~~H04N 1/54~~ takes precedence-)}
- H04N 1/6011
 - • • • {with simulation on a subsidiary picture reproducer (~~H04N 1/622~~ takes precedence; matching two or more picture reproducers [H04N 1/6052-](#))}

- U H04N 1/6016 {Conversion to subtractive colour signals}
- H04N 1/6019 {using look-up tables (~~H04N 1/6025~~ takes precedence)}
- H04N 1/6027 {Correction or control of colour gradation or colour contrast (~~H04N 1/6058~~ takes precedence)}
- U H04N 1/603 {controlled by characteristics of the picture signal generator or the picture reproducer}
- H04N 1/6033 {using test pattern analysis (~~H04N 1/6055~~ takes precedence)}
- U H04N 1/6083 {controlled by factors external to the apparatus}
- H04N 1/6091 {by environmental factors, e.g. temperature or humidity (~~H04N 1/6086~~, ~~H04N 1/6088~~ take precedence)}
- U H04N 1/62 Retouching, i.e. modification of isolated colours only or in isolated picture areas only
- H04N 1/624 {Red-eye correction (~~control of camera based on recognised facial parts H04N 5/23219~~)}
- H04N 1/64 Systems for the transmission or the storage of the colour picture signal; Details therefor, e.g. coding or decoding means therefor(~~H04N 19/00~~ takes precedence)}
- H04N 1/646 . . . {Transmitting or storing colour television type signals, e.g. PAL, Lab; Their conversion into additive or subtractive colour signals or vice versa therefor (~~H04N 1/642~~, ~~H04N 1/644~~ take precedence)}
- H04N 1/648 . . . {Transmitting or storing the primary (*additive or subtractive*) *colour signals*(~~additive or subtractive~~)~~colour signals~~; Compression thereof (~~H04N 1/642~~ to ~~H04N 1/646~~ take precedence)}
- U H04N 3/00 Scanning details of television systems**
- H04N 3/02 . . . by optical-mechanical means only (~~H04N 3/36~~ takes precedence; optical scanning systems in general ~~G02B 26/10~~)
- H04N 3/04 . . . having a moving aperture {also apertures covered by lenses}
- H04N 3/10 . . . by means not exclusively optical-mechanical (~~H04N 3/36~~ takes precedence; electro-, magneto- or acousto-optical modulation or deflection of light beams ~~G02F 1/00~~)
- H04N 3/14 . . . by means of electrically scanned solid-state devices (~~for picture generation H04N 5/335~~)
WARNING
Constructional details **97DP12C2B**
- U H04N 3/15 . . . for picture signal generation
WARNING
This group is no longer used for classification of new documents as from December 1st, 2009. The backlog is continuously reclassified into group ~~H04N 5/335~~ and subgroups]
- H04N 3/1506 {with addressing of the image-sensor elements (~~H04N 3/1575~~ takes precedence)}
- H04N 3/1512 {for MOS image-sensors, e.g. MOS-CCD (~~H04N 3/1581~~ takes precedence)}
- H04N 3/1525 {with charge transfer within the image-sensor, e.g. time delay and integration (~~H04N 3/1575~~ takes precedence)}
- U H04N 3/155 {Control of the image-sensor operation, e.g. image processing within the image-sensor}
- H04N 3/1568 {for disturbance correction or prevention within the image-sensor, e.g. biasing, blooming, smearing (~~correction circuits H04N 5/2175~~)}

- H04N 3/1581 . . . {using linear image-sensor (-time delay and integration [H04N 3/1525](#)-)}
- H04N 3/16 . . by deflecting electron beam in cathode-ray tube {also scanning corrections} (-producing saw-tooth wave forms [H03K 4/00](#)-){ for scanning and focusing devices [H01J](#) ; cathode ray oscillographs [G01R 13/20](#)-}
- U H04N 3/18 . . . Generation of supply voltages, in combination with electron beam deflecting
- H04N 3/185 . . . Maintaining dc voltage constant (-regulation of dc voltage in general [G05F](#)-)
- U H04N 3/22 . . . Circuits for controlling dimension, shape or centering of picture on screen
- H04N 3/223 . . . Controlling dimensions (-by maintaining the cathode-ray tube high voltage constant [H04N 3/185](#)-)
- H04N 3/26 . . . Modifications of scanning arrangements to improve focusing (-focusing circuits in general [H01J](#)-)
- H04N 3/27 . . . Circuits special to multi-standard receivers (-circuitry of multi-standard receivers in general [H04N 5/46](#)-)

H04N 5/00

Details of television systems (-scanning details or combination thereof with generation of supply voltages [H04N 3/00](#) ; specially adapted for colour television [H04N 9/00](#) ; { servers specially adapted for the distribution of content [H04N 21/20](#) ; client devices specially adapted for the reception of or interaction with content [H04N 21/40](#) })

NOTE

Groups [H04N 5/341](#) to [H04N 5/378](#) are based on IPC2012.01

- H04N 5/04 . Synchronising (-for television systems using pulse code modulation [H04N 7/24](#) ; in general [H03L 7/00](#)-)
- U H04N 5/06 . . Generation of synchronising signals
- U H04N 5/067 . . . Arrangements or circuits at the transmitter end
- H04N 5/0675 . . . {for mixing the synchronising signals with the picture signal or mutually (-electrical gates [H03K 17/00](#)-)}
- U H04N 5/08 . . Separation of synchronising signals from picture signals
- H04N 5/10 . . . Separation of line synchronising signal from frame synchronising signal {or vice-versa}
- H04N 5/14 . . Picture signal circuitry for video frequency region (-[H04N 5/222](#) takes precedence-)
- H04N 5/144 . . {Movement detection (-for video coding [H04N 19/503](#) ; analysis of motion in general [G06T 7/20](#)-)}
- H04N 5/145 . . . {Movement estimation (-for video coding [H04N 19/51](#)-)}
- H04N 5/148 . . {Video amplifiers (-amplifiers in general [H03F](#)-)}
- H04N 5/21 . . Circuitry for suppressing or minimising disturbance, e.g. moirè, halo,{even if the automatic gain control is involved} (-suppression of noise in television recording [H04N 5/911](#)-)
- H04N 5/211 . . . {Ghost signal cancellation (-[H04N 5/217](#) takes precedence-)}
- H04N 5/213 . . . Circuitry for suppressing or minimising impulsive noise (-[H04N 5/217](#) takes precedence-)
- H04N 5/217 . . . in picture signal generation {in cameras comprising an electronic image sensor, e.g. digital cameras, TV cameras, video cameras, camcorders, webcams, to be embedded in other devices, e.g. in mobile phones, computers or vehicles (-noise reduction or noise suppression involving solid-state image sensors [H04N 5/357](#)-)}
- U H04N 5/2173 . . . {in solid-state picture signal generation}

- H04N 5/2175
 - {Suppression of excedentary charges, e.g. blooming, smearing (-within the image sensor [H04N 3/1556](#) , [H04N 3/1568](#)-)}
- U H04N 5/222
 - . Studio circuitry; Studio devices; Studio equipment;{Cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in other devices e.g. mobile phones, computers or vehicles}
- U H04N 5/2224
 - . {related to virtual studio applications}
- H04N 5/2226
 - . . . {Determination of depth image, e.g. for foreground/background separation (-determining depth by image analysis in general [G06T 7/0051](#) ; segmentation by image analysis in general [G06T 7/0079](#)-)}
- H04N 5/225
 - . . Television cameras; {Cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, video cameras, camcorders, webcams, camera modules for embedding in other devices e.g. mobile phones, computers or vehicles (-optical systems [G02B](#); associated working of recording or reproducing apparatus with TV camera or receiver in which the television signal is not significantly involved [G11B 31/006](#) ; tubes [H01J](#)-)}
- H04N 5/2251
 - . . . {Constructional details (-arrangement comprising a plurality of cameras [H04N 5/247](#) ; stereoscopic cameras having a single image sensor [H04N 13/0207](#)-)}
- H04N 5/2257
 - . . . {Mechanical and electrical details of cameras or camera modules for embedding in other devices (-mounting structure in mobile phone see [H04M 1/0264](#) ; optical details [G03B](#)-)}
- H04N 5/2258
 - . . . {Cameras using two or more image sensors, e.g. a CMOS sensor for video and a CCD for still image (-cameras having one image sensor for each colour [H04N 9/045](#) , [H04N 9/09](#)-)}
- H04N 5/2259
 - . . . {Means for changing the camera field of view without moving the camera body, e.g. nutating or panning optics or image-sensors (-picture signal generation using shifting image-sensors [H04N 5/349](#) ; varying magnification e.g. angle of view for cameras using only optical means [G03B](#)-)}
- H04N 5/232
 - . . . Devices for controlling television cameras, e.g. remote control; {Control of cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in e.g. mobile phones, computers or vehicles} (-[H04N 5/235](#) takes precedence; { varying magnification for cameras, e.g. angle of view, by optical means only [G02B 7/00](#) }, [G03B](#))
- H04N 5/23203
 - {Remote control signaling for cameras or for parts of camera, e.g. between main body and part of camera (-distributing sync-signals to television cameras [H04N 5/0733](#)-)}
- H04N 5/23209
 - {for interchangeable parts of camera involving control signals based on electric image signals provided by an electronic image sensor (-interchangeably mounting lenses on cameras not involving a control signal based on electric image signals provided by a main electronic image sensor [G03B 17/14](#)-)}
- H04N 5/23212
 - {Focusing based on image signal provided by the electronic image sensor (-generation of focusing signals in general [G02B 7/28](#)-)}
- H04N 5/23219
 - {Control of camera operation based on recognized human faces, facial parts, facial expressions or other parts of the human body (-face recognition per se [G06K 9/00221](#)-)}
- H04N 5/23229
 - {comprising further processing of the captured image without influencing the image pickup process (image processing in general [G06T](#))}
- H04N 5/23232
 - {by using more than one image in order to influence resolution, frame rate or aspect ratio (-providing high dynamic range image [H04N 5/2355](#)-)}

- H04N 5/23238 {Control of image capture or reproduction to achieve a very large field of view, e.g. panorama (panoramic or widescreen photography [G03B 27/00](#))}
- H04N 5/23241 {Control of camera operation in relation to power supply, e.g. by reducing power consumption of electronic image sensor or image processor or by checking or displaying battery state (-details of energy supply or management for digital still cameras not peculiar to the electronic image sensor [G03B 2217/007-](#))}
- H04N 5/23248 {for stable pick-up of the scene in spite of camera body vibration (-image-sensor selective scanning per se [H04N 3/1562-](#))}
- U H04N 5/23251 {Motion detection}
- H04N 5/23254 {based on the image signal (-analysis of motion by image processing in general [G06T 7/20](#))}
- H04N 5/23258 {based on additional sensors (-cameras when not peculiar to the use or presence of the EIS [G03B 2217/005-](#))}
- U H04N 5/23264 {Vibration or motion blur correction}
- H04N 5/2327 {performed by controlling the image sensor readout, e.g. by controlling the integration time (-controlling the image sensor readout in general [H04N 5/345](#) , [H04N 5/353](#))}
- H04N 5/23274 {by controlling the scanning position, e.g. windowing (-windowed readout of image sensor in general [H04N 5/3454-](#))}
- H04N 5/2328 {performed by mechanical compensation (-stabilization for imaging systems using optical elements in general s [G02B 27/646](#) ; cameras when not peculiar to the use or presence of the EIS [G03B 2205/007-](#))}
- H04N 5/23296 {Control of means for changing angle of the field of view, e.g. optical zoom objective, electronic zooming or combined use of optical and electronic zooming (-optical details of zoom lenses [G02B 15/14](#) ; optical zooming only for cameras [G03B 5/00-](#))}
- H04N 5/235 Circuitry {or methods}for compensating for variation in the brightness of the object {based on an electric image signals provided by an electronic image sensor (-exposure control for film cameras or cameras using an additional sensor [G03B 7/00-](#))}
- H04N 5/2351 {Circuitry for evaluating the brightness variations of the object (-within the image sensor [H04N 5/351](#) ; photometry in general [G01J 1/00-](#))}
- H04N 5/2353 {by influencing the exposure time, e.g. shutter (-[H04N 5/2352](#) takes precedence; within the image sensor [H04N 5/353](#))}
- H04N 5/2354 {by influencing the scene brightness using illuminating means (-[H04N 5/2352](#) takes precedence-)}
- H04N 5/2355 {by increasing the dynamic range of the final image compared to the dynamic range of the electronic image sensor , e.g. by adding correct exposed portions of short and long exposed images (-image enhancement in general using more than one image [G06T 5/50-](#))}
- H04N 5/2358 {by influencing at least one of the pick-up tube voltages (-[H04N 5/2352](#) takes precedence-)}
- H04N 5/238 by influencing the optical part of the camera,{e.g. diaphragm, intensifier, fibre bundle (-[H04N 5/2352](#) takes precedence-)}
- H04N 5/243 by influencing the picture signal,{e.g. signal amplitude gain control (-[H04N 5/2352](#) takes precedence-)}
- H04N 5/247 Arrangements of television cameras{(-constructional details of cameras [H04N 5/2251](#) ; stereoscopic picture signal generators [H04N 13/0239](#) ; [H04N 13/0242-](#))}

- H04N 5/253
 - • Picture signal generating by scanning motion picture films or slide opaques, e.g. for telecine (-scanning details therefor [H04N 3/36](#) ; { standard conversion therefor [H04N 7/0112](#) })
 - H04N 5/257
 - • Picture signal generators using flying-spot scanners (-[H04N 5/253](#) takes precedence-)
 - U H04N 5/262
 - • Studio circuits, e.g. for mixing, switching-over, change of character of image, other special effect ;{Cameras specially adapted for the electronic generation of special effects}
 - H04N 5/2625
 - • • {for obtaining an image which is composed of images from a temporal image sequence, e.g. for a stroboscopic effect (-sequence generated by event triggered capturing [H04N 7/188](#)-)}
 - H04N 5/2627
 - • • • {for providing spin image effect, 3D stop motion effect or temporal freeze effect (-2D image animation in general [G06T 13/80](#)-)}
 - H04N 5/268
 - • • Signal distribution or switching (-for broadcasting [H04H 20/00](#)-)
 - U H04N 5/272
 - • • Means for inserting a foreground image in a background image, i.e. inlay, outlay
 - H04N 5/2723
 - • • • {Insertion of virtual advertisement; Replacing advertisements physical present in the scene by virtual advertisement (-data processing systems or methods specially adapted for marketing [G06Q 30/02](#)-)}
 - H04N 5/30
 - Transforming light or analogous information into electric information (-[H04N 5/222](#) takes precedence; scanning details [H04N 3/00](#) ; light transforming elements [H01J](#) , [H01L](#)-)
 - H04N 5/32
 - • Transforming X-rays(-image transformers [H01J 31/00](#)-)}
 - H04N 5/335
 - • using solid-state image sensors [SSIS](-[H04N 5/32](#) , [H04N 5/33](#) take precedence-)
- NOTE
- In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place
Groups [H04N 5/341](#) to [H04N 5/378](#) are based on IPC2012.01
- U H04N 5/341
 - • • Extracting pixel data from an image sensor by controlling scanning circuits, e.g. by modifying the number of pixels having been sampled or to be sampled
 - H04N 5/3415
 - • • • {for increasing the field of view by combining the outputs of a plurality of sensors, e.g. panoramic imaging (-linear arrays using abutted sensors [H04N 5/3692](#)-)}
 - H04N 5/351
 - • • Control of the SSIS depending on the scene, e.g. brightness or motion in the scene(-circuitry for evaluating the brightness variations of the object [H04N 5/2351](#)-)}
 - H04N 5/353
 - • • • Control of the integration time(-circuitry for compensating for variation in the brightness of the object by influencing the exposure time [H04N 5/2353](#)-)}
 - U H04N 5/355
 - • • • Control of the dynamic range
 - H04N 5/35536
 - • • • • {involving multiple exposures (-combination of exposures for increasing the dynamic range [H04N 5/235](#)-)}
 - U H04N 5/357
 - • • Noise processing, e.g. detecting, correcting, reducing or removing noise
 - H04N 5/3572
 - • • • {the noise resulting only from the lens unit, e.g. flare, shading, vignetting or "cos4"(-suppressing or minimizing noise in picture signal generation [H04N 5/217](#)-)}
 - H04N 5/363
 - • • • applied to reset noise, e.g. KTC noise {related to CMOS structures}
 - U H04N 5/369
 - • • SSIS architecture; Circuitry associated therewith

- H04N 5/372
 - • • Charge-coupled device [CCD] sensors; Time delay and integration [TDI] registers or shift registers specially adapted for SSIS~~{(-charge coupled imager structure [H01L 27/148-](#))}~~
- H04N 5/374
 - • • Addressed sensors, e.g. MOS or CMOS sensors~~{(-MOS imager structure [H01L 27/14643-](#))}~~
- U H04N 5/3745
 - • • • having additional components embedded within a pixel or connected to a group of pixels within a sensor matrix, e.g. memories, A/D converters, pixel amplifiers, shared circuits or shared components
- H04N 5/37452
 - • • • • {comprising additional storage means ~~{(-by controlling the amount of charges storable in the pixel [H04N 5/3559-](#))}~~
- H04N 5/38
 - Transmitter circuitry~~{(-[H04N 5/14](#) takes precedence-)}~~
- H04N 5/40
 - Modulation circuits~~{(-in general [H03C 1/00](#) , [H03C 3/00](#) , [H03C 5/00-](#))}~~
- H04N 5/44
 - Receiver circuitry~~{(-[H04N 5/14](#) takes precedence-)}~~
- H04N 5/4403
 - {User interfaces for controlling a television receiver or set top box [STB] through a remote control device, e.g. graphical user interfaces (GUI); Remote control devices therefor~~{(-user interfaces for controlling a tuning device of a television receiver through a remote control [H03J 9/00](#) ; constructive details of casings for the remote control device [H01H 9/0235](#) ; remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver [H04B 1/205](#) ; remote control devices in general [G08C-](#))}~~
- U H04N 2005/4405
 - • {Hardware details of remote control devices}
- H04N 2005/4425
 - • • {Remote control device emulator integrated into a non-television apparatus, e.g. a PDA, media center or smart toy~~{(-remote control device for a television receiver integrated into a mobile phone [H04M 1/72533-](#))}~~
- H04N 5/4446
 - {IF amplifier circuits specially adapted for B&W TV~~{(-RF amplifiers in general [H03F 3/189-](#))}~~
- H04N 5/445
 - for displaying additional information~~{(-[H04N 5/50](#) takes precedence-)}~~
- H04N 5/44504
 - • {Circuit details of the additional information generator, e.g. details of the character or graphics signal generator, overlay mixing circuits ~~{(-graphics pattern generators for visual indicators [G09G 5/36](#) ; generation of individual character patterns for visual indicators [G09G 5/24-](#))}~~
- H04N 5/44543
 - • {Menu-type displays~~{(-[H04N 5/44582](#) , [H04N 5/44591](#) take precedence-)}~~
- H04N 5/455
 - Demodulation-circuits~~{(-demodulation in general [H03D-](#))}~~
- H04N 5/46
 - for receiving on more than one standard at will~~{(-deflecting circuits of multi-standard receivers [H04N 3/27-](#))}~~
- H04N 5/50
 - Tuning indicators; Automatic tuning control~~{(-tuning control in general [H03J-](#))}~~
- H04N 5/52
 - Automatic gain control~~{(-in general [H03G-](#))}~~
- H04N 5/54
 - • for positively-modulated picture signals~~{(-[H04N 5/53](#) takes precedence-)}~~
- H04N 5/56
 - • for negatively-modulated picture signals ~~{(-[H04N 5/53](#) takes precedence-)}~~
- H04N 5/60
 - for the sound signals~~{(-for silent tuning, i.e. muting [H04N 5/505-](#))}~~
- H04N 5/607
 - • {for more than one sound signal, e.g. stereo, multilanguages ~~{(-[H04N 5/602](#) takes precedence-)}~~
- H04N 5/62
 - • Inter-carrier circuits, i.e. heterodyning sound and vision carriers~~{(-[H04N 5/607](#) takes precedence-)}~~
- H04N 5/63
 - Generation or supply of power specially adapted for television receivers~~{(-generation of supply voltages in combination with electron beam deflecting [H04N 3/18](#) ; regulating of voltage or current in general [G05F](#) ; transformers [H01F](#) ; supplying or distributing electric power, in general [H02J](#) ; static converters [H02M-](#))}~~

- H04N 5/64 • Constructional details of receivers, e.g. cabinets, dust covers (-furniture aspects [A47B](#) , e.g. [A47B 81/06-](#))
- H04N 5/66 • Transforming electric information into light information (-scanning details [H04N 3/00](#) ; { electro- or magneto optic devices [G02F 1/00](#) ; CRT's [H01J](#) })
- H04N 5/68 • • Circuit details for cathode-ray display tubes({-deviation circuits [H04N 3/16](#) , [H03K 4/00-](#)})
- H04N 5/72 • Modifying the appearance of television pictures by optical filters or diffusing screens (-optical filters or diffusing screens per se [G02B 5/00-](#))
- H04N 5/74 • Projection arrangements for image reproduction, e.g. using eidophor (-optical systems in general [G02B](#))
WARNING
[H04N 5/74](#) and subgroups are no longer used for the classification of new documents as from October 1, 2008. The backlog is being continuously reclassified to subgroups of [H04N 9/31](#)
- H04N 5/76 • Television signal recording (-diagnosis, testing or measuring for television signal recorders [H04N 17/06](#) ; recording in connection with measuring [G01D](#) ; information storage {in which the television signal is not involved, driving, starting, stopping, head switching, editing, indexing} in general [G11](#) , e.g. [G11B-](#))
- H04N 5/7605 • • {on discs or drums (-[H04N 5/781](#) , [H04N 5/805](#) , [H04N 5/83](#) , [H04N 5/85](#) take precedence-)}
- H04N 5/765 • • Interface circuits between an apparatus for recording and another apparatus (-associated working of recording or reproducing apparatus with a television camera or receiver in which the television signal is not significantly involved [G11B 31/00-](#))
- H04N 5/78 • • using magnetic recording (-[H04N 5/91](#) takes precedence; { mechanical details in so far as non typical for television circuitry [G11B 5/00](#) })
- H04N 5/7805 • • • {Recording or playback not using inductive heads, e.g. magneto-optical, thermomagnetic, magnetostrictive, galvanomagnetic (-electrostatic recording [H04N 5/80](#) , photographic recording [H04N 5/84-](#)})
- H04N 5/80 • • using electrostatic recording (-[H04N 5/91](#) takes precedence-)
- H04N 5/84 • • using optical recording (-[H04N 5/80](#) , [H04N 5/89](#) , [H04N 5/91](#) take precedence-)
- H04N 5/87 • • • Producing a motion picture film from a television signal (-scanning of motion picture films for television signal generation [H04N 3/36](#) ; television signal generation by scanning a motion picture film [H04N 5/253](#) [H04N 9/11](#) ; { standard conversion therefor [H04N 7/0112](#) })
- H04N 5/89 • • using holographic recording (-[H04N 5/91](#) takes precedence-)
WARNING
Not complete, see also [H04N 5/76](#) , [H04N 5/7605](#) , [H04N 5/84](#) , [H04N 5/85](#)
- H04N 5/903 • • using variable electrical capacitive recording (-[H04N 5/91](#) takes precedence-)
WARNING
Not complete, see also [H04N 5/7605](#)
- H04N 5/907 • • using static stores, e.g. storage tubes, semiconductor memories (-[H04N 5/91](#) takes precedence; based on relative movement between record carrier and transducer [H04N 5/78](#) to [H04N 5/903-](#))
- H04N 5/91 • • Television signal processing therefor (-of colour signals [H04N 9/79-](#))
- H04N 5/911 • • • for the suppression of noise({-[H04N 5/932](#) takes precedence-})

- H04N 5/913
 - • • for scrambling; {for copy protection} (-scrambling of a television signal for transmission [H04N 7/167-](#))
- H04N 5/917
 - • • for bandwidth reduction (-bandwidth reduction [H04N 7/12](#) ; using pulse code modulation [H04N 7/24-](#))
- H04N 5/92
 - • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback{(-transmitter circuitry [H04N 5/38](#) ; receiver circuitry [H04N 5/44-](#))}
- U H04N 5/9201
 - • • • {involving the multiplexing of an additional signal and the video signal}
- H04N 5/9202
 - • • • • {the additional signal being a sound signal (-[H04N 5/9155](#) , [H04N 5/92](#) take precedence-)}
- H04N 5/923
 - • • • using preemphasis of the signal before modulation and deemphasis of the signal after demodulation{(-volume compression or expansion in amplifiers in general [H03G 7/00-](#))}
- H04N 5/926
 - • • • by pulse code modulation (-[H04N 5/919](#) takes precedence-)
- U H04N 5/93
 - • • Regeneration of the television signal or of selected parts thereof
- U H04N 5/931
 - • • • for restoring the level of the reproduced signal
- H04N 5/9315
 - • • • • {the level control being frequency dependent (-[H04N 5/923](#) takes precedence-)}
- U H04N 5/94
 - • • • Signal drop-out compensation
- H04N 5/945
 - • • • • for signals recorded by pulse code modulation (-error detection or correction of digital signals for recording in general [G11B 20/18-](#))
- H04N 5/95
 - • • • Time-base error compensation{(-[H04N 5/932](#) takes precedence-)}
- U H04N 7/00**
 - Television systems (details [H04N 3/00](#), [H04N 5/00](#); methods or arrangements, for coding, decoding, compressing or decompressing digital video signals [H04N 19/00](#); selective content distribution [H04N 21/00](#))**
- H04N 7/002
 - {-Special television systems not provided for by [H04N 7/007](#) to [H04N 7/18](#) (-still pictures via a television channel [H04N 1/00098-](#))}
- H04N 7/01
 - Conversion of standards {involving analogue television standards or digital television standards processed at pixel level (-video transcoding [H04N 19/40](#) ; image scaling in general [G06T 3/40](#) ; adapting incoming signals to the display format of the display terminal [G09G 5/005-](#))}
- H04N 7/0117
 - • {involving conversion of the spatial resolution of the incoming video signal (-for graphics images [G09G 2340/0407-](#))}
- H04N 7/012
 - • • {Conversion between an interlaced and a progressive signal (-for graphics images [G09G 2310/0229-](#))}
- H04N 7/0135
 - • {involving interpolation processes (-interpolation-based image scaling [G06T 3/4007](#) ; interpolation for video coding [H04N 19/587](#),[H04N 19/59](#))}
- H04N 7/0137
 - • • {dependent on presence/absence of motion, e.g. of motion zones (-[H04N 7/014](#) takes precedence; movement detection in television signals [H04N 5/144-](#))}
- H04N 7/014
 - • • {involving the use of motion vectors (-motion estimation and compensation in video coding [H04N 19/51-](#))}
- H04N 7/0142
 - • • {the interpolation being edge adaptive (-edge detection in television signals [H04N 5/142](#) ; edge-driven scaling [G06T 3/403](#))}
- H04N 7/025
 - Systems for the transmission of digital non-picture data, e.g. of text during the active part of a television frame{(-transmission of digital non-picture data during the vertical blanking interval only [H04N 7/088-](#))}
- H04N 7/04
 - Systems for the transmission of one television signal, i.e. both picture and sound, by a single carrier{(-[H04N 7/084](#) , [H04N 7/087](#) take precedence-)}

- H04N 7/06
 - Systems for the simultaneous transmission of one television signal, i.e. both picture and sound, by more than one carrier (~~H04N 7/084~~ , ~~H04N 7/087~~ take precedence-)
- H04N 7/08
 - Systems for the simultaneous or sequential transmission of more than one television signal, e.g. additional information signals, the signals occupying wholly or partially the same frequency band, {e.g. by time division (~~H04N 7/007~~ takes precedence-)}
- H04N 7/0806
 - • {the signals being two or more video signals (~~H04N 7/0803~~ , ~~H04N 7/081~~ take precedence-)}
- H04N 7/084
 - • with signal insertion during the horizontal blanking interval {only}
- H04N 7/087
 - • with signal insertion during the vertical blanking interval {only}
- U H04N 7/088
 - • • the inserted signal being digital
- H04N 7/0882
 - • • • {for the transmission of character code signals, e.g. for teletext (~~circuits for the digital non-picture data signal H04N 7/035-~~)}
- H04N 7/10
 - Adaptations for transmission by electric cable (~~H04N 7/12~~ takes precedence; { transmission by lines ~~H04B 3/00~~ ; wired broadcast systems ~~H04H 20/76~~ ; ~~CATV (Community Antenna Television) systems H04H 20/78~~ } ; ~~CATV [Community Antenna Television] systems H04H 20/78~~)
- H04N 7/102
 - • {Circuits therefor, e.g. noise reducers, equalisers, amplifiers (~~H04N 7/108~~ takes precedence-)}
- H04N 7/12
 - Systems in which the television signal is transmitted via one channel or a plurality of parallel channels, the bandwidth of each channel being less than the bandwidth of the television signal (~~H04N 7/24~~ takes precedence; { by special scanning ~~H04N 3/00~~ } ; high definition television systems ~~H04N 7/015-~~)
- H04N 7/14
 - Systems for two-way working ({ ~~H04N 7/12~~ , } ~~H04N 7/173~~ take precedence-)
- H04N 7/141
 - • {between two video terminals, e.g. videophone (~~telephonic communication systems combined with television receiver for reception of entertainment or information matter H04M 11/085-~~)}
- H04N 7/147
 - • • {Communication arrangements, e.g. identifying the communication as a video-communication, intermediate storage of the signals (~~selecting H04Q-~~)}
- H04N 7/15
 - • Conference systems ({ video terminal details ~~H04N 7/141~~ } ; telephonic conference arrangements ~~H04M 3/56~~ ; { computer conferencing ~~H04L 12/1813~~ })
- H04N 7/155
 - • • {involving storage of or access to video conference sessions (~~tracking arrangements for later retrieval of a computer conference content or participants activities H04L 12/1831-~~)}
- H04N 7/157
 - • • {defining a virtual conference space and using avatars or agents (~~computer conference optimisation or adaptation H04L 12/1827-~~)}
- U H04N 7/16
 - Analogue secrecy systems; Analogue subscription systems
- H04N 7/161
 - • {Constructional details of the subscriber equipment (~~H04N 7/164~~ takes precedence; coin-freed and like apparatus in general ~~G07F-~~)}
- U H04N 7/162
 - • {Authorising the user terminal, e.g. by paying; Registering the use of a subscription channel, e.g. billing}
- H04N 7/165
 - • • {Centralised control of user terminal (~~subsequent to an upstream request signal H04N 7/17345-~~); Registering at central (~~by two-way working H04N 7/17309-~~)}
- H04N 7/166
 - • {Passage/non-passage of the television signal, e.g. jamming, band suppression (~~scrambling and descrambling H04N 7/167-~~)}
- H04N 7/167
 - • Systems rendering the television signal unintelligible and subsequently intelligible { secret communication in general ~~H04K 1/00-~~}

- H04N 7/1675
- • • {Providing digital key or authorisation information for generation or regeneration of the scrambling sequence (-pseudo-random number generators in general [G06F 7/58](#)-)}
- H04N 7/18
- Closed circuit television systems, i.e. systems in which the signal is not broadcast{(television transmission of measured quantities [G01D 5/39](#) ; intruder alarm or detection by television surveillance [G08B 13/196](#)-)}
- H04N 7/188
- • {Capturing isolated or intermittent images triggered by the occurrence of a predetermined event, e.g. an object reaching a predetermined position}(-signal generation from motion picture films [H04N 5/253](#)-)}
- H04N 7/24
- Systems for the transmission of television signals using pulse code modulation}(-[H04N 21/00](#) takes precedence-)
- H04N 7/52
- • Systems for transmission of a pulse code modulated video signal with one or more other pulse code modulated signals, e.g. an audio signal or a synchronizing signal}(-assembling of a multiplex stream by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetised elementary stream at server side [H04N 21/236](#) ; disassembling of a multiplex stream, remultiplexing of multiplex streams, extraction or processing of Service Information, disassembling of packetised elementary stream at client side [H04N 21/434](#)-)
- H04N 7/54
- • • the signals being synchronous{(H04N 21/23602 , [H04N 21/23614](#) , [H04N 21/2365](#) , [H04N 21/2368](#) , [H04N 21/4341](#) , [H04N 21/4342](#) , [H04N 21/4347](#) , [H04N 21/4348](#) take precedence-)}
- U H04N 9/00** **Details of colour television systems**
- U H04N 9/04
- Picture signal generators
- H04N 9/045
- • {using solid-state devices (-[H04N 9/11](#) takes precedence-) ; solid state picture signal generators [H01L 31/00](#)-}
- U H04N 9/09
- • with more than one pick-up device
- H04N 9/097
- • • Optical arrangements associated therewith, e.g. for beam-splitting, for colour correction}(-beam-splitting in general [G02B 27/10](#)-)
- H04N 9/10
- • using optical-mechanical scanning means only}(-[H04N 9/11](#) takes precedence; optical scanning systems in general [G02B 26/10](#)-)
- H04N 9/12
- Picture reproducers}(-devices or arrangements for the electro-, magneto- or acousto-optical modulation or deflection of light beams [G02F](#)-)
- H04N 9/14
- • using optical-mechanical scanning means only}(-[H04N 9/11](#) takes precedence; optical scanning systems in general [G02B 26/10](#)-)
- H04N 9/16
- • using cathode ray tubes (-[H04N 9/11](#) takes precedence; cathode-ray tubes [H01J 31/00](#)-)
- H04N 9/18
- • • using separate electron beams for the primary colour signals}(-[H04N 9/27](#) takes precedence-)
- WARNING
- This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/065](#) and subgroups
- H04N 9/22
- • • using the same beam for more than one primary colour information}(-[H04N 9/27](#) takes precedence-)
- U H04N 9/28
- • • Arrangements for convergence or focusing
- H04N 9/285
- • • • using quadrupole lenses (-quadrupole lenses per se [G21K 1/08](#) , [H01J 3/14](#) , [H01J 29/58](#) , [H01J 37/10](#)-)

- H04N 9/31
 - • Projection devices for colour picture display {e.g. using electronic spatial light modulators [ESLM](-projection devices using film stock, photographic film or slides, [G03B 21/00](#) and subgroups-)}
- H04N 9/3102
 - • • {using two-dimensional electronic spatial light modulators (-micromechanical modulators as such [G02B 26/0833](#) ; liquid crystal modulators as such [G02F 1/13](#)-)}
- H04N 9/3105
 - • • • {for displaying all colours simultaneously, e.g. by using two or more electronic spatial light modulators (-simultaneous projection in colour photography [G03B 33/10](#) ; beam splitting or combining systems per se [G02B 27/10](#)-)}
- H04N 9/3111
 - • • • {for displaying the colours sequentially, e.g. by using sequentially activated light sources (-sequential projection in colour photography [G03B 33/08](#)-)}
- H04N 9/312
 - • • • {Driving therefor (-driving of electronic spatial light modulators in displays other than projection devices [G09G 3/34](#) , [G09G 3/36](#) ; control of liquid crystal elements [G02F 1/133](#) ; control of micromechanical modulators [G02B 26/08](#)-)}
- H04N 9/3129
 - • • {scanning a light beam on the display screen (-scanning a light beam on a screen in displays other than projection devices [G09G 3/02](#) ; scanning systems in general [G02B 26/10](#) ; projectors using laser light sources in general [H04N 9/3161](#)-)}
- H04N 9/3138
 - • • {using arrays of modulated light sources (-electroluminescent display devices [G09G 3/30](#)-)}
- H04N 9/3141
 - • • {Constructional details thereof (-details not peculiar to the presence of an electronic spatial light modulator [G03B 21/14](#)-)}
- H04N 9/3144
 - • • • {Cooling systems (-cooling of liquid crystal cells in general [G02F 1/133382](#) ; cooling of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/16](#)-)}
- H04N 9/3147
 - • • • {Multi-projection systems (-displays in general [H04N 9/12](#) ; video walls [G06F 3/1446](#) , [G09G 2300/026](#)-)}
- H04N 9/315
 - • • • {Modulator illumination systems (-general applications of lighting devices [F21V](#); general optical systems [G02B](#); lamp houses for projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/20](#)-)}
- H04N 9/3152
 - • • • • {for shaping the light beam (-beam shaping per se [G02B 27/09](#)-)}
- H04N 9/3155
 - • • • • {for controlling the light source (-light source control per se [H05B 37/00](#) , [H05B 41/00](#) ; control of an illumination source for displays in general [G09G 3/3406](#)-)}
- H04N 9/3161
 - • • • • {using laser light sources (-using laser beams scanning the display screen [H04N 9/3129](#)-)}
- H04N 9/3167
 - • • • • {for polarizing the light beam (-polarizing optical systems per se [G02B 27/28](#)-)}
- H04N 9/317
 - • • • • {Convergence or focusing systems (-electronic adjustment of convergence [H04N 9/3185](#) ; convergence or focusing arrangements for cathode ray tubes [H04N 9/28](#) ; means for automatic focusing of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/53](#)-)}
- U H04N 9/3173
 - • • • • {wherein the projection device is specially adapted for enhanced portability}
- H04N 9/3176
 - • • • • {wherein the projection device is incorporated in a camera (-details of cameras adapted for combination with a projector not peculiar to the presence of an electronic spatial light modulator [G03B 17/54](#)-)}
- U H04N 9/3179
 - • • {Video signal processing therefor}

- H04N 9/3182
 - . . . {Colour adjustment, e.g. white balance, shading or gamut (-white balance per se [H04N 9/73](#) ; control of amplitude of colour signals [H04N 9/68](#) ; colour control circuits for displays in general [G09G 5/02](#) , [G09G 3/2003](#) , [G09G 3/3607-](#))}
- H04N 9/3185
 - . . . {Geometric adjustment, e.g. keystone or convergence (-optical or mechanical adjustment of convergence [H04N 9/317](#) ; using scanning means [H04N 3/22](#) ; optical or mechanical adjustments of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/14-](#))}
- H04N 9/3188
 - . . . {Scale or resolution adjustment (-scaling in general [G06T 3/40](#) ; resolution modifying circuits for displays in general [G09G 5/391-](#))}
- H04N 9/3191
 - . . . {Testing thereof (-testing of displays in general [G09G 3/006-](#))}
- U H04N 9/44
 - . Colour synchronisation
- H04N 9/455
 - . . Generation of colour burst signals; Insertion of colour burst signals in colour picture signals or separation of colour burst signals from colour picture signals (-[H04N 9/45](#) takes precedence-)
- H04N 9/64
 - . Circuits for processing colour signals (-[H04N 9/77](#) takes precedence-)
- H04N 9/641
 - . . {Multi-purpose receivers, e.g. for auxiliary information (-[H04N 9/642](#) takes precedence-)}
- H04N 9/647
 - . . {I.F amplifiers,(-amplifiers in general [H03F-](#))}
- H04N 9/68
 - . . for controlling the amplitude of colour signals, e.g. automatic chroma control circuits (-[H04N 9/71](#) , [H04N 9/73](#) take precedence-)
- H04N 9/74
 - . . for obtaining special effects (-[H04N 9/65](#) to [H04N 9/73](#) take precedence-)
- H04N 9/76
 - . . . for mixing of colour signals (-[H04N 9/75](#) takes precedence-)
- H04N 9/77
 - . Circuits for processing the brightness signal and the chrominance signal relative to each other, e.g. adjusting the phase of the brightness signal relative to the colour signal, correcting differential gain or differential phase (-circuits for matrixing [H04N 9/67-](#))
- U H04N 9/79
 - . Processing of colour television signals in connection with recording
- H04N 9/797
 - . . for recording the signal in a plurality of channels, the bandwidth of each channel being less than the bandwidth of the signal (-[H04N 9/804](#) , [H04N 9/81](#) , [H04N 9/82](#) take precedence-)
- H04N 9/7973
 - . . . {by dividing the luminance or colour component signal samples or frequency bands among a plurality of recording channels (-[H04N 9/804](#) , [H04N 9/825](#) take precedence-)}
- U H04N 9/80
 - . . Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback
- H04N 9/802
 - . . . involving processing of the sound signal (-[H04N 9/806](#) , [H04N 9/835](#) take precedence-)
- U H04N 9/82
 - . . . the individual colour picture signal components being recorded simultaneously only
- U H04N 9/8205
 - {involving the multiplexing of an additional signal and the colour video signal}
- H04N 9/8211
 - {the additional signal being a sound signal (-[H04N 9/835](#) takes precedence-)}
- H04N 9/87
 - . . Regeneration of colour television signals (-[H04N 9/80](#) takes precedence-)
- H04N 9/873
 - . . . for restoring the colour component sequence of the reproduced {chrominance}signal
- U H04N 9/88
 - . . . Signal drop-out compensation
- H04N 9/888
 - for signals recorded by pulse code modulation (-error detection or correction of digital signals for recording in general [G11B 20/18-](#))

- H04N 9/898
- • • using frequency multiplication of the reproduced colour signal carrier with another auxiliary reproduced signal, e.g. a pilot signal carrier{(-[H04N 9/83](#) takes precedence-)}
- H04N 11/00** **Colour television systems (-details [H04N 9/00](#)-)**
- H04N 11/02
- with bandwidth reduction ({ [H04N 11/002](#) , } [H04N 11/04](#) takes precedence-)
- H04N 11/04
- using pulse code modulation{ [H04N 11/002](#) takes precedence; pulse code modulation in general [H03K](#) , [H03M](#)-}
- U H04N 11/06
- Transmission systems characterised by the manner in which the individual colour picture signal components are combined
- H04N 11/08
- • using sequential signals only (-dot sequential systems [H04N 11/12](#)-)
- U H04N 11/12
- • using simultaneous signals only
- U H04N 11/14
- • • in which one signal, modulated in phase and amplitude, conveys colour information and a second signal conveys brightness information, e.g. NTSC-system
- H04N 11/143
- • • • {Encoding means therefor (-[H04N 11/16](#) takes precedence-)}
- H04N 11/146
- • • • {Decoding means therefor (-[H04N 11/16](#) takes precedence-)}
- U H04N 11/16
- • • • the chrominance signal alternating in phase, e.g. PAL-system
- H04N 11/162
- • • • • {Encoding means therefor (-[H04N 11/167](#) takes precedence-)}
- H04N 11/165
- • • • • {Decoding means therefor (-[H04N 11/167](#) takes precedence-)}
- H04N 13/00** **Stereoscopic {or multiview}television systems; Details thereof**
- NOTE
- This group covers systems where a three-dimensional effect or different views according to the viewpoint location are provided to one or more viewers by means of electronic signals representing a plurality of images or signals including depth information, e.g. taken from different viewpoint locations representing the interocular distance (optical systems for producing stereoscopic or other three dimensional effects [G02B 27/22](#))]
- H04N 13/0003
- {Stereoscopic image signal coding, multiplexing, processing, recording or transmission (-television signal bandwidth reduction [H04N 19/00](#) ; image coding for general purpose image data processing [G06T 9/00](#) ; transformation of the video signal for recording, including multiplexing of another television signal [H04N 5/9205](#) ; for colour signals, [H04N 9/8227](#) ; selective content distribution, e.g. interactive television, VOD [H04N 21/00](#) ; assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#) ; disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#)-)}
- H04N 13/0007
- • {Processing stereoscopic image signals (-[H04N 19/597](#) , [H04N 13/004](#) take precedence; image processing as such [G06T](#)-)}
- U H04N 13/0011
- • • {Transformation of stereoscopic image signals corresponding to virtual viewpoints, e.g. spatial image interpolation}
- H04N 13/0014
- • • • {the virtual viewpoint location being selected by the observer, e.g. observer tracking with look around effect (-~~[H04N 13/0278](#)~~ ~~akes precedence~~ [H04N 13/0278](#) ~~akes precedence~~)}

- H04N 13/0029
 - • • {Format conversion of stereoscopic images, e.g. frame-rate or size} (-standards conversion per se [H04N 7/01](#) ; reformatting operations at client side of video signals for household redistribution, storage or real-time display [H04N 21/4402](#) ; reformatting operations at server side of video signals for distribution or compliance with end-user requests or end-user device requirements [H04N 21/2343](#)-)
- H04N 13/0037
 - • {Colour aspects (-processing of colour signals per se [H04N 9/64](#)-)}
- H04N 13/0048
 - • {Encoding, multiplexing or demultiplexing different image signal components in stereoscopic image signals} (-[H04N 19/597](#) takes precedence; assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#) ; disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#) ; demultiplexing of several video streams [H04N 21/4347](#)-)
- H04N 13/0051
 - • {Synchronisation or controlling aspects (-synchronization processes at server side, e.g. processing of program clock references [H04N 21/242](#) ; content synchronization processes at client side [H04N 21/4302](#) ; control signals issued by server directed to the network components or client [H04N 21/633](#) ; control signals issued by the network directed to the server or the client [H04N 21/64746](#) ; control signals issued by the client directed to the server or network components [H04N 21/637](#) ; transmission of management data between client and server [H04N 21/65](#)-)}
- H04N 13/0059
 - • {Transmission of stereoscopic image signals} (-selective content distribution, e.g. interactive television, VOD [H04N 21/00](#) ; assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#) ; disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#) ; interfacing the downstream path of the transmission network for selective content distribution at server side [H04N 21/238](#) ; interfacing the downstream path of the transmission network originating from a server for selective content distribution at client side [H04N 21/438](#)-)
- H04N 13/0062
 - • {the image signal comprising non-image signal components, e.g. metadata, headers, format information or subtitles} (-multiplexing of additional data and video streams [H04N 21/23614](#) ; demultiplexing of additional data and video streams [H04N 21/4348](#)-)
- H04N 13/0066
 - • • {metadata (-generation or processing, within selective content distribution, of descriptive data, e.g. content descriptors [H04N 21/84](#)-)}
- H04N 13/007
 - • • {subtitles or other OSD information, e.g. menu (-data services within selective content distribution, e.g. news ticker [H04N 21/488](#) ; data services for displaying subtitles [H04N 21/4884](#)-)}
- U H04N 13/02
 - Picture signal generators
- H04N 13/0203
 - • {using a stereoscopic image camera (-endoscopes with stereoscopic vision [A61B 1/00193](#) ; stereoscopic photography [G03B 35/00](#)-)}
- U H04N 13/0207
 - • • {involving a single 2D image pickup sensor}
- H04N 13/021
 - • • • {using temporal multiplexing, i.e. alternatively capturing several geometrical viewpoints separated in time (-[H04N 13/0221](#) takes precedence-)}

- H04N 13/0228 . . . {having a lenticular screen (~~H04N 13/0232~~ takes precedence)}
- H04N 13/0246 . . . {Calibration aspects relating to the control of a stereoscopic camera (~~processing of captured images to determine and compensate stereo camera misalignment, e.g. stereo camera calibration G06T 7/002~~)}
- H04N 13/0257 . . {Colour aspects (~~processing of color signals per se H04N 9/64~~)}
- H04N 13/026 . . {with monoscopic to stereoscopic image conversion (~~H04N 13/0221~~ takes precedence)}
- H04N 13/0271 . . {wherein the generated image signal comprises a depth map or a disparity map (~~depth map generation as such G06T 7/0075 , G06T/00R7S~~)}
- H04N 13/0296 . . {Synchronisation or controlling aspects (~~synchronization processes at server side, e.g. processing of program clock references H04N 21/242 ; content synchronization processes at client side H04N 21/4302~~)}

NOTE

control aspects for eyestrain reduction are classified here in combination with [H04N 2213/002](#)

- H04N 13/04 . . Picture reproducers (~~optical systems for producing stereoscopic or other three dimensional effects G02B 27/22~~)
- U H04N 13/0402 . . {using an autostereoscopic display, i.e. viewing by the user without the aid of special glasses}
- H04N 13/0404 . . . {using a lenticular screen (~~H04N 13/0406~~ takes precedence)}
- H04N 13/0422 . . {Colour aspects} (~~processing of colour signals per se H04N 9/64~~)
- H04N 13/0427 . . {using a digital micro mirror device [DMD]}
- H04N 13/0429 . . {for viewing by the user with the aid of special glasses or head mounted displays [HMD]}, i.e. stereoscopic displaying (spectacles or goggles insofar as they have the same features as spectacles G02C)}
- H04N 13/0436 . . . {with spatial multiplexing, i.e. simultaneously displaying left and right images on different parts of the display screen and using glasses to optically recombine the stereoscopic image, e.g. with prisms or mirrors (~~H04N 13/0434~~ takes precedence)}
- H04N 13/044 . . . {with head mounted left-right displays (~~optical head mounted displays G02B 27/017~~)}
- H04N 13/0459 . . {using an image projection screen (~~H04N 13/0493 , H04N 13/0495~~ take precedence; projection devices per se H04N 9/31)}
- H04N 2013/0461 . . {Privacy aspects, i.e. devices showing different images to different viewers, the images not being viewpoints of the same scene (not used, see subgroups)}
- H04N 13/0468 . . {using observer tracking (~~computer input or output arrangements in interaction with the human body G06F3/00B8~~)}
- H04N 13/0497 . . {Synchronisation or controlling aspects (~~synchronization processes at server side, e.g. processing of program clock references H04N 21/242 ; content synchronization processes at client side H04N 21/4302~~)}

NOTE

control aspects for eyestrain reduction are classified here in combination with [H04N 2213/002](#)

H04N 21/00

Selective content distribution, e.g. interactive television, VOD [Video On Demand](-broadcast communication [H04H](#) ; arrangements, apparatus, circuits or systems for communication control or processing being characterised by a protocol [H04L 29/06](#) ; { broadcast or conference over packet-switching networks [H04L 12/18](#) , } real-time bi-directional transmission of motion video data [H04N 7/14](#)-)

NOTE

1. This group covers : • interactive video distribution processes, systems, or elements thereof, which are characterised by point-to-multipoint system configurations, and which are mainly used for motion video data unidirectional distribution or delivery resulting from interactions between systems operators, e.g. access or service providers, or users e.g. subscribers, and system elements. • such systems include dedicated communication systems, such as television distribution systems, which primarily distribute or deliver motion video data in the manner indicated, which may, in addition, provide a framework for further, diverse data communications or services in either unidirectional or bi-directional form. However, video will occupy most of the downlink bandwidth in the distribution process. • typically, system operators interface with transmitter-side elements or users' interface with receiver-side elements in order to facilitate, through interaction with such elements, the dynamic control of data processing or data flow at various points in the system. This interaction is typically occasional or intermittent in nature. • processes, systems or elements thereof specially adapted to the generation, distribution and processing of data, which is either associated with video content, e.g. metadata, ratings, or related to the user or his environment and which has been actively or passively gathered. This data is either used to facilitate interaction or to alter or target the content. 2. In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place 3. In this main group, the following terms and expressions are used with the meaning indicated:

additional data - designates still pictures, textual, graphical or executable data such as software. It is used to convey supplemental information and can be generated prior to or during the distribution process itself, e.g. metadata, keys. content designates video or audio streams, which may be combined with additional data. Video data will always be present and occupy most of the downlink bandwidth in the distribution process

server - designates an apparatus designed for adapting the content received from the content provider to the distribution network. It also manages the distribution to client devices or intermediate components over a network. Further servers may also be present for gathering or generating additional data, e.g. rights management server

additional data server - designates a server, which sole purpose is the distribution or management of additional data. It is not in charge of the distribution of video or audio data

client - designates an apparatus such as a TV receiver, a set-top-box, a PC-TV, a mobile appliance (e.g. mobile phone or receiver in a vehicle), for receiving video, audio and possibly additional data from one or several servers or intermediate components via a network for further processing, storing or displaying. It can also transmit this data on a home-based local network to further devices, e.g. a home server transmitting video to PCs and set-top-boxes within a home.

local network - pertains to a restricted area, e.g. a home or a vehicle, and designates the link between a client and its peripheral devices

network - is to be distinguished from "local network": "network" designates the link between the server and the clients, or between the server and the intermediate components, or between the intermediate components and the clients, or between remotely located clients

distribution - encompasses broadcasting, multicasting and unicasting techniques for transmitting content from one or more sources to one or more receiving stations. The distribution follows a request by a receiving station to the source, e.g. VOD or from a customization of the content by the source, e.g. targeting advertisements to a demographic group in a unidirectional or bidirectional system. Additionally, distribution encompasses techniques where the client acts as a source and another client acts as a receiving station, e.g. a peer-to-peer system for sharing video among client devices

end-user - designates a physical person, e.g. a TV viewer, who consumes the content using the client device. He is the final recipient of the content distributed by the server

interaction - covers actions occurring between or among two or more objects that have an effect upon one another, wherein objects comprise users, system operators, system elements, or content. The user may interact with content locally at the client device, e.g. for requesting additional data stored within the client device. The user may interact with content remotely through a server e.g. for VOD playback control or for uploading video to a server. The client device may interact with the content e.g. selecting content based upon the user profile. The client device may interact with a server using a return channel, e.g. for authenticating client or uploading client hardware capabilities. The server may interact with a client device, e.g. to force a client to tune to an advertisement channel

upstream - designates the direction of data flow towards the source, e.g. a server receiving a request via a mobile phone network

downstream - designates the direction of data flow towards a client, e.g. a client receiving data originating from a server elementary stream An elementary stream (ES) as defined by the MPEG system layer designates the output of an audio or video encoder

- U H04N 21/20
 - {Servers specifically adapted for the distribution of content, e.g. VOD servers; Operations thereof}
- U H04N 21/21
 - • {Server components or server architectures}
- H04N 21/214
 - • • {Specialised server platform, e.g. server located in an airplane, hotel, hospital (-arrangements specially adapted for local area broadcast systems [H04H 20/61-](#))}
- H04N 21/2143
 - • • • [located in a single building, e.g. hotel, hospital or museum (-arrangements specially adapted for plural spots in a confined site in broadcast systems [H04H 20/63](#) ; adaptations for transmission by electric cable for domestic distribution in television systems [H04N 7/106-](#))]
- H04N 21/2146
 - • • • [located in mass transportation means, e.g. aircraft, train or bus (-flight-deck installations for entertainment or communications [B64D 11/0015](#) ; arrangements specially adapted for transportation systems in broadcast systems [H04H 20/62](#) ; moving wireless networks [H04W 84/005-](#))]
- H04N 21/218
 - • • [Source of audio or video content, e.g. local disk arrays (-details of retrieval in video databases [G06F 17/30843-](#))]
- H04N 21/2181
 - • • • [comprising remotely distributed storage units, e.g. when movies are replicated over a plurality of video servers (-distributed storage of data in a network [H04L 29/08549-](#))]
- U H04N 21/21815
 - • • • [comprising local storage units]
- H04N 21/2182
 - • • • • [involving memory arrays, e.g. RAID disk arrays (-RAID arrays per se [G06F 3/0689](#) ; use of parity to protect data in RAID systems [G06F 11/1008-](#))]
- H04N 21/2183
 - • • • [Cache memory (-caches in web servers or browsers [G06F 17/30902](#) ; intermediate storage and caching in data networks [H04L 29/08801-](#))]

- H04N 21/222 . . . {Secondary servers, e.g. proxy server, cable television head-end (-intermediate processing or storage in data networks [H04L 29/08702-](#))}
- H04N 21/2221 {being a cable television head-end (-CATV in broadcast systems [H04H 20/78](#) -CATV in broadcast systems [H04H 20/78](#))}
- H04N 21/2223 {being a public access point, e.g. for downloading to or uploading from clients (-arrangements specially adapted to plural spots in a confined site in broadcast systems [H04H 20/63-](#))}
- U H04N 21/226 . . . {Characteristics of the server or} Internal components of the server
- H04N 21/2265 {Server identification by a unique number or address, e.g. serial number (-addressing and naming in data networks [H04L 29/12009-](#))}
- U H04N 21/23 . . . {Processing of content or additional data; Elementary server operations; Server middleware}
- U H04N 21/231 . . . {Content storage operation, e.g. caching movies for short term storage, replicating data over plural servers, prioritizing data for deletion}
- H04N 21/23103 {using load balancing strategies, e.g. by placing or distributing content on different disks, different memories or different servers (-storage management [G06F 3/0604](#) ; allocation of resources considering the load in multiprogramming arrangements [G06F 9/505](#) ; techniques for rebalancing the load in a distributed system [G06F 9/5083](#) ; access to distributed or replicated servers, e.g. load balancing, in data networks [H04L 29/08144-](#))}
- H04N 21/23106 {involving caching operations (-prefetching while addressing of a memory level in which the access to the desired data or data block requires associative addressing means within memory systems or architectures [G06F 12/0862](#) ; caching at an intermediate stage in a data network [H04L 29/08801-](#))}
- H04N 21/23109 {by placing content in organized collections, e.g. EPG data repository (-details of retrieval of video data and associated meta data in video databases [G06F 17/30843-](#))}
- H04N 21/23113 {involving housekeeping operations for stored content, e.g. prioritizing content for deletion because of storage space restrictions (-storage management, e.g. defragmentation [G06F 3/0604](#) ; unloading stored programs [G06F 9/445](#) ; housekeeping operations in file systems, e.g. deletion policies [G06F 17/30067](#) ; buffering arrangements in a network node or in an end terminal in packet networks [H04L 49/90-](#))}
- H04N 21/23116 {involving data replication, e.g. over plural servers (-synchronization of replicated data [G06F 11/1658](#) ; error detection or correction by means of data replication [G06F 11/2053](#) ; replication in distributed file systems [G06F 17/30067](#) ; replication in distributed file systems [G06F 17/30283](#) ; replication or mirroring of data in data networks [H04L 29/0854-](#))}
- H04N 21/2312 {Data placement on disk arrays (-data placement in general [G06F 3/0604-](#))}
- H04N 21/232 . . . {Content retrieval operation{locally}within server, e.g. reading video streams from disk arrays (-storage management [G06F 3/0604](#) ; details of querying and searching of video data from a database [G06F 17/30843-](#))}
- H04N 21/233 . . . {Processing of audio elementary streams (-details of formatting and decoding of an encoded audio signal representation into a data stream for transmission or storage purposes [G10L 19/167](#) ; arrangements characterised by components specially adapted for monitoring, identification or recognition of audio in broadcast systems [H04H 60/58-](#))}
- H04N 21/2335 {involving reformatting operations of audio signals, e.g. by converting from one coding standard to another (-details of audio signal transcoding [G10L 19/173-](#))}

- H04N 21/234
 - • • {Processing of video elementary streams, e.g. splicing of content streams, manipulating MPEG-4 scene graphs (-video encoding or transcoding processes per se [H04N 19/00](#)-)}
- H04N 21/23418
 - • • • {involving operations for analysing video streams, e.g. detecting features or characteristics (-filtering for image enhancement [G06T 5/00](#) ; methods or arrangements for recognising scenes [G06K 9/00624](#) ; arrangements characterised by components specially adapted for monitoring, identification or recognition of video in broadcast systems [H04H 60/59](#) ; television picture signal circuitry for scene change detection [H04N 5/147](#)-)}
- H04N 21/2343
 - • • • {involving reformatting operations of video signals for distribution or compliance with end-user requests or end-user device requirements (-media manipulation, adaptation or conversion at the source in one way streaming for real-time multimedia communications [H04L 29/06489](#) ; video transcoding [H04N 19/40](#)-)}
- H04N 21/234309
 - • • • • {by transcoding between formats or standards, e.g. from MPEG-2 to MPEG-4 or from Quicktime to Realvideo (-conversion of standards in analog television systems [H04N 7/01](#)-)}
- H04N 21/2347
 - • • • {involving video stream encryption (-arrangements for secret or secure communication [H04L 9/00](#) , analogue secrecy systems [H04N 7/16](#) ; Arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#) ; arrangements for preventing the taking of data from a data transmission channel without authorisation [H04L 12/22](#) ; security arrangements in wireless networks [H04W 12/00](#)-)}
- H04N 21/235
 - • • {Processing of additional data, e.g. scrambling of additional data, processing content descriptors (-arrangements for simultaneous broadcast of plural pieces of information [H04H 20/28](#)-)}
- H04N 21/2351
 - • • • {involving encryption of additional data (-arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#)-)}
- H04N 21/2355
 - • • • {involving reformatting operations of additional data, e.g. HTML pages (-optimising the visualization of content for information retrieval from the Internet [G06F 17/30905](#) ; message adaptation based on network or terminal capabilities in stored and forward packet switching [H04L 12/5825](#) ; media manipulation, adaptation or conversion at the source in one way streaming for real-time multimedia communications [H04L 29/06489](#)-)}
- H04N 21/236
 - • • • Assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, e.g. inserting a Uniform Resource Locator [URL] into a video stream, multiplexing software data into a video stream; Remultiplexing of multiplex streams; Insertion of stuffing bits into the multiplex stream, e.g. to obtain a constant bit-rate; Assembling of a packetized elementary stream{-multiplexing of data packets for data networks, e.g. RTP/UDP [H04L 65/00](#) ; stereoscopic image multiplexing or transmission [H04N 13/0003](#)-)}
- H04N 21/23605
 - • • • {Creation or processing of packetized elementary streams [PES]}
- H04N 21/23611
 - • • • {Insertion of stuffing data into a multiplex stream, e.g. to obtain a constant bitrate (-synchronisation arrangements in time-division multiplex systems using bit stuffing for systems with different or fluctuating information rates [H04J 3/073](#)-)}
- H04N 21/23614
 - • • • {Multiplexing of additional data and video streams (-arrangements for simultaneous broadcast of plural pieces of information [H04H 20/28](#)-)}

- H04N 21/23617 {by inserting additional data into a data carousel, e.g. inserting software modules into a DVB carousel (-arrangements for broadcast or for distribution of identical information repeatedly in broadcast distribution systems [H04H 20/16-](#))}
- H04N 21/2362 {Generation or processing of Service Information [SI]}
- H04N 21/238 {Interfacing the downstream path of the transmission network, e.g. adapting the transmission rate of a video stream to network bandwidth; Processing of multiplex streams (-hybrid Fiber Coaxial HFC networks for downstream channel allocation for video distribution [H04L 12/2801](#) ; flow control in packet networks [H04L 12/569](#) ; formation of RTP packets [H04L 29/06176](#) ; application layer Quality of Service and content dependent routing [H04L 29/08945-](#))}
- H04N 21/2381 {Adapting the multiplex stream to a specific network, e.g. an Internet Protocol [IP] network (-transmission of MPEG streams over ATM [H04L 12/5601-](#))}
- H04N 21/2383 Channel coding {or modulation}of digital bit-stream, e.g. QPSK modulation (-arrangements for detecting or preventing errors in the information received by adapting the channel coding [H04L 1/0009](#) ; analogue front ends or means for connecting modulators, demodulators or transceivers to a transmission line [H04L 27/0002-](#))}
- H04N 21/2385 {Channel allocation (-[H04N 21/266](#) takes precedence-); Bandwidth allocation (-[H04N 21/24](#) takes precedence; allocation of channels according to the instantaneous demands of the users in time-division multiplex systems [H04J 3/1682](#) ; arrangements for maintenance or administration in data switching networks involving bandwidth and capacity management [H04L 12/2439](#) ; Admission control, resource allocation in open networks [H04L 12/5692](#) ; negotiating bandwidth in wireless networks [H04W 28/16-](#))}
- H04N 21/239 Interfacing the upstream path of the transmission network, e.g. prioritizing client {content}requests (-hybrid Fiber Coaxial [HFC] networks for upstream channel allocation for video distribution [H04L 12/2801](#) ; flow control in data networks [H04L 12/569](#) ; formation of RTP packets [H04L 29/06176](#) ; application layer Quality of Service and content dependent routing of client requests [H04L 29/08945-](#))}
- H04N 21/2393 {involving handling client requests (-scheduling and organising the servicing of requests in data switching networks [H04L 29/08945-](#))}
- H04N 21/2396 {characterized by admission policies (-admission control, resource allocation in open networks [H04L 12/5692](#) ; arrangements for network security using user profiles for access control [H04L 29/06836](#) ; access security in wireless networks [H04W 12/08-](#))}

Project: RP0113 (H04N)

- H04N 21/24 {Monitoring of processes or resources, e.g. monitoring of server load, available bandwidth, upstream requests (-monitoring of server performance or load [G06F 11/34](#) ; ~~monitoring or testing of transmitters in general~~ [H04B 17/0002](#) ; arrangements for observation, testing or troubleshooting for broadcast or for distribution combined with broadcast [H04H 20/12-](#))}

Project: N/A (H04N)

- H04N 21/2402 {Monitoring of the downstream path of the transmission network, e.g. bandwidth available (-traffic monitoring in data switching networks [H04L 12/2418](#) ; monitoring data switching networks utilization [H04L 12/2668-](#))}

- H04N 21/2404 . . . {Monitoring of server processing errors or hardware failure (-error or fault detection [G06F 11/07](#) ; monitoring in general [G06F 11/30](#)-)}
- H04N 21/2405 . . . {Monitoring of the internal components or processes of the server, e.g. server load (-allocation of resources in multiprogramming arrangements [G06F 9/50](#) ; performance measurement of computer activity [G06F 11/34](#)-)}
- H04N 21/2407 . . . {Monitoring of transmitted content, e.g. distribution time, number of downloads (-arrangements for monitoring programmes for broadcast or for distribution combined with broadcast [H04H 20/14](#)-)}
- H04N 21/2408 . . . {Monitoring of the upstream path of the transmission network, e.g. client requests (-monitoring data switching networks utilization [H04L 12/2668](#) ; protocols for scheduling and organising the servicing of requests in network applications in communication control or processing [H04L 29/08945](#)-)}
- H04N 21/241 . . . {Operating System [OS]} processes, e.g. server setup (-arrangements for programme control [G06F 9/00](#) ; program loading or initiating in general [G06F 9/445](#) ; multiprogramming arrangements [G06F 9/46](#)-)}
- H04N 21/242 . . . {Synchronization processes, e.g. processing of Program Clock References [PCR]} (-synchronisation arrangements in time-division multiplex systems [H04J 3/06](#) ; arrangements for synchronising broadcast or distribution via plural systems in broadcast distribution systems [H04H 20/18](#) ; arrangements for synchronising receiver with transmitter [H04L 7/00](#) ; synchronising circuits with arrangements for extending range of synchronisation at the transmitter end [H04N 5/067](#)-)}
- H04N 21/25 . . {Management operations performed by the server for facilitating the content distribution or administrating data related to end-users or client devices, e.g. end-user or client device authentication, learning user preferences for recommending movies (-maintenance or administration in data networks [H04L 12/24](#)-)}
- H04N 21/251 . . . {Learning process for intelligent management, e.g. learning user preferences for recommending movies (-details of learning user preferences for the retrieval of video data in a video database [G06F 17/30843](#) ; computer systems using learning methods [G06N 3/08](#)-)}
- H04N 21/254 . . . {Management at additional data server, e.g. shopping server, rights management server (-arrangements for maintenance or administration in data networks [H04L 12/24](#) ; Protocols involving third party service providers for network applications in communication control or processing [H04L 29/08666](#)-)}
- H04N 21/2541 . . . {Rights Management (-protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#) ; security in data switching network management [H04L 12/2461](#) ; security management or policies for network security [H04L 29/06986](#) ; access security in wireless networks [H04W 12/08](#)-)}
- H04N 21/2542 . . . {for selling goods, e.g. TV shopping (-payment schemes, payment architectures or payment protocols for electronic shopping systems [G06Q 20/12](#)-)}
- H04N 21/2543 . . . Billing {e.g. for subscription services} (-payment schemes, architectures or protocols [G06Q 20/00](#) ; e-commerce [G06Q 30/00](#) (-arrangements for billing for the use of broadcast information or broadcast-related information [H04H 60/21](#) ; charging arrangements in data networks [H04L 12/14](#)-)}

- H04N 21/258 . . . {Client or end-user data management, e.g. managing client capabilities, user preferences or demographics, processing of multiple end-users preferences to derive collaborative data (-arrangements for services using the result on the distributing side of broadcast systems [H04H 60/66](#) ; data switching network applications involving user or terminal profiles [H04L 29/08918](#)-)}
- H04N 21/25808 . . . {Management of client data (-protocols involving terminal profiles for network applications in communication control or processing [H04L 29/08927](#)-)}
- H04N 21/25816 . . . {involving client authentication (-restricting access to computer systems by authenticating users using a predetermined code [G06F 21/33](#) ; authentication mechanisms for network security in communication control or processing [H04L 29/06755](#) ; authentication in wireless network security [H04W 12/06](#)-)}
- H04N 21/25825 . . . {involving client display capabilities, e.g. screen resolution of a mobile phone (-optimising the visualisation of content during browsing in the Internet [G06F 17/30905](#) ; processing of terminal status or physical abilities in wireless networks [H04W 8/22](#) ; authentication in wireless network security [H04W 12/06](#)-)}
- H04N 21/25833 . . . {involving client hardware characteristics, e.g. manufacturer, processing or storage capabilities (-allocation of resources considering hardware capabilities in multiprogramming arrangements [G06F 9/5044](#) ; allocation of resources considering software capabilities in multiprogramming arrangements [G06F 9/5055](#)-)}
- H04N 21/25841 . . . {involving the geographical location of the client (-retrieval from the Internet by querying based on geographical locations [G06F 17/3087](#) ; Arrangements for identifying locations of receiving stations in broadcast systems [H04H 60/51](#) ; protocols in which the network application is adapted for the location of the user terminal in communication control or processing [H04L 29/08657](#) ; services making use of the location of users or terminals in wireless networks [H04W 4/02](#) ; locating users or terminals in wireless networks [H04W 64/00](#)-)}
- H04N 21/25866 . . . {Management of end-user data (-customer care in data networks [H04L 12/249](#)-)}
- H04N 21/25875 . . . {involving end-user authentication (-restricting access to computer systems by authenticating users using a predetermined code [G06F 21/33](#) ; arrangements for secret or secure communication including means for verifying the identity or authority of a user of the system [H04L 9/32](#) ; authentication mechanisms for network security in communication control or processing [H04L 29/06755](#) ; authentication in wireless network security [H04W 12/06](#)-)}
- H04N 21/25883 . . . {being end-user demographical data, e.g. age, family status or address (-arrangements for identifying locations of users in broadcast systems [H04H 60/52](#)-)}
- H04N 21/25891 . . . {being end-user preferences (-retrieval of video data in a video database based on user preferences [G06F 17/30843](#) ; arrangements for recognizing users' preferences [H04H 60/46](#) ; protocols involving user profiles for network applications in communication control or processing [H04L 29/08936](#) ; processing of user preferences or user profiles in wireless networks [H04W 8/18](#)-)}

- H04N 21/262
 - • • {Content or additional data distribution scheduling, e.g. sending additional data at off-peak times, updating software modules, calculating the carousel transmission frequency, delaying a video stream transmission, generating play-lists (-scheduling strategies for dispatcher in multiprogramming arrangements [G06F 9/4881](#) ; arrangements for scheduling broadcast services or broadcast-related services [H04H 60/06](#) ; flow control in packet networks [H04L 12/569](#) ; protocols for scheduling and organising the servicing of requests, whereby a time schedule is established for servicing the requests in network applications in communication control or processing [H04L 29/08963](#)-)}
- U H04N 21/26208
 - • • • {the scheduling operation being performed under constraints}
- H04N 21/26216
 - • • • {involving the channel capacity, e.g. network bandwidth (-flow control in packet networks [H04L 12/569](#) ; admission control, resource allocation in open networks [H04L 12/5692](#) ; protocols for scheduling and organising the servicing of requests, whereby quality of service and priority requirements are taken into account in network applications in communication control or processing [H04L 29/08954](#)-)}
- H04N 21/26258
 - • • • {for generating a list of items to be played back in a given order, e.g. playlist, or scheduling item distribution according to such list (-retrieval of multimedia data based on playlists [G06F 17/30017](#)-)}
- H04N 21/26266
 - • • • {for determining content or additional data repetition rate, e.g. of a file in a DVB carousel according to its importance (-arrangements for broadcast or for distribution of identical information repeatedly in broadcast distribution systems [H04H 20/16](#)-)}
- H04N 21/26291
 - • • • {for providing content or additional data updates, e.g. updating software modules, stored at the client (-deployment, distribution, installation, update of software [G06F 8/65](#) ; error detection or correction during software upgrading [G06F 11/1433](#) ; arrangements for updating broadcast information or broadcast-related information [H04H 60/25](#)-)}
- U H04N 21/266
 - • • {Channel or content management, e.g. generation and management of keys and entitlement messages in a conditional access system, merging a VOD unicast channel into a multicast channel}
- H04N 21/26606
 - • • • {for generating or managing entitlement messages, e.g. Entitlement Control Message [ECM] or Entitlement Management Message [EMM] (-arrangements for conditional access to broadcast information or to broadcast-related services [H04H 60/14](#)-)}
- H04N 21/26613
 - • • • {for generating or managing keys in general (-key distribution for secret or secure communication, using a key distribution center, a trusted party or a key server [H04L 9/0802](#) ; key management for security in wireless networks [H04L 29/06707](#) ; key management for network security in communication control or processing [H04W 12/04](#)-)}
- H04N 21/26616
 - • • • {for merging a unicast channel into a multicast channel, e.g. in a VOD application, when a client served by unicast channel catches up a multicast channel to save bandwidth (-data multicast over packet-switching network [H04L 12/18](#)-)}
- H04N 21/2668
 - • • • {Creating a channel for a dedicated end-user group, e.g. insertion of targeted commercials based on end-user profiles (-information retrieval from the Internet by querying with filtering and personalisation [G06F 17/30867](#) ; arrangements for replacing or switching information during the broadcast [H04H 20/10](#) ; push services over packet-switching network [H04L 12/1859](#) ; adaptation of message content in packet-switching networks [H04L 12/583](#)-)}
- U H04N 21/27
 - • {Server based end-user applications}

- H04N 21/278
 - • • {Content descriptor database or directory service for end-user access (-details of content or meta data based information retrieval of video data in video databases [G06F 17/30843-](#))}
- H04N 21/40
 - {Client devices specifically adapted for the reception of or interaction with content, e.g. set-top-box [STB]; Operations thereof (-arrangements for distribution where lower stations, e.g. receivers, interact with the broadcast [H04H 20/38](#) ; arrangements specially adapted for receiving broadcast information [H04H 40/00-](#))}
- U H04N 21/41
 - • {Structure of client; Structure of client peripherals}
- U H04N 21/4104
 - • • {using peripherals receiving signals from specially adapted client devices}
- H04N 21/4108
 - • • • {characterized by an identification number or address, e.g. local network address (-protecting specific internal or external computer components used for computing or processing information by creating or determining hardware identification [G06F 21/73](#) ; addressing and naming in data networks [H04L 29/12009-](#))}
- H04N 21/4117
 - • • • {for generating hard copies of the content, e.g. printer, electronic paper (-interfaces to printers [G06F 3/12](#) ; printing data [G06K 15/02-](#))}
- H04N 21/4122
 - • • • {additional display device, e.g. video projector (-digital output for controlling a plurality of local displays [G06F 3/1423-](#))}
- H04N 21/4126
 - • • • {portable device, e.g. remote control with a display, PDA, mobile phone (-constructional details of equipment or arrangements specially adapted for portable computer application [G06F 1/1626-](#))}
- H04N 21/4131
 - • • • {home appliance, e.g. lighting, air conditioning system, metering devices (-home automation data switching networks exchanging configuration information on appliance services [H04L 12/2807-](#))}
- H04N 21/4135
 - • • • {external recorder (-interface circuits between an apparatus for recording television signals and a television receiver [H04N 5/775-](#))}
- U H04N 21/414
 - • • {Specialised client platforms, e.g. receiver in car or embedded in a mobile appliance}
- H04N 21/41407
 - • • • {embedded in a portable device, e.g. video client on a mobile phone, PDA, laptop (-constructional details of equipment or arrangements specially adapted for portable computer application [G06F 1/1626](#) ; arrangements specially adapted for mobile receivers in broadcast systems [H04H 20/57-](#))}
- H04N 21/41422
 - • • • {located in transportation means, e.g. personal vehicle (-arrangements specially adapted for transportation systems in broadcast systems [H04H 20/62-](#))}
- H04N 21/4143
 - • • • {embedded in a} Personal Computer [PC]}
- H04N 21/4147
 - • • • {Personal Video Recorder [PVR]}(-[H04N 5/76](#) takes precedence; arrangements for broadcast specially adapted for accumulation-type receivers [H04H 20/40-](#))}
- U H04N 21/418
 - • • {External card to be used in combination with the client device, e.g. for conditional access}
- H04N 21/4182
 - • • • {for identification purposes, e.g. storing user identification data, preferences, personal settings or data (-restricting access to computer systems by authenticating users using a predetermined code in combination with an additional device, e.g. dongle or smart card [G06F 21/123-](#))}
- H04N 21/4185
 - • • • {for payment (-mechanisms actuated by coded identity card or credit card to free or to actuate vending, hiring, coin or paper currency dispensing or refunding apparatus [G07F 7/08](#) ; payment schemes, architectures or protocols [G06Q 20/00](#) ; e-commerce [G06Q 30/00](#) ; charging arrangements in data networks [H04L 12/14-](#))}

- H04N 21/422
 - • • {using}Input-only peripherals {i.e. input devices connected to specially adapted client devices (-input devices also receiving signals from specially adapted client devices [H04N 21/4104](#)-)}, e.g. Global Positioning System [GPS](-input arrangements or combined input and output arrangements for interaction between user and computer [G06F 3/01](#)-)}
- H04N 21/42201
 - • • • {biosensors, e.g. heat sensor for presence detection, EEG sensors or any limb activity sensors worn by the user (-Input arrangements for interaction with the human body based on nervous system activity detection [G06F 3/015](#)-)}
- H04N 21/42204
 - • • • {User interfaces specially adapted for controlling a client device through a remote control device; Remote control devices therefor (-interaction techniques for graphical user interfaces in general, see [G06F 3/048](#) ; computer pointing devices in general, see [G06F 3/033](#) ; user interfaces for controlling a tuning device of a television receiver through a remote control [H03J 9/00](#) ; constructive details of casings for the remote control device [H01H 9/0235](#) ; remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver [H04B 1/205](#) ; remote control devices in general [G08C](#)-)}
- U H04N 21/42206
 - • • • • {characterized by hardware details}
- U H04N 21/42208
 - • • • • • {Display device provided on the remote control}
- H04N 21/42209
 - • • • • • • {for displaying non-command information, e.g. electronic program guide [EPG]}, e-mail, messages or a second television channel}}
- H04N 21/4222
 - • • • • • • {Remote control device emulator integrated into a non-television apparatus, e.g. a PDA, media center or smart toy (-remote control device for a television receiver integrated into a mobile phone [H04M 1/72533](#)-)}
- H04N 21/42221
 - • • • • • • {Transmission circuitry, e.g. infrared [IR]} or radio frequency [RF]}
- H04N 21/42224
 - • • • • • • {Touch pad or touch panel provided on the remote control (-touch pads in general [G06F 3/03547](#)-)}
- H04N 21/4223
 - • • • • {Cameras (-[H04N 5/225](#) takes precedence-)}
- H04N 21/426
 - • • • {Characteristics of or}Internal components of the client (-[H04N 5/44](#) takes precedence-)
- H04N 21/42684
 - • • • • {Client identification by a unique number or address, e.g. serial number, MAC address, socket ID (-addressing and naming in data networks [H04L 29/12009](#)-)}
- H04N 21/42692
 - • • • • {for reading from or writing on a volatile storage medium, e.g. Random Access Memory [RAM]}
- H04N 21/43
 - • {Processing of content or additional data, e.g. demultiplexing additional data from a digital video stream; Elementary client operations, e.g. monitoring of home network, synchronizing decoder's clock; Client middleware (-demultiplexing of data packets for data networks, e.g. RTP/UDP [H04L 29/06176](#)-)}
- U H04N 21/4302
 - • • • {Content synchronization processes, e.g. decoder synchronization}
- H04N 21/4305
 - • • • • {Synchronizing client clock from received content stream, e.g. locking decoder clock with encoder clock, extraction of the PCR packets (-arrangements for synchronising receiver with transmitter by comparing receiver clock with transmitter clock [H04L 7/0012](#) ; arrangements for synchronising receiver with transmitter wherein the receiver takes measures against momentary loss of synchronisation [H04L 7/0083](#)-)}

- H04N 21/431
 - • • Generation of visual interfaces {for content selection or interaction}; Content or additional data rendering (-receiver circuitry for displaying additional information [H04N 5/445](#) ; interaction techniques for graphical user interfaces [G06F 3/048](#)-)
- H04N 21/4318
 - • • • {by altering the content in the rendering process, e.g. blanking, blurring or masking an image region (-image enhancement or restoration in general [G06T 5/00](#)-)}
- H04N 21/432
 - • • {Content retrieval operation from a local storage medium, e.g. hard-disk (-details of retrieval of video data and associated meta data in video databases [G06F 17/30843](#)-)}
- H04N 21/4325
 - • • • {by playing back content from the storage medium (-reproduction of recorded television signals [H04N 5/76](#) ; reproduction of recorded television signals [H04N 9/79](#)-)}
- U H04N 21/433
 - • • {Content storage operation, e.g. storage operation in response to a pause request, caching operations}
- H04N 21/4332
 - • • • {by placing content in organized collections, e.g. local EPG data repository (-interfaces, Database management systems or updating for information retrieval [G06F 17/30002](#) ; details of retrieval of video data and associated meta data in video database [G06F 17/30843](#)-)}
- H04N 21/4334
 - • • • {Recording operations (-recording of a television signal [H04N 5/76](#) ; arrangements for recording or accumulating broadcast information or broadcast-related information [H04H 60/27](#)-)}
- H04N 21/4335
 - • • • {Housekeeping operations, e.g. prioritizing content for deletion because of storage space restrictions (-storage management, e.g. defragmentation [G06F 3/0604](#) ; unloading stored programs [G06F 9/445](#) ; storage management in file systems [G06F 17/30067](#) ; buffering arrangements in a network node or in an end terminal in packet networks [H04L 49/90](#)-)}
- H04N 21/434
 - • • Disassembling of a multiplex stream, e.g. demultiplexing audio and video streams, extraction of additional data from a video stream; Remultiplexing of multiplex streams; Extraction or processing of SI; Disassembling of packetized elementary stream{-demultiplexing of data packets for data networks, e.g. RTP/UDP [H04L 65/00](#) ; stereoscopic image multiplexing or transmission [H04N 13/0003](#)-)}
- H04N 21/4343
 - • • • {Extraction or processing of packetized elementary streams [PES]}
- H04N 21/4346
 - • • • {involving stuffing data, e.g. packets or bytes (-synchronisation arrangements in time-division multiplex systems with different or fluctuating information rates [H04J 3/073](#)-)}
- U H04N 21/435
 - • • {Processing of additional data, e.g. decrypting of additional data, reconstructing software from modules extracted from the transport stream}
- H04N 21/4353
 - • • • {involving decryption of additional data (-arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#)-)}
- H04N 21/4355
 - • • • {involving reformatting operations of additional data, e.g. HTML pages on a television screen (-optimising the visualization of content for information retrieval from the Internet [G06F 17/30905](#) ; adaptation of message content in packet-switching networks [H04L 12/5835](#) ; Media manipulation, adaptation or conversion at the destination in one way streaming for real-time multimedia communications [H04L 29/06496](#)-)}
- H04N 21/436
 - • • Interfacing a local distribution network, e.g. communicating with another STB, inside the home{; Interfacing an external card to be used in combination with the client device} (-arrangements specially adapted plural spots in a confined site in broadcast systems [H04H 20/63](#)-)}
- H04N 21/43607
 - • • • {Interfacing a plurality of external cards, e.g. through a DVB Common Interface [DVB-CI]}

- H04N 21/43615 {Interfacing a Home Network, e.g. for connecting the client to a plurality of peripherals (-home Audio Video Interoperability (HAVI) data switching networks [H04L 12/2805-](#))}
- U H04N 21/4363 Adapting the video {or multiplex} stream to a specific local network, e.g. a IEEE 1394 or Bluetooth® network
- H04N 21/43632 {involving a wired protocol, e.g. IEEE 1394 (-high-speed IEEE 1394 serial bus [H04L 12/40052-](#))}
- H04N 21/43637 {involving a wireless protocol, e.g. Bluetooth or wireless LAN (-IEEE 802.11; arrangements for wireless networking or broadcasting of information in indoor or near-field type systems [H04B 10/114](#) ; wireless local area data switching networks [H04W](#) ; flow control in wireless networks [H04W 28/10-](#))}
- H04N 21/4367 {Establishing a secure communication between the client and a peripheral device or smart card (-arrangements for secret or secure communication [H04L 9/00](#) ; security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#) ; security arrangements in wireless networks [H04W 12/00-](#))}
- H04N 21/437 {Interfacing the upstream path of the transmission network, e.g. for transmitting client requests to a VOD server (-flow control in data networks [H04L 12/569](#) ; formation of RTP packets [H04L 29/06176](#) ; application layer Quality of Service and content dependent routing of client requests [H04L 29/08945-](#))}
- H04N 21/438 {Interfacing the downstream path of the transmission network originating from a server, e.g. retrieving MPEG packets from an IP network (-transmission of MPEG streams over ATM [H04L 12/5601](#) ; flow control in data networks [H04L 12/569](#) ; processing of real-time packets [H04L 29/06176-](#))}
- H04N 21/4381 {Recovering the multiplex stream from a specific network, e.g. recovering MPEG packets from ATM cells (-transmission of MPEG streams over ATM [H04L 12/5601-](#))}
- H04N 21/4382 {Demodulation or channel decoding, e.g. QPSK demodulation (-analog front ends or means for connecting modulators, demodulators or transceivers to a transmission line [H04L 27/0002-](#))}
- H04N 21/4383 {Accessing a communication channel, e.g. channel tuning (-tuning indicators; automatic tuning control [H04N 5/50-](#))}
- U H04N 21/4385 {Multiplex stream processing, e.g. multiplex stream decrypting}
- H04N 21/43853 {involving multiplex stream decryption (-arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23-](#))}
- U H04N 21/439 {Processing of audio elementary streams}
- H04N 21/4394 {involving operations for analysing the audio stream, e.g. detecting features or characteristics in audio streams (-arrangements characterised by components specially adapted for monitoring, identification or recognition of audio in broadcast systems [H04H 60/58-](#))}
- H04N 21/4398 {involving reformatting operations of audio signals (-details of audio signal transcoding [G10L 19/173-](#))}
- U H04N 21/44 {Processing of video elementary streams, e.g. splicing a video clip retrieved from local storage with an incoming video stream, rendering scenes according to MPEG-4 scene graphs}
- H04N 21/44008 {involving operations for analysing video streams, e.g. detecting features or characteristics in the video stream (-arrangements characterised by components specially adapted for monitoring, identification or recognition of video in broadcast systems [H04H 60/59-](#))}

- H04N 21/4402
 - • • {involving reformatting operations of video signals for household redistribution, storage or real-time display (-adapting incoming signals to the display format of the display terminal [G09G 5/005](#) ; media manipulation, adaptation or conversion at the destination in one way streaming for real-time multimedia communications [H04L 29/06496](#) ; details of conversion of video standards at pixel level [H04N 7/01](#) ; video transcoding [H04N 19/40](#)-)}
- H04N 21/440218
 - • • • {by transcoding between formats or standards, e.g. from MPEG-2 to MPEG-4 (-conversion of standards in analogue television systems [H04N 7/01](#)-)}
- H04N 21/440281
 - • • • {by altering the temporal resolution, e.g. by frame skipping (-television signal recording using magnetic recording on tape for reproducing at a rate different from the recording rate [H04N 5/783](#)-)}
- H04N 21/4405
 - • • • {involving video stream decryption (-arrangements for secret or secure communication [H04L 9/00](#) ; arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#)-)}
- H04N 21/4408
 - • • • {involving video stream encryption, e.g. re-encrypting a decrypted video stream for redistribution in a home network (-arrangements for secret or secure communication [H04L 9/00](#) ; arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#)-)}
- H04N 21/441
 - • • {Acquiring end-user identification (-authentication in wireless communication networks [H04W 12/06](#)-){e.g. using personal code sent by the remote control or by inserting a card} (-restricting access to computer systems by authenticating users using a predetermined code [G06F 21/33](#)-)}
- H04N 21/4415
 - • • • {using biometric characteristics of the user, e.g. by voice recognition or fingerprint scanning (-methods or arrangements for recognising patterns [G06K 9/00](#) ; restricting access to computer systems by authenticating users using biometric data [G06F 21/32](#) ; authentication mechanisms using biometrical features for network security [H04L 29/06809](#) ; authentication in wireless network security [H04W 12/06](#)-)}
- H04N 21/442
 - • • {Monitoring of processes or resources, e.g. detecting the failure of a recording device, monitoring the downstream bandwidth, the number of times a movie has been viewed, the storage space available from the internal hard disk (-arrangements for monitoring broadcast services or broadcast-related services [H04H 60/29](#) ; arrangements for identifying or recognising characteristics with a direct linkage to broadcast information [H04H 60/35](#) ; monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#) ; monitoring in wireless networks [H04W 24/00](#)-)}
- H04N 21/44204
 - • • • {Monitoring of content usage, e.g. the number of times a movie has been viewed, copied or the amount which has been watched (-monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#) ; Protecting generic digital content where the protection is independent of the precise nature of the content [G06F 21/10](#) ; arrangements for monitoring the use made of the broadcast services in broadcast systems [H04H 60/31](#)-)}

Project: RP0113 (H04N)

- H04N 21/44209
 - • • • {Monitoring of downstream path of the transmission network originating from a server, e.g. bandwidth variations of a wireless network (-[monitoring or testing of receivers in general by measuring channel quality parameters H04B 17/0042](#) ; arrangements for maintenance or administration in data switching networks involving bandwidth and capacity management [H04L 12/2439](#)-)}

Project: N/A (H04N)

- H04N 21/44213 {Monitoring of end-user related data (-arrangements for monitoring the users' behaviour or opinions in broadcast systems [H04H 60/33](#)-)}
- H04N 21/44218 {Detecting physical presence or behaviour of the user, e.g. using sensors to detect if the user is leaving the room or changes his face expression during a TV program (-methods or arrangements for acquiring or recognising human faces, facial parts, facial sketches, facial expressions [G06K 9/00221](#) ; methods or arrangements for recognising movements or behaviour [G06K 9/00335](#) ; methods or arrangements for recognising human body or animal bodies or body parts [G06K 9/00362](#) ; arrangements for identifying users in broadcast systems [H04H 60/45](#)-)}
- H04N 21/44222 {Monitoring of user selections, e.g. selection of programs, purchase activity (-monitoring of user selections in data processing systems [G06F 11/34](#) ; monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#) ; tracking the activity of the end-user [H04L 29/08675](#) ; arrangements for monitoring the user's behaviour or opinions in broadcast systems [H04H 60/33](#)-)}
- H04N 21/44227 {Monitoring of local network, e.g. connection or bandwidth variations; Detecting new devices in the local network (-configuring of peripheral devices in general [G06F 9/4411](#) ; monitoring connectivity in data switched networks [H04L 12/2639](#)-)}
- H04N 21/44231 {Monitoring of peripheral device or external card, e.g. to detect processing problems in a handheld device or the failure of an external recording device (-configuring of peripheral devices in general [G06F 9/4411](#) ; monitoring the status of connected device in data switched networks [H04L 12/2642](#) ; reporting information sensed by appliance or service execution status of appliance services in a home automation network [H04L 12/2823](#)-)}
- H04N 21/44236 {Monitoring of piracy processes or activities (-protecting computer platforms against harmful, malicious or unexpected behaviour or activities using intrusion detection and counter measures [G06F 21/566](#) ; computer virus detection and handling [G06F 21/56](#)-)}

Project: RP0113 (H04N)

- H04N 21/4424 {Monitoring of the internal components or processes of the client device, e.g. CPU or memory load, processing speed, timer, counter or percentage of the hard disk space used (-error monitoring in general [G06F 11/30](#) ; ~~monitoring or testing of receivers in general with feedback of measurements to the transmitter H04B 17/0067~~; arrangements for monitoring conditions of receiving stations in broadcast systems [H04H 60/32](#) ; diagnosis, testing or measuring for television receivers [H04N 17/04](#)-)}
- H04N 21/44245 {Monitoring the upstream path of the transmission network, e.g. its availability, bandwidth }(-~~monitoring or testing of receivers in general by measuring channel quality parameters H04B 17/0042~~-)}

Project: N/A (H04N)

- H04N 21/4425 {Monitoring of client processing errors or hardware failure (-monitoring in electrical digital data processing [G06F 11/00](#) ; error detection in general [G06F 11/07](#) ; monitoring in general [G06F 11/30](#)-)}

- H04N 21/443
 - • • {OS processes, e.g. booting a STB, implementing a Java virtual machine in a STB, power management in a STB (-arrangements for program loading or initiating [G06F 9/445](#) ; boot device selection; loading of operating system [G06F 9/4406](#) ; program loading or initiating in general using non-volatile memory from which the program can be directly executed [G06F 9/44568](#)-)}
- H04N 21/4431
 - • • • {characterized by the use of Application Program Interface [API]} libraries}}
- H04N 21/4432
 - • • • {Powering on the client, e.g. bootstrap loading using setup parameters being stored locally or received from the server (-resetting in general [G06F 1/14](#) ; program loading or initiating in general [G06F 9/445](#) ; bootstrapping in general [G06F 9/4401](#) ; secure boots of computer platforms [G06F 21/57](#)-)}
- H04N 21/4433
 - • • • {Implementing client middleware, e.g. Multimedia Home Platform [MHP]}}}
- H04N 21/4435
 - • • • {Memory management (-allocation of memory to service a request [G06F 9/5016](#) ; addressing or allocating within memory systems or architectures [G06F 12/02](#)-)}
- H04N 21/4436
 - • • • {Power management, e.g. shutting down unused components of the receiver (-power management in computer systems [G06F 1/3203](#) ; Hibernate or awake process in computer systems [G06F 9/4418](#)-)}
- H04N 21/4437
 - • • • {Implementing a Virtual Machine [VM]}(-virtual machines in general [G06F 9/45533](#)-)}
- U H04N 21/45
 - • {Management operations performed by the client for facilitating the reception of or the interaction with the content or administrating data related to the end-user or to the client device itself, e.g. learning user preferences for recommending movies, resolving scheduling conflicts}
- U H04N 21/4508
 - • • {Management of client or end-user data}
- H04N 21/4516
 - • • • {involving client characteristics, e.g. Set-Top-Box type, software version, amount of memory available (-allocation of resources considering software capabilities [G06F 9/5055](#) ; Allocation of resources considering hardware capabilities [G06F 9/5044](#) ; message adaptation based on network or terminal capabilities in packet switching networks [H04L 12/5825](#) ; protocols involving terminal profiles for network applications in communication control or processing [H04L 29/08927](#) ; processing of terminal status or physical abilities in wireless networks [H04W 8/22](#)-)}
- H04N 21/4524
 - • • • {involving the geographical location of the client (-retrieval from the Internet by querying based on geographical locations [G06F 17/3087](#) ; Systems specially adapted for using geographical information in broadcast systems [H04H 60/70](#) ; protocols in which the network application is adapted for the location of the user terminal in communication control or processing [H04L 29/08657](#) ; services making use of the location of users or terminals in wireless networks [H04W 4/02](#) ; Locating users or terminals in wireless networks [H04W 64/00](#)-)}
- H04N 21/4532
 - • • • {involving end-user characteristics, e.g. viewer profile, preferences (-monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#) ; protocols involving user profiles for network applications in communication control or processing [H04L 29/08936](#) ; processing of user preferences or user profiles in wireless networks [H04W 8/18](#)-)}
- H04N 21/454
 - • • {Content or additional data filtering, e.g. blocking advertisements (-filtering and selective blocking of messages over packet-switching networks [H04L 12/585](#)-)}
- H04N 21/4545
 - • • • Input to filtering algorithms, e.g. filtering a region of the image{-filtering for image enhancement or restoration [G06T 5/00](#)-)}

- H04N 21/458
- • • {Scheduling content for creating a personalized stream, e.g. by combining a locally stored advertisement with an incoming stream; Updating operations, e.g. for OS modules{; time-related management operations} (-arrangements for replacing or switching information during the broadcast or during the distribution [H04H 20/10-](#))}
- H04N 21/4586
- • • • {Content update operation triggered locally, e.g. by comparing the version of software modules in a DVB carousel to the version stored locally (-deployment, distribution, installation, update of software [G06F 8/65](#) ; program updating while running in general [G06F 8/67](#) ; error detection or correction of the data by redundancy during software upgrading [G06F 11/1433](#) ; arrangements for updating broadcast information or broadcast-related information [H04H 60/25-](#))}
- U H04N 21/462
- • • {Content or additional data management e.g. creating a master electronic program guide from data received from the Internet and a Head-end, controlling the complexity of a video stream by scaling the resolution or bit-rate based on the client capabilities}
- H04N 21/4621
- • • • {Controlling the complexity of the content stream or additional data, e.g. lowering the resolution or bit-rate of the video stream for a mobile client with a small screen (-arrangements for using the results of monitoring on user's side in broadcast systems [H04H 60/65](#) ; flow control in packet networks [H04L 12/569-](#))}
- H04N 21/4622
- • • • {Retrieving content or additional data from different sources, e.g. from a broadcast channel and the Internet (-web site content organization and management for information retrieval from the Internet [G06F 17/3089](#) ; transmission by internet of broadcast information [H04H 60/82](#) ; stock exchange data over packet-switching network [H04L 12/1804](#) ; push services including data channel over packet-switching network [H04L 12/1859-](#))}
- H04N 21/4623
- • • • {Processing of entitlement messages, e.g. Entitlement Control Message [ECM]}, Entitlement Management Message [EMM](-arrangements for conditional access to broadcast information or to broadcast-related services [H04H 60/14-](#))}
- H04N 21/4627
- • • • {Rights management{associated to the content} (-protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#) ; security in data switching network management [H04L 12/2461](#) ; security management or policies for network security [H04L 29/06986](#) ; access security in wireless networks [H04W 12/08-](#))}
- H04N 21/466
- • • {Learning process for intelligent management, e.g. learning user preferences for recommending movies (-monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#) ; computer systems using learning methods [G06N 3/08](#) ; services using the results of monitoring in broadcast systems [H04H 60/61-](#))}
- H04N 21/4661
- • • • {Deriving a combined profile for a plurality of end-users of the same client, e.g. for family members within a home (-data switching network applications using user profiles [H04L 29/08936-](#))}
- H04N 21/47
- • {End-user applications (-interaction techniques for graphical user interfaces [G06F 3/048](#) ; receiver circuitry for displaying additional information [H04N 5/445](#) ; software engineering for user interfaces [G06F 8/20](#) ; services or applications for real-time multimedia communications [H04L 29/06387-](#))}
- H04N 21/472
- • • {End-user interface for requesting content, additional data or services; End-user interface for interacting with content, e.g. for content reservation or setting reminders, for requesting event notification, for manipulating displayed content (-end-user interfaces for retrieving video data from a database [G06F 17/30843](#) ; content on demand in one way streaming for real-time multimedia communications [H04L 29/06462-](#))}

- H04N 21/47211 {for requesting pay-per-view content (payment schemes payment architectures or payment protocols [G06Q 20/00](#), [G07F](#))}
- H04N 21/47214 {for content reservation or setting reminders; for requesting event notification, e.g. of sport results or stock market (-notification of incoming messages in packet switching networks [H04L 12/587](#) ; stock exchange data over packet-switching network [H04L 12/1804](#) ; push services over packet-switching network [H04L 12/1859](#))}
- H04N 21/47217 {for controlling playback functions for recorded or on-demand content, e.g. using progress bars, mode or play-point indicators or bookmarks (-specific graphical features in visual interfaces [H04N 21/4312](#)-)}
- U H04N 21/4722 {for requesting additional data associated with the content}
- H04N 21/4725 {using interactive regions of the image, e.g. hot spots (-details of information retrieval from the Internet by using URLs [G06F 17/30876](#) ; processing chained hypermedia data for information retrieval [G06F 17/30014](#)-)}
- H04N 21/4728 {for selecting a Region Of Interest [ROI]}, e.g. for requesting a higher resolution version of a selected region}
- H04N 21/475 {End-user interface for inputting end-user data, e.g. personal identification number [PIN]}, preference data}
- H04N 21/4753 {for user identification, e.g. by entering a PIN or password (-authentication mechanisms using passwords for network security [H04L 29/06782](#)-)}
- H04N 21/4755 {for defining user preferences, e.g. favourite actors or genre (-retrieval personalisation and generation of user profiles for the retrieval of video data [G06F 17/30843](#) ; Data switching network applications using user profiles [H04L 29/08936](#)-)}
- U H04N 21/478 {Supplemental services, e.g. displaying phone caller identification, shopping application}
- H04N 21/47805 {Electronic banking (-banking in general [G06Q 30/02](#)-)}
- H04N 21/47815 {Electronic shopping (-payment schemes, payment architectures or payment protocols for electronic shopping systems [G06Q 20/12](#)-)}
- H04N 21/4782 {Web browsing{, e.g. WebTV} (-information retrieval from the Internet [G06F 17/30861](#) ; protocols for network applications involving the use of web-based technology [H04L 29/0809](#)-)}
- H04N 21/4784 {receiving rewards (-payment schemes, architectures or protocols [G06Q 20/00](#) ; e-commerce [G06Q 30/00](#) ; charging arrangements in data networks [H04L 12/14](#)-)}
- H04N 21/4786 {e-mailing (-message switching systems, e.g. electronic mail systems [H04L 12/58](#)-)}
- H04N 21/4788 {communicating with other users, e.g. chatting (-arrangements for providing for computer conferences, e.g. chat rooms, to substitution in data switching networks [H04L 12/1813](#) ; protocols for peer-to-peer networking in communication control or processing [H04L 29/08306](#)-)}
- H04N 21/482 {End-user interface for program selection (-systems specially adapted for using EPGs in broadcast systems [H04H 60/72](#)-)}
- H04N 21/4828 {for searching program descriptors (-retrieval of video data [G06F 17/30843](#)-)}
- H04N 21/488 {Data services, e.g. news ticker (-systems specially adapted for using meteorological information in broadcast systems [H04H 60/71](#)-)}
- H04N 21/4882 {for displaying messages, e.g. warnings, reminders (-arrangements for providing short real-time information to substitution in data switching networks [H04L 12/1895](#)-)}

- H04N 21/60
 - {using}Network structure or processes {specifically adapted}for video distribution between server and client or between remote clients (-data switching networks [H04L 12/00](#) ; wireless communication networks [H04W-](#)); Control signaling {specific to video distribution}between clients, server and network components{, e.g. to video encoder or decoder}; Transmission of management data between server and client {e.g. sending from server to client commands for recording incoming content stream}; Communication details between server and client (-Protocols for communication control and processing in data networks [H04L 29/06](#) ; Protocols for client-server architecture [H04L 67/42](#)-)
- H04N 21/61
 - • {Network physical structure; Signal processing ([H04B](#) takes precedence)}
- U H04N 21/6106
 - • • {specially adapted to the downstream path of the transmission network}
- H04N 21/6125
 - • • • {involving transmission via Internet (-transmission by internet of broadcast information [H04H 60/82](#)-)}
- H04N 21/6131
 - • • • {involving transmission via a mobile phone network (-wireless downlink channel access [H04W 74/006](#)-)}
- H04N 21/615
 - • • {Signal processing at physical level (-signal processing in analog two-way television systems [H04N 7/173](#)-)}
- U H04N 21/6156
 - • • {specially adapted to the upstream path of the transmission network}
- H04N 21/6175
 - • • • {involving transmission via Internet (-broadcast-related systems characterised by the transmission system being the Internet [H04H 60/82](#)-)}
- H04N 21/6181
 - • • • {involving transmission via a mobile phone network (-arrangements for providing broadcast or conference services to substation in data switching networks in combination with wireless systems [H04L 12/189](#) ; wireless uplink channel access [H04W 74/004](#)-)}
- H04N 21/6193
 - • • • {involving transmission via a satellite (-arrangements for data linking, networking or transporting, or for controlling an end to end session in a satellite broadcast system [H04B 7/18526](#)-)}
- H04N 21/63
 - • Control signaling {related to video distribution}between client, server and network components; Network processes for video distribution between server and clients {or between remote clients}, e.g. transmitting basic layer and enhancement layers over different transmission paths, setting up a peer-to-peer communication via Internet between remote STB's; Communication protocols; Addressing (-signalling, control or architecture for real-time multimedia communications [H04L 29/06183](#) ; arrangements for peer-to-peer communications [H04L 29/08306](#)-)
- H04N 21/632
 - • • {using a connection between clients on a wide area network, e.g. setting up a peer-to-peer communication via Internet for retrieving video segments from the hard-disk of other client devices (-broadcast-related systems characterised by transmission among terminal devices [H04H 60/80](#) ; protocols for peer-to-peer networking in communication control or processing [H04L 29/08306](#)-)}
- H04N 21/633
 - • • {Control signals issued by server directed to the network components or client (-management of faults, events, alarms in data networks [H04L 12/2419](#)-)}
- U H04N 21/6332
 - • • • {directed to client}
- H04N 21/6334
 - • • • • {for authorization, e.g. by transmitting a key (-arrangements for secret or secure communication [H04L 9/00](#) ; wireless communications network key management [H04W 12/04](#) ; wireless communications network access security [H04W 12/08](#)-)}
- H04N 21/63345
 - • • • • • {by transmitting keys (-key distribution for secret or secure communication [H04L 9/08](#) ; arrangements for network security key management [H04L 29/06707](#)-)}

- U H04N 21/637 . . . {Control signals issued by the client directed to the server or network components}
- H04N 21/6373 {for rate control{e.g. request to the server to modify its transmission rate} (-flow control in packet networks [H04L 12/569](#)-)}
- H04N 21/6375 for requesting retransmission{, e.g. of data packets lost or corrupted during transmission from server} (-ARQ protocols [H04L 1/18](#) ; ARQ protocols [H04L 1/18](#) ; Transmission Control Protocol / Internet Protocol [TCP/IP] [H04L 29/06095](#)-)}
- H04N 21/6377 {directed to server} (-control of source by destination in one way streaming for real-time multimedia communications [H04L 29/06469](#)-)}
- H04N 21/63775 {for uploading keys, e.g. for a client to communicate its public key to the server} (-arrangements for network security key management [H04L 29/06707](#)-)}
- H04N 21/64 {Addressing} (-multicast or broadcast in one way streaming for real-time multimedia communications [H04L 29/06455](#) ; arrangements for addressing and naming in data networks [H04L 29/12009](#)-)}
- H04N 21/6402 {Address allocation for clients} (-address allocation in data networks [H04L 29/12207](#)-)}
- H04N 21/6405 {Multicasting} (-data broadcast and multicast in packet switching networks [H04L 12/18](#)-)}
- H04N 21/643 {using dedicated}Communication protocols} (-streaming protocols for real-time multimedia communications [H04L 29/06517](#)-)}
- H04N 21/6433 {Digital Storage Media - Command and Control Protocol [DSM-CC]}
- H04N 21/6437 {Real-time Transport Protocol [RTP]}
- H04N 21/647 {Control signaling between network components and server or clients; Network processes for video distribution between server and clients, e.g. controlling the quality of the video stream, by dropping packets, protecting content from unauthorized alteration within the network, monitoring of network load, bridging between two different networks, e.g. between IP and wireless} (-signalling, control or architecture for real-time multimedia communications [H04L 29/06183](#)-)}
- H04N 21/64715 {Protecting content from unauthorized alteration within the network} (-verifying the information received for network security in communication control or processing [H04L 29/06857](#) ; integrity in wireless network security [H04W 12/10](#)-)}
- H04N 21/64723 {Monitoring of network processes or resources, e.g. monitoring of network load} (-traffic related reporting in data switching networks [H04L 12/2626](#)-)}
- H04N 21/6473 {Monitoring network processes errors} (-counter-measures to a fault in communication control or processing [H04L 29/14](#)-)}
- H04N 21/64738 {Monitoring network characteristics, e.g. bandwidth, congestion level} (-data switched network analysis [H04L 12/2414](#) ; monitoring functioning in data switched networks [H04L 12/2642](#) ; flow control in packet networks [H04L 12/569](#)-)}
- U H04N 21/64746 {Control signals issued by the network directed to the server or the client}
- U H04N 21/64761 {directed to the server}
- H04N 21/64769 {for rate control} (-flow control in packet networks [H04L 12/569](#)-)}
- H04N 21/64776 for requesting retransmission, e.g. of data packets lost or corrupted during transmission from server} (-ARQ protocols [H04L 1/18](#) ; ARQ protocols [H04L 1/18](#) ; Transmission Control Protocol / Internet Protocol [TCP/IP] [H04L 29/06095](#)-)}

- H04N 21/64784
 - {Data processing by the network (-data processing in packet switching systems [H04L 12/56](#) ; flow control in packet networks [H04L 12/569](#) ; intermediate storage or scheduling [H04L 12/5694](#) ; protocols involving intermediate processing or storage in communication networks [H04L 29/08702](#)-)}
- H04N 21/64792
 - {Controlling the complexity of the content stream, e.g. by dropping packets (-media manipulation, adaptation or conversion at an intermediate station in one way streaming for real-time multimedia communications [H04L 29/06503](#) ; arrangements for reducing the amount or size of exchanged application data in the network [H04L 29/08783](#) ; negotiation of resources in wireless networks [H04W 28/16](#)-)}
- U H04N 21/65
 - . {transmission of management data between client and server}
- U H04N 21/654
 - . . . {transmission by server directed to the client}
- H04N 21/6543
 - {for forcing some client operations, e.g. recording (-remote booting in general [G06F 9/4416](#)-)}
- U H04N 21/658
 - . . . {transmission by the client directed to the server}
- H04N 21/6582
 - {Data stored in the client, e.g. viewing habits, hardware capabilities, credit card number (-arrangements where receivers interact with the broadcast [H04H 20/38](#)-)}
- H04N 21/80
 - . {Generation or processing of content or additional data by content creator independently of the distribution process; Content per se (-arrangements for generating broadcast information [H04H 60/02](#)-)}
- U H04N 21/81
 - . {Monomedia components thereof}
- H04N 21/812
 - . . . {involving advertisement data (-advertising per se [G06Q30/00A](#)-)}
- U H04N 21/8126
 - . . . {involving additional data, e.g. news, sports, stocks, weather forecasts}
- H04N 21/814
 - {comprising emergency warnings (-arrangements specially adapted for emergency or urgency in broadcast systems [H04H 20/59](#) ; arrangements for providing alarms, notifications, alerts to substation in data switching networks [H04L 12/1895](#)-)}
- H04N 21/8166
 - . . . {involving executable data, e.g. software (-arrangements for executing specific programs [G06F 9/44](#) ; broadcasting computer programmes in broadcast systems [H04H 20/91](#) ; movement of software or configuration parameters, in data networks [H04L 29/08981](#)-)}
- U H04N 21/83
 - . {Generation or processing of protective or descriptive data associated with content; Content structuring}
- H04N 21/835
 - . . . {Generation of protective data, e.g. certificates (-protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#)-)}
- H04N 21/8352
 - {involving content or source identification data, e.g. Unique Material Identifier [UMID]}
- H04N 21/8358
 - involving watermark(-protecting executable software by watermarking [G06F 21/16](#) ; image watermarking in general [G06T 1/0021](#) ; watermarks inserted in still images for transmission purposes [H04N 1/32144](#) ; inserting watermarks during video coding [H04N 19/467](#)-)}
- H04N 21/84
 - . . . {Generation or processing of descriptive data, e.g. content descriptors (-systems specially adapted for using meta-information in broadcast systems [H04H 60/73](#)-)}
- H04N 21/8402
 - {involving a version number, e.g. version number of EPG data (-arrangements for version control in computers [G06F 8/71](#)-)}
- U H04N 21/845
 - . . . {Structuring of content, e.g. decomposing content into time segments}
- H04N 21/8451
 - {using Advanced Video Coding [AVC]}
- U H04N 21/85
 - . {Assembly of content; Generation of multimedia applications}

- U H04N 21/854 . . . {Content Authoring}
- H04N 21/8543 {using a description language, e.g. Multimedia and Hypermedia information coding Expert Group [MHEG]}, eXtensible Markup Language [XML](-information retrieval of semistructured data, the underlying structure being taken into account, e.g. mark-up language structure data [G06F 17/30908](#)-)}
- H04N 21/8549 {Creating video summaries, e.g. movie trailer (-retrieval in video databases by using presentations in form of a video summary [G06F 17/30843](#)-)}
- U H04N 21/858 . . . {Linking data to content, e.g. by linking an URL to a video object, by creating a hotspot}
- H04N 21/8586 {by using a URL (-processing chained hypermedia data for information retrieval [G06F 17/30014](#) ; information retrieval from the Internet by using URLs [G06F 17/30876](#) ; URL in broadcast information [H04H 20/93](#) ; protocols for network applications involving the use of web-based technology [H04L 29/0809](#)-)}
- U H04N 2201/00 Indexing scheme relating to scanning, transmission or reproduction of documents or the like, and to details thereof**
- H04N 2201/0008 . Connection or combination of a still picture apparatus with another apparatus (not used)
- H04N 2201/0013 . . Arrangements for the control of the connected apparatus by the still picture apparatus (-arrangements for the control of a still picture apparatus by the connected apparatus [H04N 2201/0074](#) ; control of image communication with the connected apparatus [H04N 2201/0015](#)-)
- U H04N 2201/0015 . . Control of image communication with the connected apparatus, e.g. signalling capability
- H04N 2201/0022 . . . Selecting or switching between an image communication mode and a non-image communication mode (-[H04N 2201/002](#) takes precedence-)
- U H04N 2201/0034 . . Details of the connection, e.g. connector, interface
- U H04N 2201/0037 . . . Topological details of the connection
- H04N 2201/0041 Point to point (-[H04N 2201/0039](#) takes precedence-)
- H04N 2201/0043 Point to multipoint (-[H04N 2201/0039](#) takes precedence-)
- H04N 2201/0044 . . . Connecting to a plurality of different apparatus; Using a plurality of different connectors (-connection via a network [H04N 2201/0039](#)-)
- U H04N 2201/0048 . . . Type of connection
- H04N 2201/0056 Using mechanical couplings, e.g. mating elements (-[H04N 2201/0049](#) , [H04N 2201/0051](#) , [H04N 2201/0058](#) take precedence-)
- H04N 2201/007 . . Selecting or switching between a still picture apparatus or function and another apparatus or function (-[H04N 2201/0022](#) takes precedence-)
- H04N 2201/0074 . . Arrangements for the control of a still picture apparatus by the connected apparatus (-arrangements for the control of the connected apparatus by the still picture apparatus [H04N 2201/0013](#) ; control of image communication with the connected apparatus [H04N 2201/0015](#)-)
- U H04N 2201/0077 . Types of the still picture apparatus
- NOTE**
- Subgroups [H04N 2201/0077](#) to [H04N 2201/0094](#) are for use with [H04N 1/00](#) and subgroups
- H04N 2201/0081 . . Image reader (-[H04N 2201/0091](#) to [H04N 2201/0094](#) take precedence-)
- H04N 2201/0082 . . Image hardcopy reproducer (-[H04N 2201/0091](#) to [H04N 2201/0094](#) take precedence-)

- H04N 2201/0086
 - • Image transceiver (~~H04N 2201/0093 and H04N 2201/0094 take precedence-~~)
- H04N 2201/0091
 - • Digital copier; digital 'photocopier' (~~H04N 2201/0093 and H04N 2201/0094 take precedence-~~)
- H04N 2201/0093
 - • Facsimile machine (~~H04N 2201/0094 takes precedence-~~)
- U H04N 2201/024
 - deleted
- H04N 2201/02404
 - • Arrangements for mounting or supporting heads (~~H04N 2201/02402 takes precedence-~~)

NOTE

Indexing codes of group [H04N 2201/02406](#) can be used in combination, i.e. a code followed by additional codes preceded by a "+" sign, or in isolation
- H04N 2201/02406
 - • Arrangements for positioning elements within a head (~~H04N 1/02409 takes precedence; arrangements for positioning heads H04N 2201/02402-~~)
- U H04N 2201/02408
 - • • Translational positioning
- H04N 2201/02414
 - • • in a direction perpendicular to the plane of the photodetector elements, e.g. in the direction of the optical axis (~~H04N 1/02409 takes precedence-~~)
- U H04N 2201/02439
 - • • Positioning method
- H04N 2201/02447
 - • • using elastic means, e.g. springs (~~H04N 2201/02445 takes precedence-~~)
- H04N 2201/02452
 - • Arrangements for mounting or supporting elements within a scanning head (~~H04N 2201/02406 , H04N 2201/03154 take precedence-~~)
- U H04N 2201/02466
 - • • Mounting or supporting method
- H04N 2201/02474
 - • • Clamping; Clamping (~~H04N 2201/02472 takes precedence-~~)
- H04N 2201/02477
 - • • using elastic means, e.g. springs (~~H04N 2201/02472 takes precedence-~~)
- U H04N 2201/02479
 - • • Mounting or supporting means
- H04N 2201/02483
 - • • Housing or part of the housing, e.g. bottom plate (~~H04N 2201/02481 takes precedence-~~)
- H04N 2201/02487
 - • Manufacturing details (~~H04N 2201/02406 , H04N 2201/02452 take precedence-~~)
- H04N 2201/02497
 - • Additional elements, e.g. sheet guide plates, light shields (~~H04N 2201/02489 to H04N 2201/02495 take precedence-~~)
- H04N 2201/028
 - • for picture information pick-up (not used)
- H04N 2201/04
 - Scanning arrangements (not used)
- H04N 2201/0402
 - • Arrangements not specific to a particular one of the scanning methods covered by groups [H04N 1/04](#) to [H04N 1/207](#) (not used)
- H04N 2201/0422
 - • • Media holders, covers, supports, backgrounds; Arrangements to facilitate placing of the medium (~~H04N 2201/0406 to H04N 2201/0412 , H04N 2201/0434 take precedence-~~)
- H04N 2201/0436
 - • • Scanning a picture-bearing surface lying face up on a support (~~H04N 2201/0434 takes precedence; using cylindrical picture bearing surfaces H04N 1/06 ; with manual scanning H04N 1/107-~~)
- H04N 2201/0446
 - • • Constructional details not otherwise provided for, e.g. mounting of scanning components (~~H04N 2201/0448 takes precedence-~~)
- H04N 2201/0448
 - • • for positioning scanning elements not otherwise provided for; Aligning, e.g. using an alignment calibration pattern (~~arrangements for positioning elements within a scanning head H04N 2201/02406-~~)
- H04N 2201/047
 - • Detection, control or error compensation of scanning velocity or position (not used)
- H04N 2201/04701
 - • • Detection of scanning velocity or position (not used)
- U H04N 2201/0471
 - • • using dedicated detectors

- H04N 2201/04713 Details of the detector arrangement, e.g. non-standard position, optical details (-H04N 2201/04712 takes precedence-)
- H04N 2201/04743 by detecting the image directly (-detecting reference images H04N 2201/04717-)
- H04N 2201/04753 . . . Control or error compensation of scanning position or velocity (not used)
- H04N 2201/04758 by controlling the position of the scanned image area (-H04N 2201/04755 , H04N 2201/04756 take precedence-)
- U H04N 2201/0476 using an optical, electro-optical or acousto-optical element
- H04N 2201/04762 using a reflecting element (-H04N 2201/04765 takes precedence-)
- U H04N 2201/04767 by controlling the timing of the signals, e.g. by controlling the frequency or phase of the pixel clock
- U H04N 2201/04768 Controlling the frequency of the signals
- H04N 2201/04774 using a reference clock or oscillator (-H04N 2201/04772 takes precedence-)
- H04N 2201/04775 using a counter (-H04N 2201/04772 takes precedence-)
- H04N 2201/04777 using a voltage controlled oscillator (-H04N 2201/04772 takes precedence-)
- U H04N 2201/04781 Controlling the phase of the signals
- H04N 2201/04786 Controlling a start time, e.g. for output of a line of data (-H04N 2201/04784 takes precedence-)
- H04N 2201/21 . . . Intermediate information storage (not used)
- H04N 2201/32 . . . Circuits or arrangements for control or supervision between transmitter and receiver or between image input and image output device (not used)
- U H04N 2201/3201 . . . Display, printing, storage or transmission of additional information, e.g. ID code, date and time or title
- H04N 2201/3204 of data relating to a user, sender, addressee, machine or electronic recording medium (-H04N 2201/3256 and subgroups take precedence-)
- H04N 2201/3205 of identification information, e.g. name or ID code (-H04N 2201/3209 takes precedence-)
- U H04N 2201/3225 of data relating to an image, a page or a document
- U H04N 2201/3226 of identification information or the like, e.g. ID code, index, title, part of an image, reduced-size image
- U H04N 2201/3228 further additional information (metadata) being comprised in the identification information
- H04N 2201/3229 further additional information (metadata) being comprised in the file name (including path, e.g. directory or folder names at one or more higher hierarchical levels)(including path, e.g. directory or folder names at one or more higher hierarchical levels)
- H04N 2201/3242 of processing required or performed, e.g. for reproduction or before recording (-H04N 2201/3256 and subgroups take precedence-)
- H04N 2201/3252 Image capture parameters, e.g. resolution, illumination conditions, orientation of the image capture device (-H04N 2201/3256 and subgroups take precedence-)
- H04N 2201/3256 colour related metadata, e.g. colour, ICC profiles (-for use made of colour related metadata see the appropriate place, e.g. H04N 1/60 , H04N 1/60 and subgroups-)
- U H04N 2201/3261 of multimedia information, e.g. a sound signal
- H04N 2201/3263 of a graphical motif or symbol, e.g. Christmas symbol, logo (-H04N 2201/3211 takes precedence-)

- H04N 2201/3266 · · · of text or character information, e.g. text accompanying an image (~~H04N 2201/3226~~ takes precedence)
- H04N 2201/3285 · · using picture signal storage, e.g. at transmitter (not used)
- H04N 2201/333 · · Mode signalling or mode changing; Handshaking therefor (not used)
- H04N 2209/00** **Details of colour television systems (not used)**
- H04N 2209/04 · Picture signal generators (not used)
- H04N 2209/041 · · using solid-state devices (not used)
- H04N 2213/00** **Details of stereoscopic systems (not used, see subgroups)**

Project: N/A (H04Q)

- U H04Q 1/00** **Details of selecting apparatus or arrangements { for establishing connections among stations for the purpose of transferring information via these connections}**
- U H04Q 1/02 · Constructional details
- H04Q 1/021 · · {using pivoting mechanisms for accessing the interior of the apparatus}
- H04Q 1/023 · · {using sliding mechanisms for accessing the interior of the apparatus}
- H04Q 1/025 · · {Cabinets}
- H04Q 1/026 · · · {characterized by door details}
- H04Q 1/03 · · {Power distribution arrangements}
- H04Q 1/032 · · · {power failure protection}
- H04Q 1/035 · · {Cooling of active equipments, e.g. air ducts}
- U H04Q 1/06 · · Cable ducts or mountings specially adapted for exchange installations (in general [H02G](#))
- H04Q 1/062 · · · {vertical management arrangements}
- H04Q 1/064 · · · {horizontal management arrangements}
- H04Q 1/066 · · · {arranged on the front side}
- H04Q 1/068 · · · {arranged on the rear side}
- H04Q 1/09 · · {Frames or mounting racks not otherwise provided for}
- H04Q 1/11 · · {Protection against environment}
- H04Q 1/112 · · · {mechanical protection, e.g. resistance to earthquakes}
- H04Q 1/114 · · · {flooding protection, e.g. using water proof provision}
- H04Q 1/116 · · · {lightning or EMI protection, e.g. shielding or grounding (suppression of noise or interference in transmission systems [H04B 15/00](#))}
- H04Q 1/118 · · · {heat or sun protection}
- H04Q 1/13 · · {Patch panels for monitoring, interconnecting or testing circuits, e.g. patch bay, patch field or jack field; Patching modules}
- H04Q 1/131 · · · {being pivotable}
- H04Q 1/133 · · · {being slidable}
- H04Q 1/135 · · · {characterized by patch cord details}
- H04Q 1/136 · · · · {having patch field management or physical layer management arrangements}
- H04Q 1/138 · · · · · {using RFID}
- U H04Q 1/14 · · Distribution frames
- H04Q 1/143 · · · {with contacts on circular surface}
- H04Q 1/149 · · · {Wireguides in connector blocks}
- H04Q 1/15 · · {Backplane arrangements}

H04Q 1/155	. . . {-characterised by connection features}
U H04Q 3/00	Selecting arrangements (H04Q 5/00 to H04Q 11/00 take precedence)
U H04Q 3/0016	. {Arrangements providing connection between exchanges}
U H04Q 3/0029	. . {-Provisions for intelligent networking}
H04Q 3/0054	. . . {-Service creation techniques}
U H04Q 3/42	. Circuit arrangements for indirect selecting controlled by common circuits, e.g. register controller, marker
U H04Q 3/54	. . in which the logic circuitry controlling the exchange is centralised
H04Q 3/542	. . . {-Logic circuits or arrangements therefor (logic circuits in general H03K 19/00)}
U H04Q 3/545	. . . {using a stored programme}
H04Q 3/54508	. . . . {-Configuration, initialization}
H04Q 3/54541	. . . . {-using multi-processor systems}
H04Q 3/54575	. . . . {-Software application}
U H04Q 3/55	. . . using wired logic circuitry
H04Q 3/552	. . . . {-Wired circuits or arrangements therefor}
U H04Q 3/58	. Arrangements providing connection between main exchange and sub-exchange or satellite
U H04Q 3/60	. . for connecting to satellites or concentrators which connect one or more exchange lines with a group of local lines
H04Q 3/602	. . . {-Circuit arrangements therefor}
U H04Q 3/62	. . for connecting to private branch exchanges
H04Q 3/622	. . . {-Circuit arrangements therefor}
U H04Q 3/64	. Distributing or queueing
H04Q 3/645	. . {-Circuit arrangements therefor}
U H04Q 3/66	. . Traffic distributors
H04Q 3/665	. . . {-Circuit arrangements therefor}
U H04Q 3/68	. . Grouping or interlacing selector groups or stages
H04Q 3/685	. . . {-Circuit arrangements therefor}
U H04Q 11/00	Selecting arrangements for multiplex systems (multiplex systems H04J)
U H04Q 11/0001	. {using optical switching}
U H04Q 11/0005	. . {Switch and router aspects}
U H04Q 2011/0007	. . . {Construction }
H04Q 2011/0026	. . . . {using free space propagation (<i>e.g. lenses, mirrors</i>)} {e.g. lenses, mirrors}
H04Q 2011/0032	. . . . {using static wavelength routers (<i>e.g. arrayed waveguide grating router (AWGR)</i>)}{e.g. arrayed-waveguide-grating-router (AWGR)-}
U H04Q 11/04	. for time-division multiplexing {(H04Q 11/0001 takes precedence)}
H04Q 11/0421	. . {-Circuit arrangements therefor}
U H04Q 2213/00	Indexing scheme relating to selecting arrangements in general and for multiplex systems
H04Q 2213/046	. Binary switch (<i>Beta element</i>) (Beta element)
H04Q 2213/062	. Finder switch (<i>e.g. line finder, call finder</i>) (e.g. line finder, call finder)
H04Q 2213/13164	. Traffic (<i>registration, measurement,...</i>) (registration, measurement,...)
H04Q 2213/171	. Number indicating signals (<i>no dial signals</i>) (no dial signals)
H04Q 2213/216	. Code signals; -Framing (<i>not synchronizing</i>) (not synchronizing)

Project: N/A (H04R)

H04R

LOUDSPEAKERS, MICROPHONES, GRAMOPHONE PICK-UPS OR LIKE ACOUSTIC ELECTROMECHANICAL TRANSDUCERS; DEAF-AID SETS; PUBLIC ADDRESS SYSTEMS (generating mechanical vibrations in general [B06B](#); transducers for measuring particular variables [G01](#); transducers in clocks [G04](#); producing sounds with frequency not determined by supply frequency [G10K](#); transducers in recording or reproducing heads [G11B](#); transducers in motors [H02](#))

NOTE

This subclass covers :

loudspeakers, microphones, {acoustic} transducers {therefor} producing acoustic waves or variations of electric current or voltage, or gramophone pick-ups;
 arrangements actuated by variations of electric current or voltage for cutting grooves in records;
 circuits for the above-mentioned {loudspeakers, microphones, acoustic transducers, gramophone pick-ups or} arrangements;
 monitoring or testing {of the above-mentioned loudspeakers, microphones, acoustic transducers, gramophone pick-ups or arrangements}

U H04R 1/00

Details of transducers,{loudspeakers or microphones}

H04R 1/02

- Casings; Cabinets; {Supports therefor;}Mountings therein (~~H04R 1/28~~ takes precedence; ~~{(attachments for microphones H04R 1/08 ; {(attachments for microphones H04R 1/08 ; mounting of transducers in earpieces H04R 1/1075-})}~~)

H04R 1/04

- • Structural association of microphone with electric circuitry therefor (~~in deaf-aid sets H04R 25/00-~~)

H04R 1/10

- Earpieces; Attachments therefor; {Earphones; Monophonic headphones(~~H04R 1/28~~ takes precedence; stereophonic headphones [H04R 5/033](#)-)}

NOTE

- 1) This group covers details of headphones, both of monophonic and stereophonic type.
- (2) When classifying in this group or in its subgroups, aspects relating to stereophonic headphones are to be classified in [H04R 5/033](#) as well

H04R 1/1025

- • {Accumulators or arrangements for charging (~~secondary cells per se [H01M 10/00](#) ; charging in general [H02J 7/00-](#)~~)}

H04R 1/1033

- • {Cables or cables storage, e.g. cable reels (~~cord reels per se [H02G 11/02](#) ; arrangements for storing and repeatedly paying-out and re-storing lengths of conductors or cables [B65H 75/34](#) ; extensible conductors or cables, e.g. self-coiling cords [H01B 7/06-](#)~~)}

H04R 1/1041

- • {Mechanical or electronic switches, or control elements (switches in general [H01H](#))}

H04R 1/105

- • {Earpiece supports, e.g. ear hooks (~~for stereophonic headphones [H04R 5/0335-](#)~~)}

U H04R 1/1058

- • {Manufacture or assembly}

H04R 1/1066

- • • {Constructional aspects of the interconnection between earpiece and earpiece support (~~earpiece support for monophonic headphones [H04R 1/105](#) ; earpiece support for stereophonic headphones [H04R 5/0335-](#)~~)}

H04R 1/1083

- • {Reduction of ambient noise (~~active noise reduction per se [G10K 11/175](#) ; protective devices for the ear, e.g. providing acoustic protection [A61F 11/06-](#)~~)}

- H04R 1/1091
 - H04R 1/20
 - H04R 1/22
 - H04R 1/222
 - H04R 1/28
 - H04R 1/2807
 - U H04R 1/2815
 - H04R 1/2823
 - U H04R 1/2838
 - H04R 1/2846
 - U H04R 1/2869
 - H04R 1/2876
 - H04R 1/2884
 - H04R 1/32
 - H04R 1/323
 - H04R 1/326
 - H04R 1/34
 - H04R 1/40
 - H04R 1/46
 - U H04R 3/00**
 - H04R 3/005
 - H04R 3/02
 - H04R 3/12
 - H04R 5/00**
- · {Details not provided in groups [H04R 1/1008](#) to [H04R 1/1083](#) }
 - Arrangements for obtaining desired frequency or directional characteristics (for stereophonic purpose [H04R 5/00](#))
 - · for obtaining desired frequency characteristic only (circuit for combining transducers having different responses [H04R 3/00](#) { for hearing aids [H04R 25/407](#) })
 - · · {for microphones ([H04R 1/24](#) , [H04R 1/26](#) take precedence-)}
 - · · Transducer mountings or enclosures modified by provision of mechanical or acoustic impedances, e.g. resonator, damping means (combinations of transducers with horns, i.e. front-loaded horns [H04R 1/30](#))
 - · · · {Enclosures comprising vibrating or resonating arrangements (for the reduction of undesired resonances or vibrations [H04R 1/2869](#))}
 - · · · · {of the bass reflex type}
 - · · · · · {Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (number or position of ports [H04R 1/2815](#) ; vents in bandpass type enclosures [H04R 1/2846](#))}
 - · · · · {of the bandpass type}
 - · · · · · {Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (number or position of ports [H04R 1/2838](#) ; vents in bass reflex type enclosures [H04R 1/2823](#))}
 - · · · · {Reduction of undesired resonances, i.e. standing waves within enclosure, or of undesired vibrations, i.e. of the enclosure itself}
 - · · · · {by means of damping material, e.g. as cladding (damping material for tuning desired resonances [H04R 1/2807](#) , e.g. in vents [H04R 1/2823](#) , [H04R 1/2846](#))}
 - · · · · {by means of the enclosure structure, i.e. strengthening or shape of the enclosure (by means of Helmholtz resonators [H04R 1/2869](#))}
 - · for obtaining desired directional characteristic only (specially adapted for hearing aids [H04R 25/40](#))}
 - · · {for loudspeakers ([H04R 1/34](#) and [H04R 1/40](#) take precedence-)}
 - · · {for microphones ([H04R 1/34](#) and [H04R 1/40](#) take precedence-)}
 - · · by using a single transducer with sound reflecting, diffracting, directing or guiding means (specially adapted for hearing aids [H04R 25/402](#))}
 - · · by combining a number of identical transducers (specially adapted for hearing aids [H04R 25/405](#))}
 - Special adaptations for use as contact microphones, e.g. on musical instrument, on stethoscope (throat mountings [H04R 1/14](#))}
 - Circuits for transducers{, loudspeakers or microphones}**
 - {for combining the signals of two or more microphones (specially adapted for hearing aids [H04R 25/407](#))}{M1202}
 - for preventing acoustic reaction{, i.e. acoustic oscillatory feedback (specially adapted for hearing aids [H04R 25/453](#))}
 - for distributing signals to two or more loudspeakers (specially adapted for hearing aids [H04R 25/407](#))}
 - Stereophonic arrangements (stereophonic pick-ups [H04R 9/16](#) , [H04R 11/12](#) , [H04R 17/08](#) , [H04R 19/10](#))**

NOTE

In this group, the expression "stereophonic arrangements" covers quadraphonic or similar arrangements.

- H04R 5/033 · Headphones for stereophonic communication{(-details thereof, e.g. relating to batteries, cables or control elements [H04R 1/10-](#))}
- H04R 5/0335 · {Earpiece support, e.g. headbands or neckrests (-for monophonic headphones [H04R 1/105-](#))}
- H04R 5/04 · Circuit arrangements,{e.g. for selective connection of amplifier inputs/outputs to loudspeakers, for loudspeaker detection, or for adaptation of settings to personal preferences or hearing impairments(-combinations of amplifiers [H03F 3/68](#) ; stereophonic systems [H04S-](#))}
- H04R 7/00** **Diaphragms for electromechanical transducers (-in general [F16J 3/00-](#)); Cones (for musical instruments [G10](#)){(-cones, diaphragms or the like, for emitting or receiving sound in general [G10K 13/00](#) ; Mounting thereof)}**
- H04R 7/26 · Damping by means acting directly on free portion of diaphragm or cone (-air damping [H04R 1/28-](#))
- U H04R 9/00** **Transducers of moving-coil, moving-strip, or moving-wire type**
- U H04R 9/02 · Details
- U H04R 9/04 · · Construction, mounting, or centering of coil
- U H04R 9/041 · · · {Centering}
- H04R 9/043 · · · · {Inner suspension or damper, e.g. spider (-outer suspension or surround [H04R 7/16-](#))}
- H04R 9/045 · · · {Mounting (-[H04R 9/043](#) takes precedence)}
- U H04R 9/06 · Loudspeakers
- H04R 9/063 · · {using a plurality of acoustic drivers (-[H04R 1/24](#) and [H04R 1/403](#) take precedence)}
- U H04R 9/12 · Gramophone pick-ups using a stylus; Recorders using a stylus
- H04R 9/14 · · comprising two or more styli or transducers (-[H04R 9/16](#) takes precedence-)
- H04R 11/00** **Transducers of moving-armature or moving-core type (-acoustic diaphragm of magnetisable material directly coacting with electromagnet [H04R 13/00-](#))**
- U H04R 11/08 · Gramophone pick-ups using a stylus; Recorders using a stylus
- H04R 11/10 · · comprising two or more styli or transducers (-[H04R 11/12](#) takes precedence-)
- H04R 15/00** **Magnetostrictive transducers (-magnetostrictive elements in general [H01L 41/00-](#))**
- H04R 17/00** **Piezo-electric transducers; Electrostrictive transducers (-piezo-electric or electrostrictive elements in general [H01L 41/00](#) ; details of piezo-electric or electrostrictive motors, generators or positioners { [H01L 41/00](#))}**
- U H04R 17/04 · Gramophone pick-ups using a stylus; Recorders using a stylus
- H04R 17/06 · · comprising two or more styli or transducers (-[H04R 17/08](#) takes precedence-)
- U H04R 19/00** **Electrostatic transducers**
- H04R 19/02 · Loudspeakers (-[H04R 19/01](#) takes precedence-)
- H04R 19/04 · Microphones (-[H04R 19/01](#) takes precedence-)
- H04R 19/06 · Gramophone pick-ups using a stylus; Recorders using a stylus (-[H04R 19/01](#) takes precedence-)
- H04R 19/08 · · comprising two or more styli or transducers (-[H04R 19/10](#) takes precedence-)
- H04R 21/00** **Variable-resistance transducers (-gaseous resistance transducers [H04R 23/00](#) ; magneto-resistive transducers [H04R 23/00-](#))**
- H04R 23/00** **Transducers other than those covered by groups [H04R 9/00](#) to [H04R 21/00](#) {-diaphragms for transducers of the distributed-mode type [H04R 7/045-](#)}**

H04R 23/006 · {using solid state devices (-solid state devices per se [H01L-](#))}

H04R 25/00 **Deaf-aid sets** {providing an auditory perception; **Electric tinnitus maskers providing an auditory perception**} (-constructions of transducers per se [H04R 9/00](#) to [H04R 23/00](#) ; { non-electric hearing aids [A61F 11/008](#) ; replacing direct auditory perception by another kind of perception [A61F 11/04](#) ; electrical stimulation of auditory nerves to promote the auditory function [A61N 1/36032](#) } ; structural combination with spectacle frames [G02C 11/06](#) ; processing of speech signals [G10L 21/00](#)-)

NOTE

Classification should be directed to groups [H04R 25/02](#) , [H04R 25/04](#) or [H04R 25/50](#) and its subgroups, if and only if the technical subject in consideration cannot be classified elsewhere under the main group [H04R 25/00](#)

WARNING

Groups [H04R 25/30](#) to [H04R 25/75](#) do not correspond to former or current IPC groups.

H04R 25/30 · {Monitoring or testing of hearing aids, e.g. functioning, settings, battery power (-testing arrangements for electro-acoustic transducers in general [H04R 29/00](#) ; battery testing in general [G01R 31/36](#)-)}

H04R 25/43 · {Electronic input selection or mixing based on input signal analysis, e.g. mixing or selection between microphone and telecoil or between microphones with different directivity characteristics (-[H04R 25/407](#) takes precedence-)}

WARNING

Not complete pending a reorganization, see also [H04R 25/00](#)

H04R 25/45 · {Prevention of acoustic reaction, i.e. acoustic oscillatory feedback}{[m1207](#)}

H04R 25/453 · · {electronically (-in general [H04R 3/02](#)-)}

H04R 25/48 · {using constructional means for obtaining a desired frequency response (-[H04R 25/652](#) takes precedence; in general [H04R 1/22](#)-)}

U H04R 25/55 · {using an external connection, either wireless or wired}

H04R 25/554 · · {using a wireless connection, e.g. between microphone and amplifier or using T-coils (-near-field transmission in general [H04B 5/00](#)-)}

H04R 25/558 · · {Remote control, e.g. of amplification, frequency (-remote control of amplifications, tone, or bandwidth [H03G 1/02](#) ; remote control, e.g. for Hi-Fi systems or audio/video combinations [H04B 1/202](#) ; remote control in general [G05F](#)-)}

U H04R 25/60 · {Mounting, assembling or interconnection of hearing aid parts, e.g. inside tips, housing or to ossicles; Apparatus or processes therefor}

H04R 25/602 · · {Arrangements for mounting batteries (-batteries in general [H01M 2/02](#)-)}

H04R 25/75 · {Electric tinnitus maskers providing an auditory perception (-evaluating tinnitus [A61B 5/128](#) ; devices or methods to cause a change in the state of consciousness [A61M 21/00](#) ; masking sound in general [G10K 11/175](#)-)}
{ WARNINGNot complete pending a reorganization, see also [H04R 25/00](#)-}

WARNING

Not complete pending a reorganization, see also [H04R 25/00](#)

H04R 27/00 **Public address systems** (-circuits for preventing acoustic reaction [H04R 3/02](#) ; circuits for distributing signals to loudspeakers [H04R 3/12](#) ; { monitoring or testing arrangements for public address systems [H04R 29/007](#) } ; amplifiers [H03F](#))

- H04R 29/00** **Monitoring arrangements; Testing arrangements**~~{for hearing aids [H04R 25/30](#) ; detection of loudspeaker connection [H04R 5/04](#) ; sound-field adaptation dependent on speaker detection [H04S 7/308](#)}~~
- H04R 29/001 · ~~{for loudspeakers ([H04R 29/007](#) takes precedence)}~~
- H04R 29/004 · ~~{for microphones ([H04R 29/007](#) takes precedence)}~~
- H04R 29/007 · ~~{for public address systems (public address systems per se [H04R 27/00](#))}~~
- H04R 29/008 · ~~{Visual indication of individual signal levels (visual indication of stereophonic sound image [H04S 7/40](#))}~~
- H04R 31/00** **Apparatus or processes specially adapted for the manufacture of transducers or diaphragms therefor**~~{manufacture of microstructural arrangements of deformable or non-deformable structures in general [B81C 1/00182](#)}~~
- H04R 31/006 · ~~{Interconnection of transducer parts (of diaphragm and outer suspension by moulding [H04R 31/003](#))}~~
- H04R 2201/00** **Details of transducers, loudspeakers or microphones covered by [H04R 1/00](#) but not provided for in any of its subgroups (not used, see subgroups)**
- H04R 2201/003 · ~~Mems transducers or their use (of the electrostatic type [H04R 19/005](#))~~
- H04R 2201/02 · ~~Details casings, cabinets or mounting therein for transducers covered by [H04R 1/02](#) but not provided for in any of its subgroups~~
- H04R 2201/028 · ~~Structural combinations of loudspeakers with built-in power amplifiers, e.g. in the same acoustic enclosure ([H04R 2499/10](#) takes precedence; Single (sub)woofer with two or more satellite loudspeakers for mid- and high-frequency band reproduction driven via the (sub)woofer [H04R 2205/026](#))~~
- H04R 2201/10 · ~~Details of earpieces, attachments therefor, earphones or monophonic headphones covered by [H04R 1/10](#) but not provided for in any of its subgroups~~
- H04R 2201/40 · ~~Details of arrangements for obtaining desired directional characteristic by combining a number of identical transducers covered by [H04R 1/40](#) but not provided for in any of its subgroups~~
- H04R 2203/00** **Details of circuits for transducers, loudspeakers or microphones covered by [H04R 3/00](#) but not provided for in any of its subgroups (not used, see subgroups)**
- H04R 2205/00** **Details of stereophonic arrangements covered by [H04R 5/00](#) but not provided for in any of its subgroups (not used, see subgroups)**
- H04R 2207/00** **Details of diaphragms or cones for electromechanical transducers or their suspension covered by [H04R 7/00](#) but not provided for in [H04R 7/00](#) or in [H04R 2307/00](#) (not used, see subgroup)**
- H04R 2209/00** **Details of transducers of the moving-coil, moving-strip, or moving-wire type covered by [H04R 9/00](#) but not provided for in any of its subgroups (not used, see subgroups)**
- H04R 2209/026 · ~~Transducers having separately controllable opposing diaphragms, e.g. for ring-tone and voice ([H04R 2400/03](#) takes precedence)~~
- H04R 2217/00** **Details of magnetostrictive, piezo-electric, or electrostrictive transducers covered by [H04R 15/00](#) or [H04R 17/00](#) but not provided for in any of their subgroups (not used, see subgroup)**
- H04R 2225/00** **Details of deaf aids covered by [H04R 25/00](#) , not provided for in any of its subgroups**
- H04R 2225/021 · ~~Behind the ear [BTE] hearing aids ([H04R 2225/63](#) takes precedence)~~

- H04R 2225/61 · Aspects relating to mechanical or electronic switches or control elements in hearing aids (~~H04R 2225/43~~ takes precedence-)
- H04R 2225/67 · Implantable hearing aids or parts thereof not covered by [H04R 25/606](#)
- H04R 2227/00** **Details of public address [PA] systems covered by [H04R 27/00](#) but not provided for in any of its subgroups**
- H04R 2231/00** **Details of apparatus or processes specially adapted for the manufacture of transducers or diaphragms therefor covered by [H04R 31/00](#) , not provided for in its subgroups**
- H04R 2307/00** **Details of diaphragms or cones for electromechanical transducers, their suspension or their manufacture covered by [H04R 7/00](#) or [H04R 31/003](#) , not provided for in any of its subgroups**
- U H04R 2420/00** **Details of connection covered by [H04R](#), not provided for in its groups**
- H04R 2420/01 · Input selection or mixing for amplifiers or loudspeakers (~~for hearing aids [H04R 25/43](#)~~-)
- U H04R 2430/00** **Signal processing covered by [H04R](#), not provided for in its groups**
- H04R 2430/20 · Processing of the output signals of the acoustic transducers of an array for obtaining a desired directivity characteristic (~~H04R 2203/12~~ takes precedence-)
- H04R 2460/00** **Details of hearing devices, i.e. of ear- or headphones covered by [H04R 1/10](#) or [H04R 5/033](#) but not provided for in any of their subgroups, or of hearing aids covered by [H04R 25/00](#) but not provided for in any of its subgroups**
- H04R 2460/09 · Non-occlusive ear tips, i.e. leaving the ear canal open, for both custom and non-custom tips (~~H04R 2460/11~~ takes precedence-)

Project: N/A (H04S)

- U H04S 1/00** **Two-channel systems ([H04S 5/00](#), [H04S 7/00](#) take precedence)**
- H04S 1/002 · ~~{Non-adaptive circuits, e.g. manually adjustable or static, for enhancing the sound image or the spatial distribution (control circuits for electronic adaptation of the sound field [H04S 7/30](#))}~~
- H04S 1/005 · · ~~{For headphones}~~
- U H04S 3/00** **Systems employing more than two channels, e.g. quadraphonic ([H04S 5/00](#), [H04S 7/00](#) take precedence)**
- H04S 3/002 · ~~{Non-adaptive circuits, e.g. manually adjustable or static, for enhancing the sound image or the spatial distribution (control circuits for electronic adaptation of the sound field [H04S 7/30](#))}~~
- H04S 3/006 · ~~{in which a plurality of audio signals are transformed in a combination of audio signals and modulated signals, e.g. CD-4 systems (for broadcasting [H04H 20/88](#), [H04B 1/1646](#))}~~
- U H04S 5/00** **Pseudo-stereo systems, e.g. in which additional channel signals are derived from monophonic signals by means of phase shifting, time delay or reverberation (arrangements for producing a reverberation or echo sound [G10K 15/08](#))**
- H04S 5/005 · ~~{of the pseudo five- or more-channel type, e.g. virtual surround}~~
- U H04S 7/00** **Indicating arrangements; Control arrangements, e.g. balance control**
WARNING

Groups [H04S 7/30](#) to [H04S 7/40](#) do not correspond to former or current IPC groups.

- H04S 7/30 · {-Control circuits for electronic adaptation of the sound field (non-adaptive circuits, i.e. manually adjustable or static, for enhancing the sound image or the spatial distribution [H04S 1/002](#), [H04S 3/002](#))}
- H04S 7/301 · · {-Automatic calibration of stereophonic sound system, e.g. with test microphone}
- H04S 7/302 · · {-Electronic adaptation of stereophonic sound system to listener position or orientation ([H04S 7/301](#) takes precedence)}
- H04S 7/303 · · · {-Tracking of listener position or orientation}
- H04S 7/304 · · · · {-For headphones}
- H04S 7/305 · · {-Electronic adaptation of stereophonic audio signals to reverberation of the listening space ([H04S 7/301](#) takes precedence; arrangements for producing a reverberation or echo sound [G10K 15/08](#); for public address systems [H04R 27/00](#), [H04R 29/00](#))}
- H04S 7/306 · · · {-For headphones}
- H04S 7/307 · · {-Frequency adjustment, e.g. tone control ([H04S 7/301](#) takes precedence; circuits for correcting the frequency response of transducers [H04R 3/04](#); tone control circuits in amplifiers per se [H03G 5/00](#))}
- H04S 7/308 · · {-Electronic adaptation dependent on speaker or headphone connection}
- H04S 7/40 · {-Visual indication of stereophonic sound image (visual indication of individual signal levels [H04R 29/008](#))}

Project: N/A (H04T)

H04T

INDEXING SCHEME RELATING TO STANDARDS FOR ELECTRIC COMMUNICATION TECHNIQUE (CLASS [H04](#))NOTES

This scheme constitutes an non-associated internal scheme for indexing exclusively documents issued by standardisation bodies (herein called standards) for electric communication technique ([H04](#)).

As standardisation bodies organize their documents in different ways, the present scheme is subdivided into main groups related to a particular CPC range to allow different indexing approaches.

Scheme index:

Wireless communication standards	H04T 2001/00	-
H04T2001/999		
Standards related to data switching networks in general	H04T 2012/00	-
H04T2012/99		
Internet standards	H04T 2029/00	-
H04T2029/99		

H04T 2029/00

Standards related to data transmission protocols not covered by any of the codes [H04T 2001/00](#) to [H04T 2012/00](#)

Project: N/A (H04W)

H04W

WIRELESS COMMUNICATIONS NETWORKS (-radio transmission systems [H04B 7/00](#) ; transmission systems using electromagnetic waves other than radio waves, e.g. light, infrared [H04B 10/00](#) ; communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones [H04M 1/72](#) ; broadcast communication [H04H](#))

NOTES

This subclass covers :

communication networks for selectively establishing one or a plurality of wireless communication links between a desired number of users or between users and network equipment, for the purpose of transferring information via these wireless communication links;
networks deploying an infrastructure for mobility management of wireless users connected thereto, e.g. cellular networks, WLAN [Wireless Local Area Network], wireless access networks, e.g. WLL [Wireless Local Loop] or self-organising wireless communication networks, e.g. ad hoc networks;
planning or deployment specially adapted for the above-mentioned wireless networks;
services or facilities specially adapted for the above-mentioned wireless networks;
arrangements or techniques specially adapted for the operation of the above-mentioned wireless networks.

This subclass does not cover :

communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones, which are covered by group [H04M 1/72](#) ;
broadcast communication, which is covered by subclass [H04H](#).

In this subclass, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

H04W 4/00

{Mobile application}services or facilities specially adapted for wireless communication networks{(-network arrangements or communication protocols for networked applications [H04L 67/00](#) ; network arrangements or protocols for real-time communications [H04L 65/00](#) ; network arrangements or network protocols for addressing or naming [H04L 61/00](#) ; application independent communication protocol aspects and techniques in packet data networks [H04L 69/00](#) ; network architectures or network communication protocols for network security [H04L 63/00](#) ; wireless network security [H04W 12/00](#) ; message switching systems [H04L 12/58](#) ; arrangements for broadcast or conference [H04L 12/18](#) ; telephonic communication, substation extension arrangements, cordless telephones, portable communication terminals with improved user interface to control a main telephone operation mode or to indicate the communication status [H04M 1/72522](#) ; automatic or semi-automatic exchanges for telephonic communication - systems providing special services or facilities to subscribers [H04M 3/42-](#))}

NOTE

1. This groups covers mobile application services or application service signalling for communication over wireless networks. 2. This group focuses on application services specially adapted for wireless networks or adjusted to the wireless environment

H04W 4/001

• {Provisioning or reconfiguring application services e.g. OMA DM (-network management [H04L 12/24](#) ; network arrangements or communication protocols for networked applications involving the movement of software or configuration parameters, e.g. applets [H04L 67/34](#) ; program loading or initiating [G06F 9/445](#) ; mobile agents [G06F 9/4862-](#))}

H04W 4/003

• {Mobile application execution environments for application services, e.g. communicating with application store or appstore servers in the application service network and vice versa, 3GPP SIM Application toolkit [SAT], 3GPP OSA or 3GPP MEXE (-processing of user or subscriber data at user equipment or user record carrier [H04W 8/183-](#))}

- H04W 4/005
- {for Machine-to-Machine communication [M2M, MTC], e.g. 3GPP M2M, OMA M2M, 3GPP MTC or Wireless Sensor Networks [WSN]}(-self-organizing networks [H04W 84/18](#) ; network arrangements or communication protocols for networked applications adapted for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car, remote metering networks [H04L 67/12](#) ; mechanical means for transferring the output of a sensing member [G01D 5/00](#)-)}
- H04W 4/008
- {using short range communication, e.g. NFC, RFID or PAN (-telephonic substation extension arrangements interfacing with an external accessory using a two-way short-range wireless interface [H04M 1/7253](#) ; mechanical means for transferring the output of a sensing member [G01D 5/00](#); near-field transmission systems [H04B 5/00](#)-)}
- H04W 4/02
- {Mobile application}Services making use of the location of users or terminals{, e.g. OMA SUPL, OMA MLP or 3GPP LCS} (-mobility data transfer [H04W 8/08](#) ; access restriction based on user location or mobility data [H04W 48/04](#) ; registration, e.g. affiliation to network, de-registration, e.g. terminating affiliation [H04W 60/00](#) ; locating users or terminals for network management purpose [H04W 64/00](#) ; navigation or navigational instruments [G01C 21/00](#) ; radio direction-finding, radio navigation, determining distance or velocity by use of radio waves, locating or presence-detecting by use of the reflection or re-radiation of radio waves or analogous arrangements using other waves [G01S](#)-)}
- H04W 4/06
- Selective distribution or broadcast {application services; Mobile application}services to user groups; One-way selective calling services{(-connection management for selective distribution or broadcast [H04W 76/002](#) ; resource management for broadcast services [H04W 72/005](#)-)}
- H04W 4/08
- • User group management (-~~group management mechanisms in peer-to-peer network applications~~ [H04L 67/1044](#);- ~~group management mechanisms in peer-to-peer network applications~~ [H04L 67/1044](#) ; processing of subscriber group data [H04W 8/186](#)-)}
- H04W 4/10
- • Push-to-Talk {mobile application services}or Push-on-Call {mobile application}services{(-arrangements for real-time multimedia Push-to-X-Services [H04L 65/4061](#) ; connection management for Push-to-Talk or Push-on-Call services [H04W 76/005](#)-)}
- H04W 4/12
- {Mobile application service signalling using}messaging, e.g. SMS [Short Message Service]; {Mobile application service signalling using}mailboxes; {Mobile application service signalling using}announcements, e.g. informing users on the status or progress of a communication request{(-message switching systems [H04L 12/58](#) ; voice mail systems [H04M 3/533](#) ; arrangements for providing announcements [H04M 3/487](#)-)}
- H04W 4/16
- {Mobile application service signalling using}communication-related supplementary services, e.g. call-transfer or call-hold{(-automatic or semi-automatic exchange systems providing special services or facilities to subscribers [H04M 3/42](#)-)}
- H04W 4/18
- {Customizing content of application services or}information format or content conversion, e.g. adaptation by the network of the transmitted or received information for the purpose of wireless delivery to users or terminals{(-network arrangements or communication protocols for networked applications involving intermediate processing or storage in the network, e.g. proxy, [H04L 67/28](#) ; message adaptation based on network or terminal capabilities for message switching systems [H04L 12/5825](#)-)}
- H04W 4/185
- • {by embedding added-value information into content, e.g. geo-tagging (-intermediate arrangements for adding application control or application functional data [H04L 67/2804](#)-)}
- U H04W 4/20
- {Signalling of application services or}auxiliary data signalling, i.e. transmitting data via a non-traffic channel

- H04W 4/206
- {for socializing or targeting users of the same wireless application service, e.g. joint gesture signalling or mobile advertising signalling (-marketing [G06Q 30/02](#) ; input arrangements for transferring data to be processed into a form capable of being handled by the computer for entering handwritten data [G06F 3/04883](#)-)}
- H04W 4/22
- {Mobile application service}emergency connection handling {or mobile application services handling urgent or hazardous situations, e.g. 3GPP earthquake and tsunami warning system [ETWS]}(-connection management for emergency connection handling [H04W 76/007](#) ; centralised arrangements for answering calls for emergency applications requiring operator intervention [H04M 3/5116](#)-)}
- U H04W 8/00** **Network data management**
- U H04W 8/02
- Processing of mobility data, e.g. registration information at HLR [Home Location Register] or VLR [Visitor Location Register]; Transfer of mobility data, e.g. between HLR,VLR or external networks
- U H04W 8/08
- • Mobility data transfer
- H04W 8/085
- • • {involving hierarchical organized mobility servers, e.g. hierarchical mobile IP [HMIP]}
- H04W 8/16
- • • selectively restricting mobility {data}tracking
- U H04W 16/00** **Network planning, e.g. coverage or traffic planning tools; Network deployment, e.g. resource partitioning or cells structures**
- H04W 16/14
- Spectrum sharing arrangements {between different networks}
- U H04W 16/24
- Cell structures
- H04W 16/26
- • Cell enhancers {or enhancement}, e.g. for tunnels, building shadow
- U H04W 28/00** **Network traffic or resource management**
- U H04W 28/02
- Traffic management, e.g. flow control or congestion control
- H04W 28/0205
- • {at the air interface (-dynamic wireless traffic scheduling [H04W 72/12](#)-)}
- H04W 28/021
- • {in wireless networks with changing topologies, e.g. ad-hoc networks (-self-organizing networks [H04W 84/18](#)-)}
- H04W 28/0215
- • {based on user or device properties, e.g. MTC-capable devices (-mobile application services or facilities specially adapted for wireless communication networks for machine-to-machine communication [H04W 4/005](#) ; wireless resource selection or allocation plan definition based on terminal or device properties [H04W 72/048](#)-)}
- H04W 28/0226
- • {based on location or mobility (-handoff or reselection [H04W 36/00](#) ; mobile application services making use of the location of users or terminals [H04W 4/02](#)-)}
- H04W 28/0231
- • {based on communication conditions (-dynamic wireless traffic scheduling definition based on channel quality criteria [H04W 72/1226](#)-)}
- H04W 28/0247
- • {based on conditions of the access network or the infrastructure network (-central resource management [H04W 28/16](#)-)}
- H04W 28/0252
- • {per individual bearer or channel (-dynamic wireless traffic scheduling [H04W 72/12](#)-)}
- H04W 28/0268
- • {using specific QoS parameters for wireless networks, e.g. QoS class identifier [QCI] or guaranteed bit rate [GBR]}(-negotiating SLA or negotiating QoS [H04W 28/24](#)-)}
- H04W 28/0273
- • {adapting protocols for flow control or congestion control to wireless environment, e.g. adapting transmission control protocol [TCP]}(-wireless network protocols or protocol adaptations to wireless operation, e.g. wireless application protocol [H04W 80/00](#)-)}

- H04W 28/0278
 - • {using buffer status reports (-dynamic wireless traffic scheduling definition [H04W 72/1205-](#))}
- H04W 28/0284
 - • {detecting congestion or overload during communication (-monitoring arrangements [H04L 12/2602-](#))}
- H04W 28/0289
 - • {Congestion control (-performing reselection for handling the traffic [H04W 36/22](#) ; load shedding arrangements in network planning [H04W 16/08](#) ; dynamic wireless traffic scheduling [H04W 72/12-](#))}
- H04W 28/0294
 - • {forcing collision (-non-scheduled or contention based wireless access channel [H04W 74/08-](#))}
- H04W 28/04
 - • Error control{, e.g. treating errors, collisions, noise or interference(-arrangements for detecting or preventing errors in the information received [H04L 1/00-](#))}
- H04W 28/048
 - • • {Treating noise or interference (-means associated with receiver for limiting or suppressing noise or interference induced by transmission [H04B 1/10](#) ; baseband systems or shaping networks in transmitter or receiver [H04L 25/03-](#))}
- H04W 28/10
 - • Flow control {between communication endpoints}
- H04W 28/16
 - Central resource management; Negotiation of resources {or communication parameters}, e.g. negotiating bandwidth or QoS [Quality of Service]
- U H04W 36/00 Hand-off or reselection arrangements**
- NOTE
In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout [H04W](#)
- U H04W 36/0005
 - {Control or signalling for completing the hand-off}
- H04W 36/005
 - • {involving radio access media independent information, e.g. MIH [Media independent Hand-off]}]}
- U H04W 36/16
 - Performing reselection for specific purposes
- H04W 36/165
 - • {for improving the overall network performance (-[H04W 36/18](#) to [H04W 36/22](#) take precedence-)}
- H04W 36/24
 - Reselection being triggered by specific parameters {used to improve the performance of a single terminal}
- U H04W 48/00 Access restriction; Network selection; Access point selection**
- WARNING
Group [H04W 48/17](#) does not correspond to former or future IPC groups.
- U H04W 48/08
 - Access restriction or access information delivery, e.g. discovery data delivery
- H04W 48/14
 - • using user query {or user detection}
- H04W 48/17
 - {Selecting a data network PoA [Point of Attachment]}]}
- H04W 52/00 Power Management, e.g. TPC [Transmission Power Control], power saving or power classes{(-gain control in transmitters or power amplifiers [H03G 3/3042-](#))}**
- H04W 52/02
 - Power saving arrangements{(-in wired systems [H04L 12/12](#) ; signaling of mobile application services, e.g. low battery notifications [H04W 4/20-](#))}
- U H04W 52/0203
 - • {in the radio access network or backbone network of wireless communication networks}
- H04W 52/0206
 - • • {in access points, e.g. base stations (-access point devices per se [H04W 88/08-](#))}
- H04W 52/0209
 - • {in terminal devices (-terminal devices per se [H04W 88/02-](#))}

- U H04W 84/18
 - Self-organizing networks, e.g. ad-hoc networks or sensor networks
- H04W 84/20
 - · Master-slave {selection or change}arrangements
- U H04W 88/00**
Devices specially adapted for wireless communication networks, e.g. terminals, base stations or access point devices
- U H04W 88/02
 - Terminal devices
- H04W 88/06
 - · adapted for operation in multiple networks {or having at least two operational modes}, e.g. multi-mode terminals

Project: N/A (H05B)

- U H05B 1/00**
Details of electric heating devices
- U H05B 1/02
 - Automatic switching arrangements specially adapted to apparatus; { Control of heating devices}{control of temperature in general [G05D 23/00](#); thermally-actuated switches [H01H 37/00](#)
- H05B 1/0202
 - · {-Switches}
- H05B 1/0205
 - · · {-using a fusible material}
- H05B 1/0208
 - · · {-actuated by the expansion or evaporation of a gas or liquid}
- H05B 1/0211
 - · · {-using the expansion of an electric conductive liquid}
- H05B 1/0213
 - · · {-using bimetallic elements}
- H05B 1/0216
 - · · {-actuated by the expansion of a solid element, e.g. wire or rod}
- H05B 1/0219
 - · · {-actuated by modification of the magnetic properties of a material}
- H05B 1/0222
 - · · {-actuated by changing weight, level or centre of gravity}
- H05B 1/0225
 - · · {-actuated by timers}
- H05B 1/0227
 - · {-Applications}
- H05B 1/023
 - · · {-Industrial applications}
- H05B 1/0233
 - · · · {-for semiconductors manufacturing}
- H05B 1/0236
 - · · · {-for vehicles}
- H05B 1/0238
 - · · · · {-For seats}
- H05B 1/0241
 - · · · · {-For photocopiers}
- H05B 1/0244
 - · · · · {-Heating of fluids ([H05B 1/0247](#) takes precedence)}
- H05B 1/0247
 - · · · · {-For chemical processes}
- H05B 1/025
 - · · · · {-For medical applications}
- H05B 1/0252
 - · · {-Domestic applications}
- H05B 1/0255
 - · · · · {-Irons}
- H05B 1/0258
 - · · · · {-For cooking}
- H05B 1/0261
 - · · · · · {-of food}
- H05B 1/0263
 - · · · · · · {-Ovens}
- H05B 1/0266
 - · · · · · · {-Cooktops}
- H05B 1/0269
 - · · · · · · {-For heating of fluids}
- H05B 1/0272
 - · · · · · · {-For heating of fabrics}
- H05B 1/0275
 - · · · · · · {-Heating of spaces, e.g. rooms, wardrobes}
- H05B 1/0277
 - · · · · · · {-Electric radiators}
- H05B 1/028
 - · · · · · · {-Airconditioning}
- H05B 1/0283
 - · · · · · · {-For heating of fluids, e.g. water heaters}
- H05B 1/0286
 - · · · · · · {-Heat storages}
- H05B 1/0288
 - · · · {-for non specified applications}

- H05B 1/0291 {-Tubular elements}
- H05B 1/0294 {-Planar elements}
- H05B 1/0297 . . . {-Heating of fluids for non specified applications}
- U H05B 3/00 Ohmic-resistance heating**
- H05B 3/0033 . {-Heating devices using lamps (devices for radiation therapy [A61N](#))}
- H05B 3/0038 . . {-for industrial applications}
- H05B 3/0042 . . . {-used in motor vehicles}
- H05B 3/0047 . . . {-for semi-conductors manufacture}
- H05B 3/0052 . . . {-for fluid treatments}
- H05B 3/0057 . . . {-for plastic handling and treatment (including molds [B29C](#))}
- H05B 3/0061 . . . {-for metal treatment}
- H05B 3/0066 . . . {-for photocopying}
- H05B 3/0071 . . {-for domestic applications}
- H05B 3/0076 . . . {-for cooking, e.g. in ovens (lamps specially adapted for non-metallic cooking plates [H05B 3/742](#), [H05B 3/744](#))}
- H05B 3/008 . . . {-for heating of inner spaces}
- H05B 3/0085 . . {-for medical applications}
- H05B 3/009 . . {-related to general description of heaters without specification of field of application}
- U H05B 3/20 . Heating elements having extended surface area substantially in a two-dimensional plane, e.g. plate-heater ([H05B 3/62](#), [H05B 3/68](#), [H05B 3/78](#), [H05B 3/84](#) take precedence)
- U H05B 3/34 . . flexible, e.g. heating nets or webs
- H05B 3/342 . . . {-heaters used in textiles (making textile fabrics [D04H](#))}
- U H05B 3/40 . Heating elements having the shape of rods or tubes ([H05B 3/62](#), [H05B 3/68](#), [H05B 3/78](#) take precedence)
- U H05B 3/54 . . flexible
- U H05B 3/56 . . . Heating cables
- H05B 3/565 {-flat cables}
- U H05B 6/00 Heating by electric, magnetic, or electromagnetic fields (for therapeutic purposes [A61N 5/00](#); joining of preformed parts by heating of plastics or substances in a plastic state [B29C 65/02](#))**
- U H05B 6/02 . Induction heating
- U H05B 6/06 . . Control, e.g. of temperature, of power
- H05B 6/062 . . . {-for cooking plates or the like}
- H05B 6/065 {-using coordinated control of multiple induction coils}
- U H05B 6/10 . . Induction heating apparatus, other than furnaces, for specific applications
- H05B 6/101 . . . {-for local heating of metal pieces}
- H05B 6/102 {-the metal pieces being rotated while induction heated}
- H05B 6/103 {-multiple metal pieces successively being moved close to the inductor}
- H05B 6/105 . . . {-using a susceptor}
- H05B 6/106 {-in the form of fillings}
- H05B 6/107 {-for continuous movement of material}
- H05B 6/108 {-for heating a fluid}
- H05B 6/109 {-using magnets rotating with respect to a susceptor}

- U H05B 6/12
 - • • Cooking devices
- H05B 6/1209
 - • • • {induction cooking plates or the like and devices to be used in combination with them}
- H05B 6/1218
 - • • • • {with arrangements using lights for heating zone state indication}
- H05B 6/1227
 - • • • • {for wok pans and wok pans supports for induction cooking plates}
- H05B 6/1236
 - • • • • {adapted to induce current in a coil to supply power to a device and electrical heating devices powered in this way}
- H05B 6/1245
 - • • • • {with special coil arrangements}
- H05B 6/1254
 - • • • • • {using conductive pieces to direct the induced magnetic field}
- H05B 6/1263
 - • • • • • {using coil cooling arrangements}
- H05B 6/1272
 - • • • • • {with more than one coil or coil segment per heating zone}
- H05B 6/1281
 - • • • • • {with flat coils}
- H05B 6/129
 - • • • {induction ovens}
- U H05B 6/36
 - • Coil arrangements
- H05B 6/362
 - • • {with flat coil conductors}
- U H05B 6/64
 - Heating using microwaves {(containers, packaging elements or packages specially adapted to be heated by microwaves [B65D 81/3446](#))}
- H05B 6/6402
 - • {Aspects relating to the microwave cavity}
- H05B 6/6405
 - • • {Self-cleaning cavity}
- H05B 6/6408
 - • {Supports or covers specially adapted for use in microwave heating apparatus}
- H05B 6/6411
 - • • {the supports being rotated}
- H05B 6/6414
 - • {Aspects relating to the door of the microwave heating apparatus}
- H05B 6/6417
 - • • {Door interlocks of the microwave heating apparatus and related circuits}
- H05B 6/642
 - • {Cooling of the microwave components and related air circulation systems ([H05B 6/6473](#) takes precedence)}
- H05B 6/6423
 - • • {wherein the microwave oven air circulation system is also used as air extracting hood}
- H05B 6/6426
 - • {Aspects relating to the exterior of the microwave heating apparatus, e.g. metal casing, power cord}
- H05B 6/6429
 - • • {Aspects relating to mounting assemblies of wall-mounted microwave ovens}
- H05B 6/6432
 - • {Aspects relating to testing or detecting leakage in a microwave heating apparatus}
- H05B 6/6435
 - • {Aspects relating to the user interface of the microwave heating apparatus}
- H05B 6/6438
 - • • {allowing the recording of a program of operation of the microwave heating apparatus}
- H05B 6/6441
 - • • {allowing the input of coded operation instructions, e.g. bar code reader}
- H05B 6/6444
 - • {Aspects relating to lighting devices in the microwave cavity}
- H05B 6/6447
 - • {Method of operation or details of the microwave heating apparatus related to the use of detectors or sensors}
- H05B 6/645
 - • • {using temperature sensors}
- H05B 6/6452
 - • • • {the sensors being in contact with the heated product}
- H05B 6/6455
 - • • • {the sensors being infra-red detectors}
- H05B 6/6458
 - • • {using humidity or vapor sensors}
- H05B 6/6461
 - • • {using fire or fume sensors}
- H05B 6/6464
 - • • {using weight sensors}

- H05B 6/6467 . . . {using detectors with R.F. transmitters}
- H05B 6/647 . . {Aspects related to microwave heating combined with other heating techniques}
- H05B 6/6473 . . . {combined with convection heating ([H05B 6/6485](#) takes precedence)}
- H05B 6/6476 {the refrigerating air being used for convection}
- H05B 6/6479 {using steam}
- H05B 6/6482 . . . {combined with radiant heating, e.g. infra-red heating}
- H05B 6/6485 {further combined with convection heating}
- H05B 6/6488 . . . {combined with induction heating}
- H05B 6/6491 . . . {combined with the use of susceptors ([H05B 6/80](#) and subgroups takes precedence)}
- H05B 6/6494 {for cooking}
- H05B 6/6497 {the susceptors being liquids}
- U H05B 6/66 . . Circuits
- H05B 6/662 . . . {Aspects related to the boost transformer of the microwave heating apparatus}
- H05B 6/664 . . . {Aspects related to the power supply of the microwave heating apparatus}
- H05B 6/668 . . . {Microwave heating devices connected to a telecommunication network}
- U H05B 6/68 . . . for monitoring or control
- H05B 6/681 {Circuits comprising an inverter, a boost transformer and a magnetron}
- H05B 6/682 {wherein the switching control is based on measurements of electrical values of the circuit}
- H05B 6/683 {the measurements being made at the high voltage side of the circuit}
- H05B 6/685 {the measurements being made at the low voltage side of the circuit}
- H05B 6/686 {Circuits comprising a signal generator and power amplifier, e.g. using solid state oscillators}
- H05B 6/687 {for cooking}
- H05B 6/688 {for thawing}
- U H05B 6/70 . . Feed lines
- H05B 6/701 . . . {using microwave applicators}
- H05B 6/702 . . . {using coaxial cables}
- H05B 6/704 . . . {using microwave polarisers}
- H05B 6/705 . . . {using microwave tuning}
- H05B 6/707 . . . {using waveguides}
- H05B 6/708 {in particular slotted waveguides}
- U H05B 6/72 . . Radiators or aerials
- H05B 6/725 . . . {Rotatable antennas}
- U H05B 6/74 . . Mode transformers or mode stirrers
- H05B 6/745 . . . {Rotatable stirrers}
- U H05B 6/76 . . Prevention of microwave leakage, e.g. door sealings
- H05B 6/763 . . . {Microwave radiation seals for doors}
- H05B 6/766 . . . {Microwave radiation screens for windows}
- U H05B 6/78 . . Arrangements for continuous movement of material
- H05B 6/782 . . . {wherein the material moved is food}
- H05B 6/784 . . . {wherein the material is moved using a tubular transport line, e.g. screw transport systems}

- H05B 6/786
 - • • {-wherein the material is moved using mechanical vibrations of plates}
- H05B 6/788
 - • • {-wherein an elongated material is moved by applying a mechanical tension to it}
- U H05B 6/80
 - • Apparatus for specific applications (stoves or ranges [F24C 7/02](#))
- H05B 6/802
 - • • {-for heating fluids (methods of heating fluids in conventional microwave ovens [H05B 6/687](#))}
- H05B 6/804
 - • • • {-Water heaters, water boilers}
- H05B 6/806
 - • • {-for laboratory use}
- H05B 6/808
 - • • {-Microwave heating adapted for vending machines}
- U H05B 7/00**
 - Heating by electric discharge (electron beam or ion beam tubes for localised treatment of objects [H01J 37/30](#); plasma torches [H05H 1/26](#))**
- U H05B 7/18
 - Heating by arc discharge
- U H05B 7/22
 - • Indirect heating by arc discharge
- H05B 7/225
 - • • {-by arc image (heating by means of lamps [H05B 3/0033](#))}
- U H05B 31/00**
 - Electric arc lamps (regulating electric characteristics of arcs [G05F 1/02](#); with non-consumable electrodes [H01J 61/00](#))**
- H05B 31/0003
 - {-the arc being outside, in the open}
- U H05B 33/00**
 - Electroluminescent light sources (discharge lamps [H01J 61/00](#) to [H01J 65/00](#); semi-conductor devices with at least one particular jump barrier or surface barrier adapted for light emission [H01L 27/15](#), [H01L 33/00](#); organic light emitting devices [H01L 27/32](#), [H01L 51/50](#); lasers [H01S 3/00](#), [H01S 5/00](#); compositions per se, see the relevant subclasses; { luminescent scales or hands [G01D 13/20](#), [G01D 13/28](#); luminescent dials [G09F 13/20](#); conductive layers on isolated substrate [H01B 1/00](#); solid state image amplifiers [H01L 31/14](#); electronic gates with electroluminescent elements [H03K 17/78](#); pulse generation with electroluminescent elements [H03K 3/00](#)})**
- U H05B 33/02
 - Details
- U H05B 33/08
 - • Circuit arrangements not adapted to a particular application
- H05B 33/0803
 - • • {-for light emitting diodes (LEDs) comprising only inorganic semi-conductor materials}
- H05B 33/0806
 - • • • {-Structural details of the circuit}
- WARNING
- This group and its subgroups are not complete pending reorganisation; see also groups [H05B 33/0833](#), [H05B 33/0875](#) and respective subgroups
- H05B 33/0809
 - • • • • {-in the conversion stage}
- H05B 33/0812
 - • • • • • {-with a controlled linear regulator}
- H05B 33/0815
 - • • • • • • {-with a controlled switching regulator}
- H05B 33/0818
 - • • • • • • • {-wherein HF AC or pulses are generated in the final stage}
- H05B 33/0821
 - • • • • • {-in the load stage}
- H05B 33/0824
 - • • • • • • • {-with an active control inside the LED load configuration}
- H05B 33/0827
 - • • • • • • • • {-organized essentially in parallel configuration}
- H05B 33/0833
 - • • • • {-with control of the intensity of light emitted by the LEDs}
- WARNING
- This group and its subgroups are no longer used for classification of new documents as from January 1st, 2010. The backlog is being continuously reclassified to the groups [H05B 33/0806](#), [H05B 33/0842](#), [H05B 33/0884](#) and subgroups

- H05B 33/0842 {-with control ([H05B 33/0884](#) takes precedence)}
- WARNING
This group and its subgroups are not complete pending reorganisation; see also groups [H05B 33/0833](#), [H05B 33/0875](#) and respective subgroups
- H05B 33/0845 {-of the light intensity ([H05B 33/0857](#) takes precedence)}
- H05B 33/0848 {-involving load characteristic sensing means}
- H05B 33/0851 {-with permanent feedback from the light source}
- H05B 33/0854 {-involving load external environment sensing means}
- H05B 33/0857 {-of the color point of the light}
- H05B 33/086 {-involving set point control means}
- H05B 33/0863 {-by user interfaces}
- H05B 33/0866 {-involving load characteristic sensing means}
- H05B 33/0869 {-optical sensing means}
- H05B 33/0872 {-involving load external environment sensing means}
- H05B 33/0875 {-with detection of abnormal operating conditions}
- WARNING
This group and its subgroups are no longer used for classification as from January 1st, 2010. The backlog is being continuously reclassified to the groups [H05B 33/0806](#), [H05B 33/0842](#), [H05B 33/0884](#) and subgroups
- H05B 33/0884 {-with monitoring or protection}
- WARNING
This group and its subgroups are not complete pending reorganisation; see also groups [H05B 33/0833](#), [H05B 33/0875](#) and respective subgroups
- H05B 33/0887 {-of the conversion stage}
- H05B 33/089 {-of the load stage}
- H05B 33/0893 {-involving end of life detection of LEDs}
- H05B 33/0896 . . . {-for light emitting diodes (LEDs) comprising organic materials, e.g. polymer LEDs (PLEDs) or OLEDs}
- U H05B 33/12 . Light sources with substantially two-dimensional radiating surfaces
- U H05B 33/14 . . characterised by the chemical or physical composition or the arrangement of the electroluminescent material, { or by the simultaneous addition of the electroluminescent material in or onto the light source}
- NOTE
When classifying in this group, the chemical composition of the electroluminescent material is also classified in the appropriate subgroup of [C09K 11/00](#)
- H05B 33/145 . . . {-Arrangements of the electroluminescent material}
- U H05B 37/00** **Circuit arrangements for electric light sources in general {(vehicle lights [B60L 1/14](#), [B60Q](#); railways light signals [B61L](#); lighting for photographic purposes [G03B 15/02](#), for advertising purposes [G09F](#))}**
- U H05B 37/03 . Detecting lamp failure {(monitoring vehicle lamps [B60Q 11/00](#); changing to a reserve source of current [H02J 9/00](#))}
- H05B 37/04 . . Circuits providing for substitution of the light source in case of its failure {e.g. by switching over to a reserve light source-(incandescent lamps with reserve body [H01K](#))}

- U H05B 39/00** **Circuit arrangements or apparatus for operating incandescent light sources and not adapted to a particular application {(incandescent lamps per se [H01K](#))}**
- U H05B 39/04
H05B 39/08
- Controlling (regulating voltage in general [G05F](#))
 - • by shifting phase of trigger voltage applied to gas-filled controlling tubes {also in controlled semiconductor devices-(in converters [H02M 5/00](#); with regulation [G05F 1/44](#))}
- U H05B 41/00** **Circuit arrangements or apparatus for igniting or operating discharge lamps {(circuit elements structurally associated with discharge lamps [H01J 7/44](#), [H01J 19/78](#); discharge lamps per se [H01J 61/00](#) to [H01J 65/00](#); arc lamps with consumable electrodes [H05B 31/00](#); transformers or chokes for supplying discharge lamps [H01F 38/08](#))}**
- U H05B 41/14
- Circuit arrangements
- U H05B 41/26
- • in which the lamp is fed by power derived from dc by means of a converter, e.g. by high-voltage dc
- U H05B 41/28
- • • using static converters
- U H05B 41/282
- • • • With semiconductor devices ({[H05B 41/2806](#)}, [H05B 41/288](#), [H05B 41/295](#) take precedence)
- U H05B 41/2825
- • • • • {by means of a bridge converter in the final stage ([H05B 41/285](#) takes precedence)}
- H05B 41/2827
- • • • • • {-using specially adapted components in the load circuit, e.g. feed-back transformers, piezo-electric transformers; using specially adapted load circuit configurations}

Project: N/A (H05G)

- U H05G 1/00** **X-ray apparatus involving X-ray tubes; circuits therefor**
- U H05G 1/02
- Constructional details
- H05G 1/025
- • {-Means for cooling the X-ray tube or the generator}
- U H05G 1/08
- Electrical details
- H05G 1/085
- • {-Circuit arrangements particularly adapted for X-ray tubes having a control grid}
- U H05G 1/26
- • Measuring, controlling, protecting (measuring electric values [G01R](#); measuring X-ray intensity [G01T](#))
- H05G 1/265
- • • {-Measurements of current, voltage or power}
- U H05G 1/30
- • • Controlling
- H05G 1/36
- • • • temperature of anode; -brightness of image {power-(electrical temperature regulating in general [G05D 23/19](#))}
- H05G 1/70
- • Circuit arrangements for X-ray tubes with more than one anode; -Circuit arrangements for apparatus comprising more than one X ray tube { or more than one cathode-([H05G 1/58](#) takes precedence)}
- U H05G 2/00** **Apparatus or processes specially adapted for producing X-rays, not involving X-ray tubes, e.g. involving generation of a plasma (X-ray lasers [H01S 4/00](#); plasma technique in general [H05H](#))}**
- H05G 2/001
- {-X-ray radiation generated from plasma (plasma for generation of electrons to be accelerated towards an anode [H01J 35/00](#))}
- H05G 2/003
- • {-being produced from a liquid or gas}
- H05G 2/005
- • • {-containing a metal as principal radiation generating component}
- H05G 2/006
- • • • {-details of the ejection system, e.g. constructional details of the nozzle}

- H05G 2/008
- • {-involving a beam of energy, e.g. laser or electron beam in the process of exciting the plasma}

Project: N/A (H05H)

- U H05H 1/00** **Generating plasma; Handling plasma**
- H05H 1/0006
- {Investigating plasma, e.g. degree of ionisation (*electron temperature*)}~~{electron temperature}~~
- U H05H 1/24**
- Generating plasma {(gas-filled discharge reactors [H01J 37/32](#); nuclear fusion reactors [G21B 1/00](#); ohmic heating [H05H 1/20](#); injection heating [H05H 1/22](#))}
- H05H 1/2406
- • {-Dielectric barrier discharges}
- H05H 1/2475
- • {-Acoustic pressure discharge}
- U H05H 5/00** **Direct voltage accelerators; Accelerators using single pulses ([H05H 3/06](#) takes precedence)**
- H05H 5/04
- {-energised by electrostatic generators}
- H05H 5/042
- • {-of the van de Graaf type}
- H05H 5/045
- • {-High voltage cascades, e.g. Greinacher cascade}
- H05H 5/047
- • {-Pulsed generators}
- H05H 5/06
- {-Multistage accelerators}
- H05H 5/063
- • {-Tandems}
- H05H 5/066
- • {-Onion-like structures}
- U H05H 7/00** **Details of devices of the types covered by groups [H05H 9/00](#), [H05H 11/00](#), [H05H 13/00](#)**
- H05H 7/001
- {-Arrangements for beam delivery or irradiation (irradiation systems per se [G21K 5/00](#))}
- H05H 7/04
- Magnet systems {e.g. undulators, wigglers ~~{free-electron laser [H01S 3/0903](#)~~};
-Energisation thereof
- U H05H 9/00** **Linear accelerators**
- H05H 9/005
- {-Dielectric wall accelerators}
- U H05H 9/04**
- Standing-wave linear accelerators
- H05H 9/041
- • {-Hadron LINACS}
- H05H 9/042
- • • {-Drift tube LINACS}
- H05H 9/044
- • • {-Coupling cavity LINACS, e.g. side coupled}
- H05H 9/045
- • • {-Radio frequency quadrupoles}
- H05H 9/047
- • • {-Hybrid systems}
- H05H 9/048
- • {-Lepton LINACS}
- U H05H 13/00** **Magnetic resonance accelerators; Cyclotrons {(strophotrons, turbine tubes [H01J 25/62](#))}**
- H05H 13/005
- {-Cyclotrons}
- U H05H 13/08**
- Alternating-gradient magnetic resonance accelerators
- H05H 13/085
- • {-Fixed-field alternating gradient accelerators [[FFAG](#)]}~~}~~

Project: N/A (H05K)**H05K**

PRINTED CIRCUITS; CASINGS OR CONSTRUCTIONAL DETAILS OF ELECTRIC APPARATUS; MANUFACTURE OF ASSEMBLAGES OF ELECTRICAL COMPONENTS (-details of instruments or comparable details of other apparatus not otherwise provided for [G12B](#); thin-film or thick-film circuits [H01L 27/01](#) , [H01L 27/13](#) ; non-printed means for electric connections to or between printed circuits, {electric connections or line connectors, apparatus or processes for manufacturing, assembling, maintaining or repairing such connections or connectors}[H01R](#); casings for, or constructional details of, particular types of apparatus, see the relevant subclasses; processes involving only a single technical art, e.g. heating, spraying, for which provision exists elsewhere, see the relevant classes)

NOTES

This subclass covers:

- combinations of a radio or television receiver with apparatus having a different main function;- printed circuits structurally associated with non-printed electric components; - {printed connectors (non printed connectors [H01R](#))}

In this subclass, the following expression is used with the meaning indicated:

- "printed circuits" covers all kinds of mechanical constructions of circuits that consist of an insulating base or support carrying the conductor and are combined structurally with the conductor throughout their length, especially in a two-dimensional plane, the conductors of which are secured to the base in a non-dismountable manner, and also covers the processes or apparatus for manufacturing such constructions, e.g. forming the circuit by mechanical or chemical treatment of a conductive foil, paste, or film on an insulating support.

H05K 1/00

Printed circuits (-assemblies of a plurality of individual semiconductor or solid state devices [H01L 25/00](#) ; devices consisting of a plurality of solid state components formed in or on a common substrate, e.g. integrated circuits, thin-film or thick-film circuits, [H01L 27/00](#)-)

- U H05K 1/02 · Details
- U H05K 1/0201 · · {Thermal arrangements, e.g. for cooling, heating or preventing overheating}
- H05K 1/0203 · · · {Cooling of mounted components (-[H05K 1/0272](#) takes precedence-)}
- H05K 1/0204 · · · · {using means for thermal conduction connection in the thickness direction of the substrate (-[H05K 1/0207](#) takes precedence-)}
- H05K 1/0213 · · {Electrical arrangements not otherwise provided for (-screening [H05K 9/00](#) ; emergency protective circuits [H02H](#)-)}
- H05K 1/0216 · · · {Reduction of cross-talk, and noise or electromagnetic interference (-grounding [H05K 1/0215](#)-)}
- H05K 1/0218 · · · · {by printed shielding conductors, ground planes or power plane (-[H05K 1/0236](#) takes precedence-)}
- U H05K 1/0219 · · · · · {Printed shielding conductors for shielding around or between signal conductors, e.g. coplanar or coaxial printed shielding conductors}
- H05K 1/0221 · · · · · · {Coaxially shielded signal lines comprising a continuous shielding layer partially or wholly surrounding the signal lines (-coaxially shielded vias [H05K 1/0222](#)-)}
- H05K 1/0224 · · · · · · {Patterned shielding planes, ground planes or power planes (-[H05K 1/0253](#) takes precedence-)}

- H05K 1/0225 {Single or multiple openings in a shielding, ground or power plane (-[H05K 1/0227](#) takes precedence-)}
- H05K 1/0228 {Compensation of cross-talk by a mutually correlated lay-out of printed circuit traces, e.g. for compensation of cross-talk in mounted connectors (-balanced signal pairs [H05K 1/0245](#)-)}
- H05K 1/023 {using auxiliary mounted passive components or auxiliary substances (-printed passive components [H05K 1/16](#)-)}
- H05K 1/0234 {Resistors or by disposing resistive or lossy substances in or near power planes (-[H05K 1/0246](#) takes precedence-)}
- H05K 1/0236 {Electromagnetic band-gap structures (-conductive planes with an opening or a split [H05K 1/0225](#) , [H05K 1/0227](#)-)}
- H05K 1/0237 . . . {High frequency adaptations (-[H05K 1/0216](#) takes precedence-)}
- H05K 1/025 {Impedance arrangements, e.g. impedance matching, reduction of parasitic impedance (-[H05K 1/024](#) and [H05K 1/0243](#) take precedence; for semiconductor devices [H01L 23/66](#)-)}
- H05K 1/0253 {Impedance adaptations of transmission lines by special lay-out of power planes, e.g. providing openings (-[H05K 1/0251](#) takes precedence-)}
- H05K 1/0254 . . . {High voltage adaptations; Electrical insulation details; Overvoltage or electrostatic discharge protection (-electrostatic discharge protection for electric apparatus in general [H05K 9/0067](#) , [H05K 9/0079](#)-); Arrangements for regulating voltages or for using plural voltages}
- U H05K 1/0257 {Overvoltage protection}
- H05K 1/0259 {Electrostatic discharge [ESD] protection}
- H05K 1/026 {Spark gaps (spark gaps per se [H01T](#))}
- H05K 1/0263 . . . {High current adaptations, e.g. printed high current conductors or using auxiliary non-printed means; Fine and coarse circuit patterns on one circuit board (-[H05K 1/0293](#) takes precedence-)}
- H05K 1/0274 . . . {Optical details, e.g. printed circuits comprising integral optical means (-[H05K 1/0269](#) takes precedence; Coupling light guides with opto-electronic components [G02B 6/42](#)-)}
- H05K 1/0275 . . . {Security details, e.g. tampering prevention or detection (-security details of computer components [G06F 21/70](#)-)}
- H05K 1/0277 . . . {Bendability or stretchability details (-not used, see subgroups; [H05K 1/038](#) , [H05K 3/4691](#) take precedence-)}
- H05K 1/028 {Bending or folding regions of flexible printed circuits (-[H05K 1/0283](#) takes precedence-)}
- H05K 1/0284 . . . {Details of three-dimensional rigid printed circuit boards (-[H05K 1/119](#) takes precedence; shaping of the substrate [H05K 3/0014](#)-)}
- H05K 1/0286 . . . {Programmable, customizable or modifiable circuits (-by programmable non-printed jumper connections [H05K 3/222](#)-)}
- H05K 1/0292 {having a modifiable lay-out, i.e. adapted for engineering changes or repair (-[H05K 1/0293](#) takes precedence-)}
- H05K 1/0296 . . . {Conductive pattern lay-out details not covered by sub groups [H05K 1/02](#) to [H05K 1/0295](#) (-[H05K 1/11](#) takes precedence; lay-out adapted to mounted component configuration [H05K 1/18](#)-)}
- H05K 1/03 Use of materials for the substrate (-substrates for semiconductor chips [H01L 23/00](#)-)}
- U H05K 1/0313 . . . {Organic insulating material}
- U H05K 1/0353 {consisting of two or more materials, e.g. two or more polymers, polymer + filler, + reinforcement}

- H05K 1/0366 {reinforced, e.g. by fibres, fabrics (~~H05K 1/036~~ takes precedence)}
- H05K 1/0373 {containing additives, e.g. fillers (~~H05K 1/036~~ takes precedence)}
- H05K 1/038 . . . {Textiles (~~used as reinforcing materials for organic insulating substrates H05K 1/0366~~)}
- H05K 1/0386 . . . {Paper sheets (~~used as reinforcing materials for organic insulating substrates H05K 1/0366~~)}
- H05K 1/0393 . . . {Flexible materials (~~H05K 1/038~~ takes precedence; specific organic compositions are classified in [H05K 1/0313](#) and subgroups)}
- H05K 1/05 . . . Insulated metal substrate {or other insulated electrically conductive substrate (~~thermal coupling of mounted components and metal substrate H05K 1/0204 , H05K 1/021~~)}
- H05K 1/09 . . Use of materials for the metallic pattern {or other conductive pattern (~~materials for conductors H01B 1/00~~)}
- H05K 1/092 . . . {Dispersed materials, e.g. conductive pastes or inks (~~Conductive material dispersed in non-conductive material in general H01B 1/14 to H01B 1/24 ; Conductive material dispersed in non-conductive material in general H01B 1/14 to H01B 1/24 ; Conductive inks in general C09D 11/52~~)}
- U H05K 1/11 . . Printed elements for providing electric connections to or between printed circuits
- H05K 1/115 . . . {Via connections; Lands around holes or via connections (~~H05K 1/112~~ takes precedence)}
- H05K 1/119 . . . {Details of rigid insulating substrates therefor, e.g. three-dimensional details (~~H05K 1/117~~ takes precedence)}
- H05K 1/14 . . Structural association of two or more printed circuits (~~providing electric connection to or between printed circuits H05K 1/11 , H01R 9/09 , H01R 23/68~~)
- H05K 1/141 . . . {One or more single auxiliary printed circuits mounted on a main printed circuit, e.g. modules, adapters (~~H05K 1/142 and H05K 1/147~~ take precedence)}
- H05K 1/147 . . . {at least one of the printed circuits being bent or folded, e.g. by using a flexible printed circuit (~~H05K 1/148~~ takes precedence)}
- H05K 1/16 . . incorporating printed electric components, e.g. printed resistor, capacitor, inductor(~~thick-film or thin-film circuits H01L 27/01 , H01L 27/13~~)}
- H05K 1/18 . . Printed circuits structurally associated with non-printed electric components ({[H05K 1/0201](#) , [H05K 1/023](#) , [H05K 1/0243](#) , } ~~H05K 1/16~~ take precedence)}
- H05K 1/182 . . {associated with components mounted in the printed circuit board, e.g. IMC (~~insert mounted components~~)(~~insert mounted components~~)}
- H05K 1/185 . . . {Components encapsulated in the insulating substrate of the printed circuit or incorporated in internal layers of a multilayer circuit (~~semiconductor chips encapsulated by interconnect and support structures H01L 23/5389 , H01L 24/00~~)}
- H05K 1/189 . . {characterised by the use of a flexible or folded printed circuit (~~H05K 3/326~~ takes precedence)}
- H05K 3/00** **Apparatus or processes for manufacturing printed circuits (~~photomechanical production of textured or patterned surfaces, materials or originals therefor, apparatus specially adapted therefor, in general G03F ; involving the manufacture of semiconductor devices H01L~~)**
- H05K 3/0008 . . {for aligning or positioning of tools relative to the circuit board (~~H05K 3/4638 , H05K 3/4679~~ take precedence; for manufacturing assemblages of components [H05K 13/0015](#))}

- H05K 3/0011 • {Working of insulating substrates or insulating layers (making copper-clad substrates [H05K 3/022](#) ; surface treatment for improvement of adhesion [H05K 3/381](#)-)}
- H05K 3/0044 • • {Mechanical working of the substrate, e.g. drilling or punching (~~H05K 3/0008~~ takes precedence-)}
- H05K 3/0058 • {Laminating printed circuit boards onto other substrates, e.g. metallic substrates (~~H05K 1/0281~~ takes precedence-)}
- H05K 3/0061 • • {onto a metallic substrate, e.g. a heat sink (~~heat sinks for electric apparatus H05K 7/20~~-)}
- H05K 3/007 • {Manufacture or processing of a substrate for a printed circuit board supported by a temporary or sacrificial carrier (~~H05K 1/187~~ , [H05K 3/20](#) and [H05K 3/4682](#) take precedence-)}
- H05K 3/0073 • {Masks not provided for in groups [H05K 3/02](#) to [H05K 3/46](#) , e.g. for photomechanical production of patterned surfaces-}
- H05K 3/0079 • • {characterised by the method of application or removal of the mask (~~H05K 3/0091~~ takes precedence-)}
- H05K 3/0085 • {Apparatus for treatments of printed circuits with liquids not provided for in groups [H05K 3/02](#) to [H05K 3/46](#) ; conveyers and holding means therefor (~~apparatus specially adapted for manufacturing assemblages of electric components, e.g. printed circuit boards, H05K 13/00~~-)}
- H05K 3/0097 • {Processing two or more printed circuits simultaneously, e.g. made from a common substrate, or temporarily stacked circuit boards (~~H05K 3/0052~~ takes precedence-)}
- U H05K 3/02 • in which the conductive material is applied to the surface of the insulating support and is thereafter removed from such areas of the surface which are not intended for current conducting or shielding
- H05K 3/022 • • {Processes for manufacturing precursors of printed circuits, i.e. copper-clad substrates (~~laminates in general B32B~~-)}
- H05K 3/027 • • {the conductive material being removed by irradiation, e.g. by photons, alpha, beta particles (~~machining by laser in general B23K 26/00~~ ; electron - or ion beam tubes therefor [H01J 37/00](#)-)}
- H05K 3/06 • • the conductive material being removed chemically or electrolytically, e.g. by photo-etch process (~~Non-mechanical removal of metallic material from surfaces C23F~~; semi-additive methods [H05K 3/108](#)-)}
- H05K 3/061 • • • {Etching masks (~~local etching C23F 1/02~~-)}
- H05K 3/062 • • • • {consisting of metals or alloys or metallic inorganic compounds (~~H05K 3/065~~ takes precedence-)}
- H05K 3/065 • • • • {applied by electrographic, electrophotographic or magnetographic methods (~~in general G03G~~-)}
- H05K 3/067 • • • {Etchants (~~in general C23F 1/10 to C23F 1/46~~-)}
- H05K 3/068 • • • • {Apparatus for etching printed circuits (~~in general C23F 1/08~~-)}
- H05K 3/08 • • the conductive material being removed by electric discharge, e.g. by spark erosion { working of metal by electro-erosion per se [B23H](#) }
- U H05K 3/10 • in which conductive material is applied to the insulating support in such a manner as to form the desired conductive pattern
- H05K 3/102 • • {by bonding of conductive powder, i.e. metallic powder (~~H05K 3/12~~ takes precedence-)}
- U H05K 3/105 • • {by conversion of non-conductive material on or in the support into conductive material, e.g. by using an energy beam}
- H05K 3/106 • • • {by photographic methods (~~in general G03C~~-)}

- H05K 3/107
 - {by filling grooves in the support with conductive material (~~H05K 3/045~~ , [H05K 3/101](#) , [H05K 3/1258](#) and [H05K 3/465](#) take precedence-)}
- H05K 3/108
 - {by semi-additive methods; masks therefor (~~characterised by metallic etch mask H05K 3/062~~ ; electroplating methods or apparatus [H05K 3/241](#)-)}
- H05K 3/12
 - {using thick film techniques, e.g. printing techniques to apply the conductive material or similar techniques for applying conductive paste or ink patterns (printing techniques in general [B41M](#), printing apparatus [B41F](#))}
- H05K 3/1208
 - • {Pretreatment of the circuit board, e.g. modifying wetting properties; Patterning by using affinity patterns (~~providing shape patterns H05K 3/1258~~ ; adhesion treatments [H05K 3/38](#)-)}
- U H05K 3/1216
 - • {by screen printing or stencil printing}
- H05K 3/1225
 - • • {Screens or stencils (~~in general B41N 1/24~~ ; manufacturing of screens or stencils [B41C 1/14](#)-); Holders therefor (~~stencil holders for applying liquids B05C 17/08~~-)}
- U H05K 3/1241
 - • • {by ink-jet printing or drawing by dispensing}
- H05K 3/125
 - • • {by ink-jet printing (in general [B41J](#))}
- H05K 3/1266
 - • • {by electrographic or magnetographic printing (in general [G03G](#))}
- H05K 3/14
 - • using spraying techniques to apply the conductive material (including vapour evaporation; ~~covering metals by metal spraying C23C 4/00~~ ; coating by vacuum evaporation [C23C 14/00](#)-)}
- H05K 3/143
 - • • {Masks therefor (~~H05K 3/048~~ takes precedence-)}
- H05K 3/16
 - • • by cathodic sputtering (~~covering materials by cathodic sputtering C23C 14/34~~ ; discharge devices therefor [H01J 37/34](#)-)}
- H05K 3/18
 - • using precipitation techniques to apply the conductive material (~~chemical coating of a substrate by decomposition C23C 18/00~~-)}
- H05K 3/181
 - • • {by electroless plating (~~adhesives therefor H05K 3/387~~ ; electroless plating in general [C23C 18/16](#)-)}
- H05K 3/20
 - • by affixing prefabricated conductor pattern (~~H05K 1/187~~ , [H05K 3/046](#) , [H05K 3/4658](#) , [H05K 3/4682](#) takes precedence-)}
- H05K 3/22
 - Secondary treatment of printed circuits (~~H05K 3/1283~~ takes precedence; embedding circuits in grooves by pressure [H05K 3/107](#)-)}
- H05K 3/222
 - {Completing of printed circuits by adding non-printed jumper connections (~~printed jumper connections H05K 3/4685~~-)}
- H05K 3/225
 - {Correcting or repairing of printed circuits (~~H05K 1/0292~~ , [H05K 3/222](#) , [H05K 3/288](#) , [H05K 3/4685](#) take precedence-)}
- H05K 3/24
 - Reinforcing the conductive pattern (~~by solder coating H05K 3/3457~~-)}
- H05K 3/241
 - • • {characterised by the electroplating method; means therefor, e.g. baths, apparatus (~~electroplating in general C25D~~-)}
- H05K 3/243
 - • • {characterised by selective plating, e.g. for finish plating of pads (~~selective plating for making the circuit pattern H05K 3/108~~ , [H05K 3/182](#)-)}
- H05K 3/244
 - • • {Finish plating of conductors, especially of copper conductors, e.g. for pads or lands (~~selective plating methods H05K 3/243~~ ; finish plating of conductors made by printing techniques [H05K 3/246](#) ; solder as finish [H05K 3/3457](#) , e.g. by plating [H05K 3/3473](#)-)}
- H05K 3/28
 - • Applying non-metallic protective coatings (~~H05K 3/0091~~ takes precedence; methods for intermediate insulating layers for build-up multilayer circuits [H05K 3/4673](#)-)}
- H05K 3/281
 - • • {by means of a preformed insulating foil (~~H05K 3/284~~ takes precedence-)}
- H05K 3/284
 - • • {for encapsulating mounted components (~~H05K 1/185~~ takes precedence-)}
- U H05K 3/30
 - Assembling printed circuits with electric components, e.g. with resistor

- H05K 3/301 . . {by means of a mounting structure (~~H05K 3/325~~ takes precedence)}
- H05K 3/303 . . {Surface mounted components, e.g. affixing before soldering, aligning means, spacing means (~~H05K 3/32~~ takes precedence)}
- H05K 3/306 . . {Lead-in-hole components, e.g. affixing or retention before soldering, spacing means (~~H05K 3/32~~ takes precedence)}
- H05K 3/308 . . . {Adaptations of leads (~~connectors to printed circuits H01R 9/091~~)}
- U H05K 3/32 . . electrically connecting electric components or wires to printed circuits
- H05K 3/321 . . . {by conductive adhesive (~~in general H01R 4/04~~)}
- H05K 3/325 . . . {by abutting or pinching, i.e. without alloying process; mechanical auxiliary parts therefor (~~adaptations of leads inserted in holes for press-fit connections H05K 3/308~~)}
- H05K 3/326 {the printed circuit having integral resilient or deformable parts, e.g. tabs or parts of flexible circuits (~~H05K 3/365~~ takes precedence)}
- H05K 3/34 . . . by soldering{(~~soldering or desoldering apparatus H05K 13/04 , B23K 1/00 , B23K 3/00~~)}
- H05K 3/3447 {Lead-in-hole components (~~H05K 3/3415~~ takes precedence)}
- H05K 3/3457 {Solder materials or compositions (~~solder compositions per se B23K 35/24~~); Methods of application thereof}
- U H05K 3/3478 {Applying solder paste, particles or preforms; Transferring prefabricated solder patterns}
- H05K 3/3484 {Paste or slurry or powder (~~screen printing or stencil printing of solder paste H05K 3/1216~~)}
- H05K 3/3494 {Heating methods for reflowing of solder (~~using integral heating means H05K 1/0212~~)}
- H05K 3/36 . . Assembling printed circuits with other printed circuits{ ~~H05K 7/142~~ takes precedence}
- H05K 3/366 . . {substantially perpendicularly to each other (~~H05K 3/361~~ takes precedence)}
- H05K 3/368 . . {parallel to each other (~~H05K 3/361~~ takes precedence)}
- H05K 3/38 . . Improvement of the adhesion between the insulating substrate and the metal (~~Laminates per se B32B~~)
- U H05K 3/386 . . {by the use of an organic polymeric bonding layer, e.g. adhesive}
- H05K 3/387 . . . {for electroless plating (~~H05K 3/4661~~ takes precedence)}
- U H05K 3/40 . . Forming printed elements for providing electric connections to or between printed circuits
- H05K 3/4007 . . {Surface contacts, e.g. bumps (~~H05K 3/4092~~ takes precedence; deposition of finish layers on pads H05K 3/24 ; forming solder bumps H05K 3/3457)}
- H05K 3/403 . . {Edge contacts; Windows or holes in the substrate having plural connections on the walls thereof (~~H05K 3/4092~~ takes precedence)}
- H05K 3/4038 . . {Through-connections or via connections (~~H05K 3/403~~ and ~~H05K 3/42~~ take precedence)}
- H05K 3/42 . . Plated through-holes {or plated via connections}
- H05K 3/421 . . . {Blind plated via connections (~~H05K 3/422 , H05K 3/423 and H05K 3/425~~ take precedence)}
- H05K 3/44 . . Manufacture insulated metal core circuits {or other insulated electrically conductive core circuits (~~H05K 3/0058 , H05K 3/4641 , H05K 3/4608~~ take precedence)}
- H05K 3/46 . . Manufacturing multilayer circuits{(~~incorporating non-printed electric components in internal layers H05K 1/185~~)}
- H05K 3/4611 . . {by laminating two or more circuit boards (~~H05K 3/4652~~ takes precedence)}

- H05K 3/4623
 - • • {the circuit boards having internal via connections between two or more circuit layers before lamination, e.g. double-sided circuit boards (-[H05K 3/462](#) takes precedence-)}
- H05K 3/4626
 - • • {characterised by the insulating layers or materials (-[H05K 3/4688](#) takes precedence-)}
- H05K 3/4644
 - • {by building the multilayer layer by layer, i.e. build-up multilayer circuits (-making via holes in the insulating layers [H05K 3/0011](#) ; special circuit boards as base or core whereon the multilayer is built [H05K 3/4602](#)-)}
- H05K 3/4652
 - • • {Adding a circuit layer by laminating a metal foil or a preformed metal foil pattern (-[H05K 3/4647](#) takes precedence-)}
- H05K 3/4655
 - • • • {by using a laminate characterized by the insulating layer (-general-purpose insulating materials [H05K 1/03](#) , [H05K 3/4673](#)-)}
- H05K 3/4661
 - • • {Adding a circuit layer by direct wet plating, e.g. electroless plating; insulating materials adapted therefor (-other insulating materials [H05K 3/387](#)-)}
- H05K 3/4664
 - • • {Adding a circuit layer by thick film methods, e.g. printing techniques or by other techniques for making conductive patterns by using pastes, inks or powders (-[H05K 3/4647](#) takes precedence-)}
- H05K 3/467
 - • • {Adding a circuit layer by thin film methods (-[H05K 3/4647](#) takes precedence-)}
- H05K 3/4673
 - • • {Application methods or materials of intermediate insulating layers not specially adapted to any one of the previous methods of adding a circuit layer (-similar methods for protective coatings [H05K 3/28](#)-)}
- H05K 3/4688
 - • {Composite multilayer circuits, i.e. comprising insulating layers having different properties (-having a special base or central core [H05K 3/4602](#)-)}
- H05K 3/4694
 - • • {Partitioned multilayer circuits having adjacent regions with different properties, e.g. by adding or inserting locally circuit layers having a higher circuit density (-[H05K 3/4691](#) takes precedence-)}
- H05K 3/4697
 - • {having cavities, e.g. for mounting components (-[H05K 3/4691](#) takes precedence-)}
- H05K 5/00**
 - Casings, cabinets or drawers for electric apparatus (-in general [A47B](#); radio receiver cabinets [H04B 1/08](#) ; television receiver cabinets [H04N 5/64](#) ; { constructional details or arrangements for computers [G06F 1/16](#) })**
- H05K 5/0086
 - {portable, e.g. battery operated apparatus (-casings for switching devices [H01H 9/02](#)-)}
- H05K 5/0091
 - {Housing specially adapted for small components (-for resistors [H01C](#); for capacitors [H01G](#); for integrated circuits [H01L 23/00](#)-)}
- U H05K 5/02
 - Details
- H05K 5/0204
 - • {Mounting supporting structure on the outside of casings (-mounting supporting structure in casings [H05K 7/14](#)-)}
- H05K 5/0217
 - • {Mechanical details of casings (-[G06F 1/1613](#) , [H01M 2/10](#) , [H04M 1/0202](#) take precedence-)}
- H05K 5/0226
 - • • {Hinges (-[H02B 1/38](#) takes precedence-)}
- U H05K 5/0256
 - • {of interchangeable modules or receptacles therefor, e.g. cartridge mechanisms}
- H05K 5/026
 - • • {having standardized interfaces (-flash memory cards [G06K 19/077](#)-)}
- U H05K 5/0265
 - • • • {of PCMCIA type}
- H05K 5/0273
 - • • • {having extensions for peripherals e.g. LAN, antennas (-details of antennas [H01Q 1/2275](#)-)}
- H05K 5/0278
 - • • • {of USB type (-details relating to connectors [H01R 27/00](#)-)}

- H05K 5/06
 - Hermetically-sealed casings{(specially adapted for small components [H05K 5/0095](#)-)}
- H05K 5/068
 - • {having a pressure compensation device, e.g. membrane (venting means [H05K 5/0213](#)-)}
- H05K 7/00**
 - Constructional details common to different types of electric apparatus (-casings, cabinets, drawers [H05K 5/00](#)-)**
- U H05K 7/02
 - Arrangements of circuit components or wiring on supporting structure
- H05K 7/06
 - • on insulating boards {e.g. wiring harnesses (for printed circuits [H05K 1/18](#) , [H05K 3/30](#)-)}
- H05K 7/10
 - • Plug-in assemblages of components,{e.g. IC sockets (for connection on printed circuit board [H01R 23/6806](#)-)}
- U H05K 7/1015
 - • • {having exterior leads}
- U H05K 7/103
 - • • • {co-operating by sliding, e.g. DIP carriers}
- H05K 7/1038
 - • • • • {with spring contact pieces ([H05K 7/1046](#) takes precedence-)}
- H05K 7/12
 - • Resilient or clamping means for holding component to structure (holding two-part couplings together [H01R 13/00](#)-)
- H05K 7/14
 - Mounting supporting structure in casing or on frame or rack{(H05K 7/18 takes precedence; test adapters [G01R 31/2808](#)-)}
- H05K 7/1401
 - • {comprising clamping or extracting means ([H05K 7/10](#) takes precedence-)}
- H05K 7/1417
 - • {having securing means for mounting boards, plates or wiring boards ([H05K 7/1461](#) takes precedence-)}
- H05K 7/1418
 - • • {Card guides, e.g. grooves ([H05K 7/1425](#) takes precedence-)}
- H05K 7/1462
 - • {for programmable logic controllers [PLC]}for automation and/or industrial process control (programmable logic controllers per se [G05B 19/05](#)-)}
- U H05K 7/1468
 - • • {Mechanical features of input/output (I/O) modules}
- H05K 7/1469
 - • • • {Terminal blocks for connecting sensors (terminal blocks in general [H01R 9/24](#)-)}
- U H05K 7/1485
 - • {Servers; Data center rooms, e.g. 19-inch computer racks}
- U H05K 7/1488
 - • • {Cabinets therefore, e.g. chassis, racks}
- H05K 7/1489
 - • • • {characterized by the mounting of blades therein, e.g. brackets, rails, trays (H05K 7/1491 takes precedence-)}
- H05K 7/1491
 - • • • • {having cable management arrangements (management of optical cables [G02B 6/444](#) ; in telecommunication cabinets [H04Q 1/06](#)-)}
- H05K 7/1494
 - • • • • {having hardware for monitoring blades, e.g. keyboards, displays (methods or software therefore [H05K 7/1498](#)-)}
- H05K 7/1498
 - • • {Resource management, Optimisation arrangements, e.g. configuration, identification, tracking, physical location (thermal management [H05K 7/20836](#)-)}
- U H05K 7/18
 - Construction of rack or frame
- H05K 7/186
 - • {for supporting telecommunication equipment (selecting apparatus [H04Q 1/02](#)-)}
- H05K 7/20
 - Modifications to facilitate cooling, ventilating, or heating{(of printed circuits [H05K 1/0201](#) ; of resistors [H01C](#); of capacitors [H01G](#); of individual semiconductor components [H01L 23/34](#) , [H01L 31/024](#) ; of LEDs [H01L 33/64](#) ; of personal computers [G06F 1/20](#)-)}
- H05K 7/20009
 - • {using a gaseous coolant in electronic enclosures (in cabinets of standardized dimensions [H05K 7/20536](#) ; in server cabinets [H05K 7/20709](#) ; in vehicle electronic casings [H05K 7/20845](#) ; in power control electronics [H05K 7/2089](#) ; in displays [H05K 7/20954](#)-)}

- H05K 7/20136
 - H05K 7/20172
 - H05K 7/20181
 - H05K 7/20218
 - H05K 7/2029
 - H05K 7/2039
 - H05K 7/205
 - U H05K 7/20536
 - H05K 7/20554
 - U H05K 7/20709
 - H05K 7/20718
 - U H05K 7/20845
 - H05K 7/20854
 - U H05K 7/2089
 - H05K 7/209
 - H05K 7/20954
 - H05K 7/20963
 - H05K 9/00**
 - H05K 9/0001
 - H05K 9/0005
 - H05K 9/0007
 - U H05K 9/002
 - H05K 9/0022
 - H05K 9/0066
 - H05K 9/0067
 - H05K 9/0073
- • • {Forced ventilation, e.g. by fans (~~H05K 7/202~~ takes precedence)}
 - • • • {Fan mounting or fan specifications (~~blowers in general F04D 29/601~~)}
 - • • • {Filters; Louvers (~~filters in general B01D 46/00~~)}
 - • {using a liquid coolant without phase change in electronic enclosures (~~in cabinets of standardized dimensions H05K 7/20536~~ ; in server cabinets ~~H05K 7/20709~~ ; in vehicle electronic casings ~~H05K 7/20845~~ ; in power control electronics ~~H05K 7/2089~~ ; in displays ~~H05K 7/20954~~)}
 - • {using a liquid coolant with phase change in electronic enclosures (~~in cabinets of standardized dimensions H05K 7/20536~~ ; in server cabinets ~~H05K 7/20709~~ ; in vehicle electronic casings ~~H05K 7/20845~~ ; in power control electronics ~~H05K 7/2089~~ ; in displays ~~H05K 7/20954~~)}
 - • {characterised by the heat transfer by conduction from the heat generating element to a dissipating body (~~arrangements for increasing/decreasing heat-transfer, e.g. fins details, F28F 13/00~~)}
 - • • {Thermal paths through the printed circuit board [PCB] (~~details of PCBs related to heat transfer H05K 1/0201~~)}
 - • {for racks or cabinets of standardized dimensions, e.g. 19-inch electronic racks}
 - • • {Forced ventilation of a gaseous coolant (~~in closed loop H05K 7/206~~ or ~~H05K 7/20609~~ or ~~H05K 7/20618~~)}
 - • {for server racks or cabinets; for data centers, e.g. 19-inch computer racks}
 - • • {Forced ventilation of a gaseous coolant (~~in closed loop H05K 7/20754~~)}
 - • {for vehicle electronic casings}
 - • • {Heat transfer by conduction from internal heat source to heat radiating structure (~~H05K 7/20863~~ takes precedence)}
 - • {for power electronics, e.g. for inverters for controlling motor}
 - • • {Heat transfer by conduction from internal heat source to heat radiating structure (~~H05K 7/20909~~ takes precedence)}
 - • {for display panels (~~cooling means for computer displays G06F 1/20~~ ; heating or cooling of liquid crystal cells ~~G02F 1/133382~~ ; cooling for projectors ~~G03B 21/16~~ ; plasma display panels per se ~~H01J 17/49~~)}
 - • • {Heat transfer by conduction from internal heat source to heat radiating structure (~~H05K 7/20972~~ takes precedence)}
 - Screening of apparatus or components against electric or magnetic fields (~~devices for absorbing radiation from an aerial H01Q 17/00~~ ; { screening of semiconductor devices ~~H01L 24/00~~ , ~~H01L 23/58~~ ; screening structurally associated with dynamo-electric machines ~~H02K 11/00~~ ; shielding against nuclear radiation ~~G21F~~ })**
 - • {Rooms, chambers (~~building construction in general E04B~~; anechoic room ~~G01R 29/0821~~ ; Nuclear magnetic resonance ~~G01R 33/42~~)}
 - • {Shielded windows (~~window for building construction in general E06B 5/00~~)}
 - • {Casings (~~standardised racks H05K 9/0062~~)}
 - • {with localised screening}
 - • • {of components mounted on printed circuit boards [PCB] (~~shields integrated within component packages H01L 23/552~~ ; shields integrated within PCB ~~H05K 1/0218~~)}
 - • {Constructional details of transient suppressor (~~protective circuit H02H~~)}
 - • {Devices for protecting against damage from electrostatic discharge (~~materials see H05K 9/0079~~)}
 - • {Shielding materials (~~H05K 9/0003~~ takes precedence)}

- H05K 9/0075
 - • {Magnetic shielding materials (-magnetic material in general [H01F 1/00](#) ; for electrical motor [H02K 11/00](#) ; for transformer [H01F 27/28](#)-)}
- H05K 9/0077
 - • • {comprising superconductors (-superconductors in general [H01L 39/00](#)-)}
- H05K 9/0081
 - • {Electromagnetic shielding materials, e.g. EMI, RFI shielding (-[H05K 9/0003](#) takes precedence-)}
- H05K 9/0083
 - • • {comprising electro-conductive non-fibrous particles embedded in an electrically insulating supporting structure, e.g. powder, flakes, whiskers (-[H05K 9/0086](#) takes precedence-)}
- H05K 9/009
 - • • {comprising electro-conductive fibres, e.g. metal fibres, carbon fibres metallised textile fibres, electro-conductive mesh, woven, non-woven mat, fleece, cross-linked (-Screening during electrotherapy [A61N 1/16](#)-)}
- H05K 11/00**

Combination of a radio or television receiver with apparatus having a different main function{(-combined with clocks [G04B 47/00](#) ; controlled by a clock [G04C 21/28](#)-)}
- U H05K 13/00**

Apparatus or processes specially adapted for manufacturing or adjusting assemblages of electric components
- H05K 13/0007
 - {using handtools (-for mounting on a circuit board [H05K 13/0447](#)-)}
- H05K 13/0023
 - {Making assemblies of electric components, e.g. modules (-[H05K 13/04](#) take precedence-)}
- H05K 13/0046
 - {Encapsulation of electrical assemblies in resins (-hermetically-sealed casings [H05K 5/06](#)-)}
- H05K 13/0053
 - {Means for helping with the manual mounting of components, e.g. special tables, light spots indicating the place for mounting (-handtools [H05K 13/0447](#)-)}
- U H05K 13/0061**
 - {Tools for holding the circuit boards during processing; handling transport of printed circuit boards}
- H05K 13/0076
 - • {Straightening or aligning terminal leads of pins mounted on boards, during transport of the boards (-during the mounting operation, after fitting components on the board [H05K 13/0473](#)-)}
- H05K 13/0092
 - {Treatment of the terminal leads as a separate operation (-during transport [H05K 13/0076](#) , [H05K 13/023](#) ; during mounting [H05K 13/04](#)-)}
- H05K 13/02
 - Feeding of components (-in general [B65G](#)-)
- H05K 13/021
 - • {Loading or unloading of containers (-[H05K 13/028](#) takes precedence-)}
- H05K 13/022
 - • {with orientation of the elements (-orientation while mounting [H05K 13/0413](#) ; in general [B23P 19/00](#)-)}
- H05K 13/023
 - • {with bending or straightening of the terminal leads (-bending and cutting after the mounting on a p.c. board [H05K 13/0473](#)-)}
- H05K 13/029
 - • {Feeding axial lead components, e.g. using vibrating bowls, magnetic fields (-[H05K 13/022](#) takes precedence-)}
- H05K 13/04
 - Mounting of components {e.g. of leadless components}
- U H05K 13/0404**
 - • {pick and place heads or apparatus, e.g. with jaws}
- H05K 13/0408
 - • • {incorporating a sucking device (-[H05K 13/0413](#) takes precedence-)}
- H05K 13/0413
 - • • {with orientation of the component while holding it (-orientation while feeding [H05K 13/022](#)-)}
- U H05K 13/0417**
 - • {Feeding with belts}
- H05K 13/0421
 - • • {with treatment of the terminal leads (-bending and cutting after fitting on a circuit board [H05K 13/0473](#)-)}
- H05K 13/0426
 - • • {for components being oppositely extending terminal leads (-[H05K 13/0421](#) takes precedence-)}
- H05K 13/046
 - • {Surface mounting (-surface mounted components [H05K 3/341](#)-)}

- H05K 13/0465 . . . {by soldering ([H05K 13/0469](#) takes precedence; soldering apparatus in general [B23K](#)-)}
- H05K 13/0473 . . {Cutting and clinching the terminal ends of the leads after they are fitted on a circuit board (~~-during transport [H05K 13/0076](#)-~~)}
- H05K 2201/00 Indexing scheme relating to printed circuits covered by [H05K 1/00](#)**
- U H05K 2201/01 . Dielectrics
- U H05K 2201/0104 . . Properties and characteristics in general
- H05K 2201/0133 . . . Elastomeric or compliant polymer (~~-elastomeric conductor [H05K 2201/0314](#)-~~)
- U H05K 2201/0137 . . Materials
- H05K 2201/017 . . . Glass ceramic coating, e.g. formed on inorganic substrate (~~-inorganic, non-metallic substrates [H05K 1/0306](#)-~~)
- U H05K 2201/02 . Fillers; Particles; Fibers; Reinforcement materials
- U H05K 2201/0203 . . Fillers and particles
- U H05K 2201/0206 . . . Materials
- H05K 2201/0233 Deformable particles (~~-insulating particles having an electrically conductive coating [H05K 2201/0221](#)-~~)
- H05K 2201/0236 Plating catalyst as filler in insulating material (~~-catalytic ink [H05K 2203/0709](#)-~~)
- H05K 2201/0239 Coupling agent for particles (~~-using a coupling agent to improve the adhesion between an insulating substrate and a metal [H05K 3/389](#)-~~)
- U H05K 2201/0242 . . . Shape of an individual particle
- H05K 2201/0248 Needles or elongated particles; Elongated cluster of chemically bonded particles (~~-microfibers [H05K 2201/0251](#) ; stacked conductors [H05K 2201/0379](#)-~~)
- H05K 2201/0251 Non-conductive microfibers (~~-relatively short elongated particles [H05K 2201/0248](#)-~~)
- H05K 2201/0257 Nanoparticles (~~-inks comprising nanoparticles [H05K 1/097](#)-~~)
- U H05K 2201/0275 . . Fibers and reinforcement materials
- H05K 2201/0284 . . . Paper, e.g. as reinforcement (~~-paper sheet substrates [H05K 1/0386](#)-~~)
- H05K 2201/029 . . . Woven fibrous reinforcement or textile (~~-textile substrates [H05K 1/038](#)-~~)
- U H05K 2201/03 . Conductive materials
- U H05K 2201/0302 . . Properties and characteristics in general
- H05K 2201/0314 . . . Elastomeric connector or conductor, e.g. rubber with metallic filler (~~-elastomeric dielectric [H05K 2201/0133](#)-~~)
- U H05K 2201/0332 . . Structure of the conductor
- U H05K 2201/0335 . . . Layered conductors or foils
- H05K 2201/0338 Layered conductor, e.g. layered metal substrate, layered finish layer, layered thin film adhesion layer (~~-etched tri-metal structure [H05K 2201/0361](#)-~~)
- H05K 2201/0347 Overplating, e.g. for reinforcing conductors or bumps; Plating over filled vias (~~-reinforcing the conductive pattern [H05K 3/24](#)-~~)
- U H05K 2201/0364 . . . Conductor shape
- H05K 2201/0367 Metallic bump or raised conductor not used as solder bump (~~-solder materials or compositions and methods of application thereof [H05K 3/3457](#)-~~)

- H05K 2201/0373
 - • • Conductors having a fine structure, e.g. providing a plurality of contact points with a structured tool (-providing micro- or nanometer scale roughness on a metal surface [H05K 2203/0307-](#))
- U H05K 2201/0388
 - • • Other aspects of conductors
- H05K 2201/0397
 - • • Tab (-forming integral conductive tabs [H05K 3/4092-](#))
- U H05K 2201/04
 - Assemblies of printed circuits
- H05K 2201/046
 - • Planar parts of folded PCBs making an angle relative to each other (-assembling printed circuits perpendicularly to each other [H05K 3/366-](#))
- U H05K 2201/06
 - Thermal details
- H05K 2201/066
 - • Heatsink mounted on the surface of the PCB (-heatsink inserted in the PCB [H05K 2201/10416-](#))
- U H05K 2201/07
 - Electric details
- H05K 2201/073
 - • High voltage adaptations (-overvoltage protection [H05K 1/0257-](#))
- U H05K 2201/09
 - Shape and layout
- U H05K 2201/09009
 - • Substrate related
- H05K 2201/09036
 - • • Recesses or grooves in insulating substrate (-recess in metallic substrate [H05K 2201/09745-](#))
- H05K 2201/09045
 - • • Locally raised area or protrusion of insulating substrate (-rigid curved substrate [H05K 2201/09018-](#))
- U H05K 2201/09145
 - • Edge details
- H05K 2201/0919
 - • • Exposing inner circuit layers or metal planes at the side edge of the PCB or at the walls of large holes (-shielding provided by an inner layer of PCB [H05K 2201/0723-](#))
- H05K 2201/092
 - • • Exposing inner circuit layers or metal planes at the walls of high aspect ratio holes (-forming plated-through holes [H05K 3/42](#) ; cutting around hole [H05K 2203/0242-](#))
- U H05K 2201/09209
 - • Shape and layout details of conductors
- U H05K 2201/09218
 - • • Conductive traces
- H05K 2201/09236
 - • • • Parallel layout (-layout of balanced signal pairs [H05K 1/0245](#) ; superposed layout [H05K 2201/09672-](#))
- H05K 2201/09245
 - • • • Crossing layout (-alternating conductors [H05K 2201/097-](#))
- H05K 2201/09281
 - • • • Layout details of a single conductor (-meander [H05K 2201/09263](#) ; layout details of angles or corners [H05K 2201/09272-](#))
- U H05K 2201/0929
 - • • Conductive planes
- H05K 2201/093
 - • • • Layout of power planes, ground planes or power supply conductors, e.g. having special clearance holes therein (-reduction of cross-talk, noise or interference by patterned shielding planes, ground planes or power planes [H05K 1/0224-](#))
- H05K 2201/09354
 - • • • Ground conductor along edge of main surface (-edge contacts [H05K 3/403-](#))
- U H05K 2201/09372
 - • • Pads and lands
- H05K 2201/09381
 - • • • Shape of non-curved single flat metallic pad, land or exposed part thereof; Shape of electrode of leadless component (-notches in edge pads [H05K 2201/09181-](#))
- H05K 2201/094
 - • • • Array of pads or lands differing from one another, e.g. in size, pitch, thickness; Using different connections on the pads (-using different types of conductors [H05K 2201/0391-](#))
- H05K 2201/09463
 - • • • Partial lands, i.e. lands or conductive rings not completely surrounding the hole (-landless plated-through hole or via [H05K 2201/09545-](#))

- H05K 2201/09472 Recessed pad for surface mounting (-recess in pad [H05K 2201/09745-](#)); Recessed electrode of component
- H05K 2201/09481 Via in pad; Pad over filled via (-if used for surface mounting [H05K 1/113-](#))
- H05K 2201/0949 Pad close to a hole, not surrounding the hole (-if used for surface mounting [H05K 1/114-](#))
- U H05K 2201/095 Conductive through-holes or vias
- H05K 2201/09563 Metal filled via (-plated through-hole filled with insulating material [H05K 2201/0959-](#))
- H05K 2201/09572 Solder filled plated through-hole in the final product (-soldering lead-in-hole components [H05K 3/3447-](#))
- H05K 2201/09609 Via grid, i.e. two-dimensional array of vias or holes in a single plane (-interposers [H05K 2201/10378-](#))
- H05K 2201/09627 Special connections between adjacent vias, not for grounding vias (-redundant conductors or connections [H05K 2201/0979-](#))
- H05K 2201/09654 covering at least two types of conductors provided for in [H05K 2201/09218 - H05K 2201/095](#)
- H05K 2201/09663 Divided layout, i.e. conductors divided in two or more parts (-branched layout [H05K 2201/09254-](#))
- H05K 2201/09672 Superposed layout, i.e. in different planes (-parallel traces in one plane [H05K 2201/09236-](#))
- H05K 2201/09754 Connector integrally incorporated in the PCB or in housing (-mounted connector [H05K 2201/10189-](#))
- H05K 2201/09772 Conductors directly under a component but not electrically connected to the component (-cooling of mounted components by printed thermal vias [H05K 1/0206-](#))
- H05K 2201/09809 Coaxial layout (-reduction of cross-talk, noise or interference by printed shielding conductors for shielding around a single via or around a group of vias [H05K 1/0222-](#))
- H05K 2201/09818 Other shape and layout details not provided for in [H05K 2201/09009 - H05K 2201/09209-](#); Shape and layout details covering several of these groups
- H05K 2201/09827 Tapered, e.g. tapered hole, via or groove (-bevelled, chamfered or tapered edge [H05K 2201/09154-](#))
- H05K 2201/09872 Insulating conformal coating (-foil encapsulation [H05K 2203/1311-](#))
- U H05K 2201/10 Details of components or other objects attached to or integrated in a printed circuit board
- U H05K 2201/10227 Other objects, e.g. metallic pieces
- H05K 2201/10234 Metallic balls (-solder balls [H05K 2203/041-](#))
- H05K 2201/10242 Metallic cylinders (-small solder preforms other than balls [H05K 2203/0415-](#))
- H05K 2201/1025 Metallic discs (-small solder preforms other than balls [H05K 2203/0415-](#))
- H05K 2201/10272 Busbars, i.e. thick metal bars mounted on the PCB as high-current conductors (-metal strips [H05K 2201/1028-](#))
- H05K 2201/1034 Edge terminals, i.e. separate pieces of metal attached to the edge of the PCB (-tab [H05K 2201/0397-](#))
- H05K 2201/10416 Metallic blocks or heatsinks completely inserted in a PCB (-metallic supports [H05K 3/0061-](#))
- H05K 2201/10431 Details of mounted components (-printed components [H05K 1/16-](#))
- U H05K 2201/10439 Position of a single component
- H05K 2201/10446 Mounted on an edge (-soldering edge mounted components [H05K 3/3405](#) ; edge terminals [H05K 2201/1034-](#))

H05K 2201/10492	<ul style="list-style-type: none"> • • • Electrically connected to another device (-mounted components directly electrically connected to each other H05K 2201/1053-)
H05K 2201/105	<ul style="list-style-type: none"> • • • Mechanically attached to another device (-attached components H05K 2201/10537-)
H05K 2201/10575	<ul style="list-style-type: none"> • • • Insulating foil under component (-permanent spacer or stand-off H05K 2201/2036-)
H05K 2201/10606	<ul style="list-style-type: none"> • • • Permanent holder for component or auxiliary PCB mounted on a PCB (-clamping a component by an element or a set of elements H05K 2201/10393-)
U H05K 2201/10613	<ul style="list-style-type: none"> • • Details of electrical connections of non-printed components, e.g. special leads
U H05K 2201/10621	<ul style="list-style-type: none"> • • • Components characterised by their electrical contacts
H05K 2201/10628	<ul style="list-style-type: none"> • • • • Leaded surface mounted device (-soldering surface mounted leaded components H05K 3/3421-)
U H05K 2201/10742	<ul style="list-style-type: none"> • • • Details of leads
U H05K 2201/10886	<ul style="list-style-type: none"> • • • • Other details
H05K 2201/10924	<ul style="list-style-type: none"> • • • • • Leads formed from a punched metal foil (-affixing a prefabricated self-supporting metal foil pattern H05K 3/202-)
U H05K 2201/10954	<ul style="list-style-type: none"> • • • Other details of electrical connections
H05K 2201/10977	<ul style="list-style-type: none"> • • • • Encapsulated connections (-applying non-metallic protective coatings for encapsulating mounted components H05K 3/284-)
H05K 2201/10984	<ul style="list-style-type: none"> • • • • Component carrying a connection agent, e.g. solder, adhesive (-soldering leadless components having an array of bottom contacts H05K 3/3436 ; BGA components H05K 2201/10734-)
H05K 2201/20	<ul style="list-style-type: none"> • Details of printed circuits not provided for in H05K 2201/01 - H05K 2201/10
H05K 2201/2036	<ul style="list-style-type: none"> • • Permanent spacer or stand-off in a printed circuit or printed circuit assembly (-pattern for applying drops or paste H05K 2203/0545-)
H05K 2201/2072	<ul style="list-style-type: none"> • • Anchoring, i.e. one structure gripping into another (-providing micro- or nanometer scale roughness on a metal surface H05K 2203/0307-)
H05K 2203/00	Indexing scheme relating to apparatus or processes for manufacturing printed circuits covered by H05K 3/00
U H05K 2203/01	<ul style="list-style-type: none"> • Tools for processing; Objects used during processing
U H05K 2203/0104	<ul style="list-style-type: none"> • • for patterning or coating
H05K 2203/013	<ul style="list-style-type: none"> • • • Inkjet printing, e.g. for printing insulating material or resist (-using ink-jet printing to form a conductive pattern H05K 3/125-)
U H05K 2203/0147	<ul style="list-style-type: none"> • • Carriers and holders
H05K 2203/0152	<ul style="list-style-type: none"> • • • Temporary metallic carrier, e.g. for transferring material (-affixing a prefabricated conductor pattern formed by electroplating or electroforming on a metallic carrier H05K 3/205-)
H05K 2203/0195	<ul style="list-style-type: none"> • • Tool for a process not provided for in H05K 3/00 , e.g. tool for handling objects using suction, for deforming objects, for applying local pressure
U H05K 2203/02	<ul style="list-style-type: none"> • Details related to mechanical or acoustic processing, e.g. drilling, punching, cutting, using ultrasound
H05K 2203/025	<ul style="list-style-type: none"> • • Abrading, e.g. grinding or sand blasting (-deburring, rounding, bevelling or smoothing conductor edges H05K 2203/0346-)
U H05K 2203/03	<ul style="list-style-type: none"> • Metal processing
H05K 2203/033	<ul style="list-style-type: none"> • • Punching metal foil, e.g. solder foil (-affixing a prefabricated self-supporting metal foil pattern H05K 3/202-)

H05K 2203/0338	<ul style="list-style-type: none"> • Transferring metal or conductive material other than a circuit pattern, e.g. bump, solder, printed component (-affixing a prefabricated conductor pattern H05K 3/20-)
H05K 2203/0353	<ul style="list-style-type: none"> • Making conductive layer thin, e.g. by etching (-selective thinning for providing different thickness H05K 2203/0369-)
H05K 2203/0392	<ul style="list-style-type: none"> • Pretreatment of metal, e.g. before finish plating, etching (-improvement of the adhesion between an insulating substrate and a metal by special treatment of the metal H05K 3/382-)
H05K 2203/04	<ul style="list-style-type: none"> • Soldering or other types of metallurgic bonding (-using molten metal H05K 2203/128-)
H05K 2203/041	<ul style="list-style-type: none"> • Solder preforms in the shape of solder balls (-soldering leadless components having an array of bottom contacts H05K 3/3436-)
H05K 2203/045	<ul style="list-style-type: none"> • Solder filled PTH during processing (-solder filled plated through-hole in the final product H05K 2201/09572-)
U H05K 2203/05	<ul style="list-style-type: none"> • Patterning and lithography; Masks; Details of resist
U H05K 2203/0502	<ul style="list-style-type: none"> • Patterning and lithography
H05K 2203/0542	<ul style="list-style-type: none"> • Continuous temporary metal layer over metal pattern (-reinforcing the conductive pattern characterised by the electroplating method H05K 3/241-)
H05K 2203/0545	<ul style="list-style-type: none"> • Pattern for applying drops or paste; Applying a pattern made of drops or paste (-using thick film techniques to apply conductive material by using a substrate with a shape pattern H05K 3/1258-)
U H05K 2203/0562	<ul style="list-style-type: none"> • Details of resist
H05K 2203/0597	<ul style="list-style-type: none"> • Resist applied over the edges or sides of conductors, e.g. for protection during etching or plating (-coating over pads H05K 2201/09818-)
U H05K 2203/06	<ul style="list-style-type: none"> • Lamination
H05K 2203/061	<ul style="list-style-type: none"> • of previously made multilayered subassemblies (-laminating only or mainly similar single-sided circuit boards H05K 3/4617 ; laminating only or mainly similar double-sided circuit boards H05K 3/462-)
H05K 2203/066	<ul style="list-style-type: none"> • Transfer laminating of insulating material, e.g. resist as a whole layer, not as a pattern (-transferring an insulating pattern H05K 2203/0537-)
U H05K 2203/07	<ul style="list-style-type: none"> • Treatments involving liquids, e.g. plating, rinsing
U H05K 2203/0703	<ul style="list-style-type: none"> • Plating
H05K 2203/0709	<ul style="list-style-type: none"> • Catalytic ink or adhesive for electroless plating (-catalyst filler H05K 2201/0236-)
U H05K 2203/0756	<ul style="list-style-type: none"> • Uses of liquids, e.g. rinsing, coating, dissolving
H05K 2203/0776	<ul style="list-style-type: none"> • Uses of liquids not otherwise provided for in H05K 2203/0759 - H05K 2203/0773
U H05K 2203/10	<ul style="list-style-type: none"> • Using electric, magnetic and electromagnetic fields; Using laser light
H05K 2203/105	<ul style="list-style-type: none"> • Using an electrical field; Special methods of applying an electric potential (-electroplating H05K 2203/0723-)
H05K 2203/107	<ul style="list-style-type: none"> • Using laser light (-shaping a substrate by laser ablation H05K 3/0026-)
U H05K 2203/11	<ul style="list-style-type: none"> • Treatments characterised by their effect, e.g. heating, cooling, roughening
H05K 2203/1121	<ul style="list-style-type: none"> • Cooling, e.g. specific areas of a PCB being cooled during reflow soldering (-details related to cooling of mounted components H05K 1/0203-)
H05K 2203/1163	<ul style="list-style-type: none"> • Chemical reaction, e.g. heating solder by exothermic reaction (-oxidising metal H05K 2203/0315-)
U H05K 2203/12	<ul style="list-style-type: none"> • Using specific substances
H05K 2203/122	<ul style="list-style-type: none"> • Organic non-polymeric compounds, e.g. oil, wax, thiol (-using solvent H05K 2203/0783-)

- H05K 2203/128
 - Molten metals, e.g. casting thereof, or melting by heating and excluding molten solder (-spraying droplets of molten metal [H05K 2203/1344](#)-)
- U H05K 2203/13
 - Moulding and encapsulation; Deposition techniques; Protective layers
- U H05K 2203/1305
 - Moulding and encapsulation
- H05K 2203/1327
 - Moulding over PCB locally or completely (-applying non-metallic protective coatings for encapsulating mounted components [H05K 3/284](#)-)
- U H05K 2203/1333
 - Deposition techniques, e.g. coating
- H05K 2203/1361
 - Coating by immersion in coating bath (-applying molten solder [H05K 3/3468](#)-)
- H05K 2203/1366
 - Spraying coating (-apparatus for coating printed circuit boards using liquid non-metallic coating compositions [H05K 3/0091](#)-)
- H05K 2203/1372
 - Coating by using a liquid wave (-solder dip coating [H05K 2203/04](#)-)
- U H05K 2203/14
 - Related to the order of processing steps
- H05K 2203/1438
 - Treating holes after another process, e.g. coating holes after coating the substrate (-metal used as mask for etching vias [H05K 2203/0554](#)-)
- U H05K 2203/16
 - Inspection; Monitoring; Aligning
- H05K 2203/162
 - Testing a finished product, e.g. heat cycle testing of solder joints (-patterns for electrical inspection or testing [H05K 1/0268](#)-)
- U H05K 2203/17
 - Post-manufacturing processes
- H05K 2203/173
 - Adding connections between adjacent pads or conductors, e.g. for modifying or repairing (-programmable, customizable or modifiable circuits [H05K 1/0286](#)-)
- H05K 2203/176
 - Removing, replacing or disconnecting component; Easily removable component (-thermal arrangements, e.g. to prevent overheating [H05K 1/0201](#)-)
- H05K 2203/30
 - Details of processes not otherwise provided for in [H05K 2203/01](#) - [H05K 2203/17](#)
- H05K 2203/302
 - Bending a rigid substrate; Breaking rigid substrates by bending (-rigid circuit boards or rigid supports locally made bendable [H05K 1/0278](#)-)

Project: N/A (Y02B)

- U Y02B 20/00** **Energy efficient lighting technologies**
- U Y02B 20/30
 - Semiconductor lamps, e.g. solid state lamps [SSL] light emitting diodes [LED] or organic LED [OLED]
- Y02B 20/32
 - Electroluminescent panels (not used, see subgroups)
- Y02B 20/34
 - inorganic LEDs (not used, see subgroups)
- U Y02B 30/00** **Energy efficient heating, ventilation or air conditioning [HVAC]**
- U Y02B 30/08
 - relating to domestic heating, space heating or domestic hot water heating or supply systems [DHW]
- Y02B 30/10
 - using boilers (not used, see subgroups)
- Y02B 30/50
 - Systems profiting of external/internal conditions (not used, see subgroups)
- Y02B 30/54
 - Free-cooling systems (not used, see subgroups)
- Y02B 30/56
 - Heat recovery units (not used, see subgroups)
- Y02B 30/60
 - Other technologies for heating or cooling (not used, see subgroups)
- Y02B 30/70
 - Efficient control or regulation technologies (empty, see subgroups)
- Y02B 30/74
 - Technologies based on motor control (not used, see subgroups)
- Y02B 30/76
 - Centralised control (not used, see subgroups)
- Y02B 30/90
 - Passive houses; Double facade technology (not used, see subgroups)

- U Y02B 40/00 Technologies aiming at improving the efficiency of home appliances**
- Y02B 40/10 · Relating to domestic cooking (not used, see subgroups)
 - Y02B 40/12 · · Induction cooking in kitchen stoves (not used, see subgroups)
 - Y02B 40/14 · · Microwave ovens (not used, see subgroups)
 - Y02B 40/16 · · Improved cooking stoves (not used, see subgroups)
 - Y02B 40/30 · Relating to refrigerators or freezers (not used see subgroups)
 - Y02B 40/40 · Relating to dish-washers (not used, see subgroups)
 - Y02B 40/70 · Relating to laundry dryers (not used, see subgroups)
 - Y02B 40/80 · Related to vacuum cleaners (not used, see subgroups)
- U Y02B 70/00 Technologies for an efficient end-user side electric power management and consumption**
- Y02B 70/10 · Technologies improving the efficiency by using switched-mode power supplies [SMPS], i.e. efficient power electronics conversion (not used, see subgroups)
 - Y02B 70/14 · · Reduction of losses in power supplies (not used, see subgroups)
 - Y02B 70/1416 · · · Converters benefiting from a resonance, e.g. resonant or quasi-resonant converters (not used, see subgroups)
 - Y02B 70/1458 · · · Synchronous rectification (not used, see subgroups)
 - Y02B 70/30 · Systems integrating technologies related to power network operation and communication or information technologies for improving the carbon footprint of the management of residential or tertiary loads, i.e. smart grids as climate change mitigation technology in the buildings sector, including also the last stages of power distribution and the control, monitoring or operating management systems at local level (-smart grids supporting the management or operation of end-user stationary applications in general, including technologies with no associated climate change mitigation effect [Y04S 20/00](#))(not used, see subgroups)
 - Y02B 70/32 · · End-user application control systems (not used, see subgroups)
 - Y02B 70/3208 · · · characterised by the aim of the control (not used, see subgroups)
 - Y02B 70/3258 · · · characterised by the end-user application (not used, see subgroups)
 - Y02B 70/3291 · · · · The end-user application involving uninterruptible power supply [UPS] systems or standby or emergency generators (-for uninterruptible power supply systems or standby or emergency generators in the last power distribution stages [Y04S 20/12](#)-)
 - Y02B 70/34 · · Smart metering supporting the carbon neutral operation of end-user applications in buildings (not used, see subgroups)
- U Y02B 90/00 Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation**
- Y02B 90/20 · Systems integrating technologies related to power network operation and communication or information technologies mediating in the improvement of the carbon footprint of the management of residential or tertiary loads, i.e. smart grids as enabling technology in buildings sector (not used, see subgroups) (-Smart grids supporting the management or operation of end-user stationary applications in general, including technologies with no associated climate change mitigation effect [Y04S 20/00](#)-)
 - Y02B 90/22 · · Systems characterised by the monitored, controlled or operated end-user elements or equipments (not used, see subgroups)

- Y02B 90/222
 - • • the elements or equipments being or involving energy storage units, uninterruptible power supply [UPS] systems or standby or emergency generators involved in the last power distribution stages (-energy storage units involved in power generation, transmission or distribution [Y04S 10/14](#) ; uninterruptible power supply systems or standby or emergency generators as end-user application [Y04S 20/248](#)-)
- Y02B 90/24
 - • Smart metering mediating in the carbon neutral operation of end-user applications in buildings (not used, see subgroups)
- Y02B 90/26
 - • Communication technology specific aspects (not used, see subgroups)
- Y02B 90/2607
 - • • Details of the transmission structure or support between the monitoring, controlling or managing units and monitored, controlled or operated electrical equipment (not used, see subgroups)
- Y02B 90/2676
 - • • Aspects related to the treatment or conditioning of data or signals (not used, see subgroups)

Project: N/A (Y02C)

- Y02C 10/00 **CO₂ capture or storage (not used, see subgroups)**
- Y02C 20/00 **Capture or disposal of greenhouse gases [GHG] other than CO₂ (not used, see subgroups)**

Project: N/A (Y02E)

- U Y02E 20/00 **Combustion technologies with mitigation potential**
- U Y02E 20/30
 - Technologies for a more efficient combustion or heat usage (not used, see subgroups)
- Y02E 20/32
 - • Direct CO₂ mitigation (not used, see subgroups)
- Y02E 20/34
 - • Indirect CO₂ mitigation, i.e. by acting on non CO₂ directly related matters of the process, e.g. more efficient use of fuels (not used, see subgroups)

Project: N/A (Y02T)

- U Y02T 10/00 **Road transport of goods or passengers**
- Y02T 10/60
 - Other road transportation technologies with climate change mitigation effect (not used, see subgroups)
- U Y02T 10/62
 - • Hybrid vehicles
- Y02T 10/6204
 - • • using ICE and mechanical energy storage, e.g. flywheel (-mechanical storage units for electromobility in general [Y02T 10/7027](#)-)
- Y02T 10/6213
 - • • using ICE and electric energy storage, i.e. battery, capacitor (-battery or capacitor technology for electromobility in general [Y02T 10/7005](#) , [Y02T 10/7022](#)-)
- Y02T 10/70
 - • Energy storage for electromobility (-hydrogen internal combustion engines [Y02T 90/42](#) ; fuel cell powered electric vehicles [Y02T 90/34](#)-)
- Y02T 10/7072
 - • • Electromobility specific charging systems or methods for batteries, ultracapacitors, supercapacitors or double-layer capacitors (-efficient charging systems for batteries, ultracapacitors, supercapacitors or double-layer capacitors in road transportation in general [Y02T 10/92](#)-)
- U Y02T 90/00 **Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation**
- Y02T 90/10
 - Technologies related to electric vehicle charging (not used, see subgroups)
- U Y02T 90/16
 - • Information or communication technologies improving the operation of electric vehicles

- Y02T 90/167
- • • Systems integrating technologies related to power network operation and communication or information technologies for supporting the interoperability of electric or hybrid vehicles, i.e. smartgrids as interface for battery charging of electric and hybrid vehicles (-power aggregation of HEV or EV [Y02E 60/721](#)-)(not used, see subgroups)

NOTE

Documents tagged under [Y02T 90/167](#) are concurrently tagged also under [Y04S 30/10](#)

- Y02T 90/30
- Application of fuel cell technology to transportation (not used, see subgroups)
- Y02T 90/40
- Application of hydrogen technology to transportation (-[Y02T 90/30](#) takes precedence-)(not used, see subgroups)

Project: N/A (Y10)

Y10

TECHNICAL SUBJECTS COVERED BY FORMER USPC-CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS**Project: N/A (Y10T)**

N Y10T

TECHNICAL SUBJECTS COVERED BY FORMER US CLASSIFICATION**NOTE**

This subclass has been introduced in January 2015 in view of the CPC to accommodate for technical subjects formerly covered by USPC

N Y10T 16/00 -
Y10T 16/00**Former US Class 16 series**

N Y10T 16/00

Miscellaneous hardware [e.g., bushing, carpet fastener, caster, door closer, panel hanger, attachable or adjunct handle, hinge, window sash balance, etc.]

N Y10T 16/05

• Bushing

N Y10T 16/063

- • Providing a restricted or insulated environment [i.e., sealable] for internal elements

N Y10T 16/075

• • Bung or tap

N Y10T 16/082

• • • Threaded

N Y10T 16/088

• • Providing strain relief

N Y10T 16/10

• Carpet fasteners

N Y10T 16/104

• • Combined fasteners and stretchers

N Y10T 16/109

• • Hook

N Y10T 16/113

• • Moldings

N Y10T 16/118

• • Rug

N Y10T 16/122

• • Stair

N Y10T 16/124

• • • Risers

N Y10T 16/125

• • • Rods

N Y10T 16/126

• • • • Catches

N Y10T 16/1263

• • • • • Sliding

N Y10T 16/1267

• • • • • Swinging

N Y10T 16/127

• • Sliding

N Y10T 16/131

• • Strips

N Y10T 16/134

• • Swinging

N Y10T 16/14

• Carpet stiffener or anti-slip device, per se

N	Y10T 16/18	· Casters
N	Y10T 16/182	· · Adjustable
N	Y10T 16/184	· · Wheels
N	Y10T 16/1847	· · · Antifrictionally mounted
N	Y10T 16/1853	· · · Multiple
N	Y10T 16/1857	· · · · Antifrictionally swivelled
N	Y10T 16/186	· · Antifrictionally swivelled
N	Y10T 16/1867	· · · Ball
N	Y10T 16/1873	· · · Cylinder
N	Y10T 16/1877	· · · · Pivoted
N	Y10T 16/188	· · Ball
N	Y10T 16/1887	· · · Antifrictionally mounted
N	Y10T 16/1889	· · · · Ball
N	Y10T 16/1891	· · · · Cylinder
N	Y10T 16/1893	· · · Pivoted
N	Y10T 16/19	· · Bracket supports
N	Y10T 16/191	· · Detachable
N	Y10T 16/193	· · Leg elevators
N	Y10T 16/1937	· · · Sliding
N	Y10T 16/1943	· · · Swinging
N	Y10T 16/195	· · Locked
N	Y10T 16/196	· · · Shimmy dampening
N	Y10T 16/197	· · Lubricators
N	Y10T 16/199	· · Pintles
N	Y10T 16/201	· · Pintle retainers
N	Y10T 16/202	· · · Frame
N	Y10T 16/203	· · Frame
N	Y10T 16/204	· · · Single leg frame or fork
N	Y10T 16/205	· · Rigid wheel supports
N	Y10T 16/207	· · Scrapers
N	Y10T 16/209	· · Sliding
N	Y10T 16/21	· · · for tubular leg
N	Y10T 16/211	· · Sockets
N	Y10T 16/212	· · Spring supported
N	Y10T 16/214	· · Inclined axle
N	Y10T 16/216	· · Caster guard
N	Y10T 16/218	· · Obstruction climbing aid
N	Y10T 16/22	· Thermally released check or closer
N	Y10T 16/27	· Checks and closers
N	Y10T 16/276	· · Liquid
N	Y10T 16/2766	· · · Concentric spring chamber
N	Y10T 16/2769	· · · · Cam
N	Y10T 16/2771	· · · Hinge
N	Y10T 16/2774	· · · · Floor pivot

N	Y10T 16/2777	. . . Multiple piston
N	Y10T 16/2782	. . . Oscillating cylinder
N	Y10T 16/2788	. . . Oscillating piston
N	Y10T 16/2793	. . . Side spring chamber
N	Y10T 16/2796	. . . . Cam
N	Y10T 16/2799	. . . Spring and flexible link
N	Y10T 16/2804	. . . Spring and gear
N	Y10T 16/281	. . Pneumatic
N	Y10T 16/282	. . . Flexible link
N	Y10T 16/283	. . . Hinge
N	Y10T 16/285	. . . Spring and gear
N	Y10T 16/286	. . . Spring and lever
N	Y10T 16/287	. . Spring and flexible link
N	Y10T 16/293	. . Spring and gear
N	Y10T 16/299	. . Spring and lever
N	Y10T 16/304	. . Hinge
N	Y10T 16/31	. Gate hangers
N	Y10T 16/33	. . Sliding and swinging
N	Y10T 16/35	. Panel hangers, travelers and/or tracks
N	Y10T 16/353	. . with flexible panel attaching means
N	Y10T 16/354	. . . Covered, hollow or slotted track
N	Y10T 16/3543	. . . . with antifriction means
N	Y10T 16/3545	. . . . . Wood track
N	Y10T 16/3547	. . . . Wood track
N	Y10T 16/355	. . . with antifriction means
N	Y10T 16/356	. . Ball
N	Y10T 16/359	. . Cylinder
N	Y10T 16/361	. . Guide brackets
N	Y10T 16/364	. . Guide rollers
N	Y10T 16/367	. . Link and lever
N	Y10T 16/37	. . Sliding shoe
N	Y10T 16/372	. . . Drapery supports
N	Y10T 16/373	. . Track and bracket
N	Y10T 16/375	. . . Drapery supports
N	Y10T 16/376	. . Covered, hollow or slotted track
N	Y10T 16/377	. . . Wood
N	Y10T 16/378	. . . Drapery supports
N	Y10T 16/3785	. . . . Wood
N	Y10T 16/379	. . Tracks
N	Y10T 16/3797	. . . Drapery supports
N	Y10T 16/3803	. . . Laminated
N	Y10T 16/381	. . Wheel mounts
N	Y10T 16/3813	. . . Antifrictionally mounted wheels
N	Y10T 16/3816	. . . Door elevating

- N Y10T 16/3819 . . . Floor
- N Y10T 16/3822 . . . Reciprocating track
- N Y10T 16/3825 . . . Traveling wheel
- N Y10T 16/3828 . . . Swinging
- N Y10T 16/3831 . . . Swiveling
- N Y10T 16/3834 . . . Vertically adjustable
- N Y10T 16/3837 . . . Wheel and guide roller
- N Y10T 16/384 . . . Wheels
- N Y10T 16/387 . . . Overlapping doors, common track
- N Y10T 16/39 . . . Ferrules, rings, and thimbles
- N Y10T 16/42 . . . Ring ferrules
- N Y10T 16/44 . . . Handle, handle component, or handle adjunct
- N Y10T 16/444 . . . having receptacle within
- N Y10T 16/447 . . . for plow
- N Y10T 16/451 . . . Length adjustable pull handle for luggage or luggage cart [e.g., wheeled suitcase handle, etc.]
- N Y10T 16/455 . . . Luggage-type [loop style] handgrip for carrying [e.g., suitcase, handbag, briefcase, shopping bag, package, etc.]
- N Y10T 16/4554 . . . Extensible handle
- N Y10T 16/4559 . . . Detachable handle
- N Y10T 16/4563 . . . Welded or adhesively attached handle
- N Y10T 16/4567 . . . Swinging handle
- N Y10T 16/4569 with means permanently connecting the handle to a carried article
- N Y10T 16/4571 with means permanently connecting the handle to a carried article
- N Y10T 16/4576 with carrier handle including a user enhanced grip attachment
- N Y10T 16/458 . . . Door handle
- N Y10T 16/459 Detachable handle
- N Y10T 16/46 Knob type
- N Y10T 16/462 . . . Drawer pull
- N Y10T 16/4628 Lift
- N Y10T 16/4636 Knob type
- N Y10T 16/464 Swinging
- N Y10T 16/4644 Loop type
- N Y10T 16/4652 Ring type
- N Y10T 16/466 . . . Handle having mounted grip means [e.g., bicycle handlebar grips, etc.]
- N Y10T 16/469 . . . Detachable handle
- N Y10T 16/4696 for battery
- N Y10T 16/4701 for casket
- N Y10T 16/4707 for container
- N Y10T 16/4713 Auxiliary handle
- N Y10T 16/4719 Extension
- N Y10T 16/4724 Cord or rope related
- N Y10T 16/473 . . . Extensible handle

- N Y10T 16/476
 - • *Handle with ergonomic structure [e.g., finger engagement structure such as indents, grooves, etc.] and handle user-interaction [human engineering] enhancements such as improved handle dimensions and handle positioning*
- N Y10T 16/48
 - *Insulated handle*
- N Y10T 16/484
 - • *Handwheel*
- N Y10T 16/487
 - • *Knob type*
- N Y10T 16/491
 - • *Wire type*
- N Y10T 16/495
 - • *Unshaped or unattached pad*
- N Y10T 16/498
 - • *Bar-type handle*
- N Y10T 16/499
 - • • *for lawnmower*
- N Y10T 16/50
 - • • *Swinging*
- N Y10T 16/501
 - • • • *Casket handle*
- N Y10T 16/502
 - • *Braced handle*
- N Y10T 16/506
 - • *Knob-type handle*
- N Y10T 16/508
 - • • *with flexible suspending means*
- N Y10T 16/509
 - • *Lift*
- N Y10T 16/513
 - • *Loop-type handle*
- N Y10T 16/515
 - • • *Swinging*
- N Y10T 16/516
 - • *Ring-type handle*
- N Y10T 16/52
 - *Hinge*
- N Y10T 16/521
 - • *including frangible or fusible portion*
- N Y10T 16/522
 - • *with diverse art portion or attachment*
- N Y10T 16/524
 - • *Ball and socket*
- N Y10T 16/525
 - • *Pliant or elastic hinge*
- N Y10T 16/5253
 - • • *Metallic*
- N Y10T 16/5257
 - • • *Snap or X hinge*
- N Y10T 16/526
 - • *Eyeglass hinge*
- N Y10T 16/527
 - • *Retractable pintle*
- N Y10T 16/5275
 - • • *Latch hinge*
- N Y10T 16/528
 - • *Latch hinge*
- N Y10T 16/5285
 - • • *Resilient securing means*
- N Y10T 16/529
 - • *including lever for shifting one member of hinge relative to another*
- N Y10T 16/531
 - • *having staggered leaves*
- N Y10T 16/532
 - • *including adjustment for changing relative orientation of hinged members*
- N Y10T 16/5321
 - • • *having plural independent adjustments*
- N Y10T 16/5322
 - • • • *All rectilinear*
- N Y10T 16/53225
 - • • • • *including screw-operated means to move hinged members*
- N Y10T 16/5323
 - • • *Pivotal adjustment*
- N Y10T 16/53235
 - • • • *including screw-operated means to move hinged members*
- N Y10T 16/53238
 - • • • • *About hinge axis*
- N Y10T 16/5324
 - • • *including means to move hinged members*
- N Y10T 16/53247
 - • • • *Along or parallel to hinge axis*
- N Y10T 16/5325
 - • • • • *including threaded hinge pin*
- N Y10T 16/53253
 - • • • *Screw-operated*
- N Y10T 16/53257
 - • • • • *to shift plate toward or away from hinged member*

- N Y10T 16/5326 . . . *having adjustable spacer between leaf and hinged member [e.g., shim]*
- N Y10T 16/5327 . . . *Adjustable along or parallel to hinge axis*
- N Y10T 16/5329 . . . *having interdigitated surfaces or slot for hinge-to-member fastener*
- N Y10T 16/533 . . . *having cover*
- N Y10T 16/5335 . . . *Leaf cover*
- N Y10T 16/534 . . . *having clamp for attaching hinge to hinged member*
- N Y10T 16/5345 . . . *Circumferential clamp*
- N Y10T 16/535 . . . *having means to facilitate assembly and disassembly of hinge sections to join or disjoin hinged members*
- N Y10T 16/5353 . . . *Resiliently biased hinge*
- N Y10T 16/5355 *having helical spring along hinge axis*
- N Y10T 16/5357 . . . *Resiliently biased retaining means*
- N Y10T 16/5358 *having discrete latch and spring to slide or pivot latch*
- N Y10T 16/5359 *Discrete retaining means for pivotal contacting surfaces*
- N Y10T 16/536 . . . *Separation of pivotal contacting surfaces*
- N Y10T 16/53605 *having movable or removable connector*
- N Y10T 16/53607 *Pintle removable from remainder of hinge*
- N Y10T 16/536075 *and additional connector for pintle or separate pintle sections*
- N Y10T 16/53608 *Screw-threaded connector*
- N Y10T 16/5361 *Axially shifting hinge sections*
- N Y10T 16/53613 *At specific angular orientation of hinge sections*
- N Y10T 16/53615 *Hook and pin*
- N Y10T 16/5362 *Hook in aperture*
- N Y10T 16/53625 *Hook to hook*
- N Y10T 16/5363 . . . *and discrete movable or removable connector to fasten one hinge section to another*
- N Y10T 16/5367 . . . *by relatively sliding connection [e.g., dovetail]*
- N Y10T 16/5369 *including receiving connector attachable to hinged member*
- N Y10T 16/537 . . . *having means to reduce friction between hinge parts*
- N Y10T 16/5373 . . . *by fluid lubricant*
- N Y10T 16/5377 . . . *Ball or roller bearing*
- N Y10T 16/5379 *Circularly distributed balls or rollers*
- N Y10T 16/538 . . . *Resiliently biased hinge*
- N Y10T 16/5381 . . . *including means to render spring ineffective through all or a portion of swing*
- N Y10T 16/53815 *comprising manipulatable element or portion*
- N Y10T 16/5382 . . . *Biased from either direction toward neutral position [e.g., double acting]*
- N Y10T 16/53822 *Helical spring transverse to hinge axis*
- N Y10T 16/53824 *Plural hinge axes [e.g., multiple pintle]*
- N Y10T 16/53825 *and barrels for helical springs on separate axes*
- N Y10T 16/53826 *Resiliently biased rolling or sliding cam surface*
- N Y10T 16/53828 *by helical spring along hinge axis*
- N Y10T 16/5383 . . . *having transverse helical spring or elastic strip*
- N Y10T 16/53832 *Plural hinge axes [e.g., multiple pintle]*
- N Y10T 16/53833 *Four or more axes*

- N Y10T 16/53834 to counterbalance weight of hinged member [e.g., closure biased to open position]
- N Y10T 16/53835 including pivoted coaxial spring retaining bar
- N Y10T 16/53836 Over-center spring or linkage travel [e.g., "holdback hinge"]
- N Y10T 16/53838 having means to hold hinged members against pivotal movement about hinge axis [i.e., catch]
- N Y10T 16/5384 . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
- N Y10T 16/53843 Plural hinge axes
- N Y10T 16/53845 Coil spring having axis along or parallel to hinge axis
- N Y10T 16/53848 including camming or sliding surface to deflect spring perpendicularly to the hinge axis
- N Y10T 16/5385 . . . having means to hold hinged members against pivotal movement about hinge axis [e.g., catch]
- N Y10T 16/5386 . . . having force adjustment
- N Y10T 16/53862 Rotatable spring-engaging collar
- N Y10T 16/538627 having detention aperture or protuberance
- N Y10T 16/538633 having tool-receiving aperture
- N Y10T 16/53864 . . . Plural hinge axes [e.g., multiple pintle]
- N Y10T 16/5387 . . . having axially biased camming surface
- N Y10T 16/5388 . . . Coil
- N Y10T 16/53883 Plural coils
- N Y10T 16/53885 to counterbalance weight of hinged member [e.g., horizontal closure biased to open position]
- N Y10T 16/53888 On pintle
- N Y10T 16/5389 . . . torsion spring
- N Y10T 16/539 . . . Gravitating hinge having vertical axis
- N Y10T 16/5393 . . . having lift rod
- N Y10T 16/5395 . . . having plural spaced hinge axes
- N Y10T 16/5398 . . . including cam surface and follower
- N Y10T 16/53984 and rolling element
- N Y10T 16/53985 Between opposing surfaces
- N Y10T 16/53987 and detent in cam surface
- N Y10T 16/53988 On axially twisted or helically fluted element
- N Y10T 16/53992 including means to hold hinged members against pivotal movement
- N Y10T 16/53996 having aperture for slidably receiving pintle [e.g., camming knuckle]
- N Y10T 16/54 . . . including means to hold or retard hinged members against pivotal movement [e.g., catch]
- N Y10T 16/5401 . . . Magnetic
- N Y10T 16/5402 . . . Resiliently biased catch
- N Y10T 16/54021 having spring force adjustment
- N Y10T 16/54023 including toggle linkage
- N Y10T 16/54024 having discrete manipulatable release means [e.g., lever]
- N Y10T 16/540243 including cam or eccentric
- N Y10T 16/540247 Sliding release means or lever-actuated sliding catch
- N Y10T 16/54025 Sliding
- N Y10T 16/540253 Movement along or parallel to hinge axis

- N Y10T 16/540254 *Interdigitated or plural sockets*
- N Y10T 16/540255 *Opposed interdigitated sliding collars on hinge axis*
- N Y10T 16/540256 *and catch receiving socket*
- N Y10T 16/540257 *and catch receiving socket*
- N Y10T 16/54026 *Pivoted*
- N Y10T 16/54028 *Plural alternately useable detents*
- N Y10T 16/54029 *Spring arm*
- N Y10T 16/540295 *Plural opposed arms*
- N Y10T 16/5403 *by friction*
- N Y10T 16/54033 *Screw-threaded adjustment*
- N Y10T 16/54034 *Along or parallel to hinge axis*
- N Y10T 16/540345 *Threaded pintle*
- N Y10T 16/54035 *Cam or wedge actuator*
- N Y10T 16/54038 *On hinge pin or between surfaces surrounding hinge axis*
- N Y10T 16/5404 *Pivoted*
- N Y10T 16/54044 *Plural alternately useable detents*
- N Y10T 16/54048 *and sliding*
- N Y10T 16/54052 *Serially connected pivoted arms between leaves [e.g., brace]*
- N Y10T 16/54056 *About axis along or parallel to hinge axis*
- N Y10T 16/5406 *by transversely moving pin in slot*
- N Y10T 16/5407 *having discrete manipulatable release means [e.g., lever operated]*
- N Y10T 16/5408 *by shifting hinged members*
- N Y10T 16/54085 *Along hinge axis*
- N Y10T 16/5409 *Sliding*
- N Y10T 16/54095 *Along or parallel to hinge axis*
- N Y10T 16/541 *including toothed gear*
- N Y10T 16/542 *comprising nested open curved portions attached to hinged members*
- N Y10T 16/543 *including hinge pin*
- N Y10T 16/544 *including transversely moving pin in slot*
- N Y10T 16/5443 *Plural noncollinear pins and slots*
- N Y10T 16/5444 *Parallel slots*
- N Y10T 16/5445 *having pin fixed to pivoted arm or plate*
- N Y10T 16/5448 *Hinge pin movable along slot*
- N Y10T 16/545 *including sliding surfaces to permit relative translation of hinged members*
- N Y10T 16/5453 *and stop or abutment for pivotal movement*
- N Y10T 16/5457 *Movement transverse to hinge axis*
- N Y10T 16/546 *Three-hinged members*
- N Y10T 16/547 *having plural hinge axes [e.g., multiple pintle]*
- N Y10T 16/5472 *having transverse or skewed axes*
- N Y10T 16/5474 *Connected by serially arranged pivoted links between hinged members*
- N Y10T 16/5475 *Plural sets of serially arranged pivoted links*
- N Y10T 16/5476 *Four or more axes*
- N Y10T 16/5478 *including stop or latch*
- N Y10T 16/548 *including laminated leaf*

- N Y10T 16/549 • • *Wire hinge*
- N Y10T 16/551 • • *having stop or abutment*
- N Y10T 16/5513 • • • *Adjustable or resilient*
- N Y10T 16/5515 • • • *comprising relieved axially opposed relatively rotating surfaces*
- N Y10T 16/5518 • • • *comprising platelike bearing portion curved about hinge axis*
- N Y10T 16/552 • • *Hinge axis passes through hinged member [e.g., floor hinge]*
- N Y10T 16/5525 • • • *Pintle or pivot concealed in hinged member*
- N Y10T 16/553 • • *including means to retain pintle in hinge [e.g., tamper proof, nonrising pintle, etc.]*
- N Y10T 16/5535 • • • *Threaded or slotted pintle or knuckle*
- N Y10T 16/554 • • *including means to fasten leaf to member*
- N Y10T 16/5543 • • • *by expandable connector*
- N Y10T 16/5547 • • • *Self-penetrating fastener*
- N Y10T 16/555 • • *Specified material*
- N Y10T 16/557 • • *Specific pintle structure*
- N Y10T 16/558 • • *Specific leaf structure*
- N Y10T 16/559 • • *having prongs or cooperating structure on leaf*
- N Y10T 16/5595 • • • *Angular leaf sections*
- N Y10T 16/55963 • • • • *Parallel sections*
- N Y10T 16/55975 • • • • *Coplanar sections*
- N Y10T 16/55988 • • • • *including planar section perpendicular to hinge axis*
- N Y10T 16/56 • *Closers*
- N Y10T 16/568 • • *Spring and flexible link*
- N Y10T 16/577 • • *Spring and gear*
- N Y10T 16/585 • • *Spring and lever*
- N Y10T 16/593 • • *Spring*
- N Y10T 16/595 • • • *Bow*
- N Y10T 16/597 • • • *Rubber*
- N Y10T 16/599 • • • *torsional*
- N Y10T 16/5995 • • • • *Coil*
- N Y10T 16/60 • • • *Volute*
- N Y10T 16/602 • • *Weight*
- N Y10T 16/61 • *Closure checks*
- N Y10T 16/615 • • *Inertia*
- N Y10T 16/62 • • *Pneumatic*
- N Y10T 16/625 • • *Spring*
- N Y10T 16/628 • • • *Rubber*
- N Y10T 16/6285 • • • • *Rubber cushioned*
- N Y10T 16/629 • • • • *Multiple or opposed buffer surfaces*
- N Y10T 16/6295 • • • • *Link type*
- N Y10T 16/6298 • *Sash balances*
- N Y10T 16/63 • • *Cord and counterweight*
- N Y10T 16/635 • • *Sash and cord*
- N Y10T 16/64 • • *Spring*

N	Y10T 16/641	. . . Drum and cord
N	Y10T 16/642	. . . Friction roller
N	Y10T 16/643	. . . Lever
N	Y10T 16/644	. . . Rack and pinion
N	Y10T 16/645	. . Rack and pinion
N	Y10T 16/65	. Sash-cord fasteners
N	Y10T 16/655	. . Bendable
N	Y10T 16/66	. . Chain
N	Y10T 16/665	. . Clamps
N	Y10T 16/67	. . Hooks
N	Y10T 16/675	. . Knot
N	Y10T 16/68	. . Slack-cord holders
N	Y10T 16/685	. . Weight
N	Y10T 16/69	. Sash-cord guides
N	Y10T 16/698	. . Wheel and casing
N	Y10T 16/706	. . Casings
N	Y10T 16/71	. . . Sheet metal, single piece
N	Y10T 16/714	. . Multiple wheel
N	Y10T 16/722	. . Sliding
N	Y10T 16/73	. Sash weights
N	Y10T 16/743	. . Composite
N	Y10T 16/755	. . Sectional
N	Y10T 16/767	. . Weight and wheel
N	Y10T 16/78	. Window-bead fasteners
N	Y10T 16/82	. Counterbalance device, per se
N	Y10T 16/84	. . Spring
N	Y10T 16/86	. Door escutcheon or similar element
N	Y10T 16/90	. Paper weight
N	Y10T 16/95	. Miscellaneous element or attachment
N	Y10T 24/00 - Y10T 24/00	<u>Former US Class 24 series</u>
N	Y10T 24/00	Buckles, buttons, clasps, etc.
N	Y10T 24/10	. Miscellaneous
N	Y10T 24/11	. Album fasteners
N	Y10T 24/12	. Gun band type
N	Y10T 24/13	. Article holder attachable to apparel or body
N	Y10T 24/1303	. . Chatelaine safety hooks
N	Y10T 24/1306	. . Flower
N	Y10T 24/1309	. . . Pin attached
N	Y10T 24/1312	. . Napkin
N	Y10T 24/1315	. . . Hook
N	Y10T 24/1318	. . . Neck enclosing
N	Y10T 24/1321	. . Pencil
N	Y10T 24/1324	. . . Clasp attached

- N Y10T 24/1326 Finger ear, belt attached pencil holder
- N Y10T 24/1329 Pencil holder with paper clip
- N Y10T 24/1332 Combined and convertible pencil holder
- N Y10T 24/1335 Container type pencil holder
- N Y10T 24/1338 Separate pencil holder and pocket engaging clip
- N Y10T 24/1341 Sliding jaw pencil holding clip
- N Y10T 24/1344 Wire pencil holder
- N Y10T 24/1347 Flexible shank pencil holder
- N Y10T 24/135 with movable catch [e.g., pin pivoted lever, roller, etc.]
- N Y10T 24/1353 Pivoted jaw pencil holder
- N Y10T 24/1356 Pin attached
- N Y10T 24/1359 Rule holder
- N Y10T 24/1362 . . Sleeve holder [e.g., for inner coat]
- N Y10T 24/1365 . . Pin attached
- N Y10T 24/1368 . . Arm or leg carried holder
- N Y10T 24/1371 . . Eyeglass holder including retaining means
- N Y10T 24/1374 . . Neck supported holder
- N Y10T 24/1376 . . Holder contains pocket engager [e.g., antitheft device, wallet protector]
- N Y10T 24/1379 . . Key ring holder
- N Y10T 24/1382 . . Receptacle type holder
- N Y10T 24/1385 . . Eyeglass or spectacle case
- N Y10T 24/1388 . . Open-ended holster type holder
- N Y10T 24/1391 . . Article held by clip with spring [e.g., leaf, coil] member
- N Y10T 24/1394 . . Article held by clip
- N Y10T 24/1397 . . Article held by flexible connector [e.g., chain]
- N Y10T 24/14 . . Bale and package ties, hose clamps
- N Y10T 24/1402 . . Packet holders
- N Y10T 24/1404 Cord
- N Y10T 24/1406 Adjustable bands
- N Y10T 24/1408 Closed loops
- N Y10T 24/141 Plastic bands
- N Y10T 24/1412 . . with tighteners
- N Y10T 24/1414 Wedge
- N Y10T 24/1416 Winder
- N Y10T 24/1418 Self-locking [dead center or snap action]
- N Y10T 24/142 Adjustable girth
- N Y10T 24/1422 Rack bar
- N Y10T 24/1424 Lever
- N Y10T 24/1427 Worm and tooth
- N Y10T 24/1429 Pivotal worm band clamp
- N Y10T 24/1431 Radial worm band clamp
- N Y10T 24/1433 Integral thread
- N Y10T 24/1435 External thread
- N Y10T 24/1437 Both ends threaded

N	Y10T 24/1439	. . . Radial screw
N	Y10T 24/1441	. . . Tangential screw
N	Y10T 24/1443	. . . . Adjustable girth
N	Y10T 24/1445	. . . . . Step adjustment
N	Y10T 24/1447	. . . . . Plural separable parts
N	Y10T 24/1449	. . . . Wire
N	Y10T 24/1451	. . . . Plural separable parts
N	Y10T 24/1453	. . . . Pivotal strap parts
N	Y10T 24/1455	. . . . Plural wrap
N	Y10T 24/1457	. . Metal bands
N	Y10T 24/1459	. . . Separate connections
N	Y10T 24/1461	. . . . One piece
N	Y10T 24/1463	. . . . . Sheet metal
N	Y10T 24/1465	. . . . . Buckle band connection
N	Y10T 24/1467	. . . . . Swedged sheet metal band connection
N	Y10T 24/1469	. . . . . End-to-end integral with band connecting means
N	Y10T 24/1471	. . . . Pivoted parts
N	Y10T 24/1473	. . . . Wedging parts
N	Y10T 24/1476	. . . . Wire
N	Y10T 24/1478	. . . Circumferentially swagged band clamp
N	Y10T 24/148	. . . End-to-end integral band end connection
N	Y10T 24/1482	. . . Ratchet and tool tightened band clamp
N	Y10T 24/1484	. . . Spring closed band clamp
N	Y10T 24/1486	. . . Screw locked band clamp
N	Y10T 24/1488	. . . Swedged to lock band ends
N	Y10T 24/149	. . Wire
N	Y10T 24/1492	. . . Separate connections
N	Y10T 24/1494	. . . . Wire
N	Y10T 24/1496	. . Wooden bands
N	Y10T 24/1498	. . Plastic band
N	Y10T 24/15	. Bag fasteners
N	Y10T 24/152	. . Swedged bag tie
N	Y10T 24/153	. . Plastic band bag tie
N	Y10T 24/155	. . Resilient slot bag tie
N	Y10T 24/157	. . Twist-to-close bag tie
N	Y10T 24/158	. . Slides to lock bag end within housing
N	Y10T 24/16	. Belt fasteners
N	Y10T 24/1604	. . Tighteners
N	Y10T 24/1608	. . Hinged
N	Y10T 24/1612	. . . Ring connected belt ends
N	Y10T 24/1616	. . . Bent over flanged ends
N	Y10T 24/162	. . . Pintle pin connected belt ends
N	Y10T 24/1624	. . . V and round belts
N	Y10T 24/1628	. . . Overlapped belt ends

N	Y10T 24/1632	. . . Sheet metal knuckles, common pintle
N	Y10T 24/1636	. . . Wire knuckles, common pintle
N	Y10T 24/164	. . . Knuckle integral with belt material
N	Y10T 24/1644	. . . Multiple pintles interconnected V-belt type
N	Y10T 24/1648	. . Lacing
N	Y10T 24/1652	. . One piece
N	Y10T 24/1656	. . . Deflecting prong
N	Y10T 24/166	. . Screw clamp
N	Y10T 24/1664	. . Splices
N	Y10T 24/1668	. . Wire
N	Y10T 24/1672	. . Butt connected belt ends
N	Y10T 24/1676	. . V, round, trapezoidal belts
N	Y10T 24/168	. . Flanged belt ends, connector hold ends
N	Y10T 24/1684	. . Lapped ends of endless belts
N	Y10T 24/1688	. . Hinged ends of endless belts
N	Y10T 24/1692	. . Wire strands reinforce belts
N	Y10T 24/1696	. . Hook and loop type fastener and zipper belt end connection
N	Y10T 24/17	. Buttoners
N	Y10T 24/18	. Cuff holder
N	Y10T 24/181	. . Adjustable
N	Y10T 24/183	. . Sleeve clasp and button for cuff
N	Y10T 24/184	. . Sleeve clasp and clasp for cuff
N	Y10T 24/185	. . Sleeve clasp and hook for cuff
N	Y10T 24/186	. . Sleeve clasp and pin for cuff
N	Y10T 24/188	. . Sleeve pin and button for cuff
N	Y10T 24/189	. . Pin fastener
N	Y10T 24/19	. Necktie fastener
N	Y10T 24/1903	. . Bands
N	Y10T 24/1907	. . . End-securing pin
N	Y10T 24/191	. . . Gripping
N	Y10T 24/1914	. . . Depressors
N	Y10T 24/1917	. . . . Button engaging
N	Y10T 24/1921	. . . . Pin or spur
N	Y10T 24/1924	. . Button engaging
N	Y10T 24/1928	. . . Adjustable
N	Y10T 24/1931	. . . Cord loop
N	Y10T 24/1934	. . . Pivoted or sliding jaw
N	Y10T 24/1938	. . . Pin attached
N	Y10T 24/1941	. . Collar button combined
N	Y10T 24/1945	. . . Clasp attached
N	Y10T 24/1948	. . . Pin attached
N	Y10T 24/1952	. . . Separable fastener
N	Y10T 24/1955	. . Tie, attached hook
N	Y10T 24/1959	. . Magnetic, adhesive, or snap type fastener connects tie to shirt

- N Y10T 24/1962 . . Tie engaging loop with shirt engaging fastener
- N Y10T 24/1966 . . Tie knot engaging and collar attaching
- N Y10T 24/1969 . . Tie clip and shirt clasp attaching
- N Y10T 24/1972 . . Tie clip and fastening pin
- N Y10T 24/1976 . . Tie pin with shirt fastener
- N Y10T 24/1979 . . Tie stiffener with shirt fastener
- N Y10T 24/1983 . . with pivotal jaws having spring means
- N Y10T 24/1986 . . Slider
- N Y10T 24/199 . . Ornamental
- N Y10T 24/1993 . . . Key shaped
- N Y10T 24/1997 . . Resilient clasp
- N Y10T 24/20 . . Paper fastener
- N Y10T 24/201 . . with screw threaded or notch engaging securing means
- N Y10T 24/202 . . Resiliently biased
- N Y10T 24/203 . . . including means to open or close fastener
- N Y10T 24/204 Pivotaly mounted on pintle
- N Y10T 24/205 . . . One piece
- N Y10T 24/206 Mounted on support means
- N Y10T 24/207 . . Adhesive
- N Y10T 24/208 . . Corner fastened
- N Y10T 24/209 . . Paper-penetrating
- N Y10T 24/21 . . Strap tighteners
- N Y10T 24/2102 . . Cam lever and loop
- N Y10T 24/2104 . . . Step adjusted
- N Y10T 24/2106 Ski boot and garment fasteners
- N Y10T 24/2108 Split ring tightener
- N Y10T 24/2109 Chain and rope tighteners
- N Y10T 24/2111 Tire chain tighteners
- N Y10T 24/2113 Strap tighteners
- N Y10T 24/2115 Jewelry
- N Y10T 24/2117 . . . Strap tighteners
- N Y10T 24/2119 . . . Tie chain tighteners
- N Y10T 24/2121 . . . Cargo tie down
- N Y10T 24/2123 . . . Cover fasteners
- N Y10T 24/2125 . . . Chain tighteners
- N Y10T 24/2126 . . . Strap tightener machine
- N Y10T 24/2128 . . . toggle actuated sliding jaw
- N Y10T 24/213 . . . Jewelry
- N Y10T 24/2132 . . . Split ring with tightener
- N Y10T 24/2134 . . . Concrete form panels
- N Y10T 24/2136 . . . Seat belt buckles
- N Y10T 24/2138 . . . Chain, cable, wire tighteners, and anchors
- N Y10T 24/214 . . . Envelope fasteners
- N Y10T 24/2142 . . . Ski boot and garment fasteners

- N Y10T 24/2143 • • *Strap-attached folding lever*
- N Y10T 24/2145 • • • *toggle latch*
- N Y10T 24/2147 • • • *Strap tightener*
- N Y10T 24/2149 • • • *Tire antiskid strap tightener*
- N Y10T 24/2151 • • • *Seat belts*
- N Y10T 24/2153 • • • *Split ring fasteners*
- N Y10T 24/2155 • • • *Jewelry-watch straps*
- N Y10T 24/2157 • • • *Tie downs [covers, articles]*
- N Y10T 24/2158 • • • *Cable, wire, rope tightener*
- N Y10T 24/216 • • • *Ski boot and garment fasteners*
- N Y10T 24/2162 • • • *Dress hem raisers*
- N Y10T 24/2164 • • *Midline*
- N Y10T 24/2166 • • *Jewelry*
- N Y10T 24/2168 • • *Seat belt*
- N Y10T 24/217 • • *Accordion straps*
- N Y10T 24/2172 • • *Parallel poles clamp*
- N Y10T 24/2174 • • *form panels for walls*
- N Y10T 24/2175 • • *Cargo tie down*
- N Y10T 24/2177 • • *Chain tighteners*
- N Y10T 24/2179 • • *Split band with tightener*
- N Y10T 24/2181 • • *Tire chain tighteners*
- N Y10T 24/2183 • • *Ski, boot, and shoe fasteners*
- N Y10T 24/2185 • • *Fixed jaw with sliding or pivoted jaw*
- N Y10T 24/2187 • • *Rack and pinion and circular tighteners*
- N Y10T 24/2189 • • *Circular flange container clamp*
- N Y10T 24/2191 • • *Strap stretching tools, tighteners, and sealers*
- N Y10T 24/2192 • • *Buckle type*
- N Y10T 24/2194 • • *Integral piece*
- N Y10T 24/2196 • • *toggle*
- N Y10T 24/2198 • • *Stocking top*
- N Y10T 24/22 • *Trouser guards, clips, straps [e.g., above shoetops]*
- N Y10T 24/23 • *Bedclothes holders*
- N Y10T 24/24 • *T-head nongripping, fabric engaging type*
- N Y10T 24/25 • *Zipper or required component thereof*
- N Y10T 24/2502 • • *Plural zippers*
- N Y10T 24/2504 • • • *Zipper chain*
- N Y10T 24/2505 • • • *having surface sealing structure*
- N Y10T 24/2507 • • *having slider or interconnected sliders with access opening for diverse-art member*
- N Y10T 24/2509 • • *Plural independently movable sliders*
- N Y10T 24/2511 • • *with distinct, stationary means for anchoring slider*
- N Y10T 24/2513 • • • *and for aligning surfaces or obstructing slider movement*
- N Y10T 24/2514 • • *with distinct member for sealing surfaces*
- N Y10T 24/2516 • • *with distinct separable-fastener*

- N Y10T 24/2518 . . . having coiled or bent continuous wire interlocking surface
- N Y10T 24/252 with stringer tape interwoven or knitted therewith
- N Y10T 24/2521 with stringer tape having specific weave or knit pattern
- N Y10T 24/2523 with core encircled by coils or bends
- N Y10T 24/2525 with mounting portion having structural formations complementary to stitching
- N Y10T 24/2527 Attached by stitching
- N Y10T 24/2529 String or stringer tape having distinctive property [e.g., heat sensitive]
- N Y10T 24/253 with stringer tape having distinctive property [e.g., heat sensitive]
- N Y10T 24/2532 . . . having interlocking surface with continuous cross section
- N Y10T 24/2534 Opposed interlocking surface having dissimilar cross section
- N Y10T 24/2536 . . . having interlocking surface formed from single member with varying cross section
- N Y10T 24/2538 Opposed surface having dissimilar cross section
- N Y10T 24/2539 . . . Interlocking surface constructed from plural elements in series
- N Y10T 24/2541 having either noninterlocking element in, interrupted, or unequal length series
- N Y10T 24/2543 with element structural feature unrelated to interlocking or securing portion
- N Y10T 24/2545 Dissimilar opposed elements
- N Y10T 24/2546 Wire element
- N Y10T 24/2548 Preattached to mounting cord
- N Y10T 24/255 having interlocking portion with specific shape
- N Y10T 24/2552 including symmetrical formations on opposite walls for engaging mating elements
- N Y10T 24/2554 including complementary formations on opposite walls for engaging mating elements
- N Y10T 24/2555 Mating elements having reversed orientation of formations
- N Y10T 24/2557 having mounting portion with specific shape or structure
- N Y10T 24/2559 including embracing jaws
- N Y10T 24/2561 . . . Slider having specific configuration, construction, adaptation, or material
- N Y10T 24/2563 including relatively movable spaced wings [i.e., restraining walls]
- N Y10T 24/2564 including converging channel and relatively movable separator island
- N Y10T 24/2566 including position locking-means attached thereto
- N Y10T 24/2568 Protrusion on pull tab directly engaging interlocking surfaces
- N Y10T 24/257 having surface engaging element shifted by reorientation of pull tab
- N Y10T 24/2571 Resilient or spring biased element
- N Y10T 24/2573 Selectively shifted by either of two pull tabs
- N Y10T 24/2575 with relatively movable link
- N Y10T 24/2577 Biased by distinct spring
- N Y10T 24/2579 having aperture cooperating with guide post
- N Y10T 24/258 including means preventing bunching of structure-to-be-secured or stringer
- N Y10T 24/2582 having specific contour or arrangement of converging channel, separator island, or wing
- N Y10T 24/2584 Spaced segments of each wall of channel supported by different wings
- N Y10T 24/2586 including pull tab attaching means
- N Y10T 24/2588 including means for attaching components of slider together

- N Y10T 24/2589 • • • *with ornamental slider*
- N Y10T 24/2591 • • *with means for concealing surfaces*
- N Y10T 24/2593 • • *including complementary, aligning means attached to ends of interlocking surfaces*
- N Y10T 24/2595 • • • *having specific mounting connection or reinforcing structure at connection*
- N Y10T 24/2596 • • *including means attaching interlocking surfaces together*
- N Y10T 24/2598 • • *including means for obstructing movement of slider*
- N Y10T 24/26 • *Slit closing means including guides on opposite edges of slit and slidable bridging component*
- N Y10T 24/262 • • *with hand-actuated lever for shifting bridging component*
- N Y10T 24/264 • • *including structure linking and allowing variations in separation between opposite-guide-contacting portions of component*
- N Y10T 24/266 • • *having bridging components attached in series along carrying element*
- N Y10T 24/268 • • *having separate, independently movable, bridging components*
- N Y10T 24/27 • *including readily dissociable fastener having numerous, protruding, unitary filaments randomly interlocking with, and simultaneously moving towards, mating structure [e.g., hook-loop type fastener]*
- N Y10T 24/2708 • • *Combined with diverse fastener*
- N Y10T 24/2717 • • *with distinct structure for sealing securement joint*
- N Y10T 24/2725 • • *with feature facilitating, enhancing, or causing attachment of filament mounting surface to support therefor*
- N Y10T 24/2733 • • *having filaments formed from continuous element interwoven or knitted into distinct, mounting surface fabric*
- N Y10T 24/2742 • • *having filaments of varied shape or size on same mounting surface*
- N Y10T 24/275 • • *with feature facilitating or causing attachment of filaments to mounting surface*
- N Y10T 24/2758 • • • *Thermal or adhesive*
- N Y10T 24/2767 • • *having several, repeating, interlocking formations along length of filaments*
- N Y10T 24/2775 • • *having opposed structure formed from distinct filaments of diverse shape to those mating therewith*
- N Y10T 24/2783 • • *having filaments constructed from coated, laminated, or composite material*
- N Y10T 24/2792 • • *having mounting surface and filaments constructed from common piece of material*
- N Y10T 24/28 • *Freight container to freight container fastener*
- N Y10T 24/29 • *Drum or can spacer fastener*
- N Y10T 24/30 • *Trim molding fastener*
- N Y10T 24/301 • • *having externally threaded attaching means*
- N Y10T 24/302 • • • *and laterally extending biasing appendage*
- N Y10T 24/303 • • *having laterally extending biasing appendage*
- N Y10T 24/304 • • *Resilient metal type*
- N Y10T 24/306 • • • *Strip formed*
- N Y10T 24/307 • • • *Sheet metal formed*
- N Y10T 24/308 • • • *Wire formed*
- N Y10T 24/309 • • *Plastic type*
- N Y10T 24/31 • *Plural fasteners having intermediate flaccid connector*
- N Y10T 24/312 • • *Chain connector*
- N Y10T 24/314 • • *Elastic connector*

N	Y10T 24/316	. . . Strap connector
N	Y10T 24/318	. . Strap connector
N	Y10T 24/32	. having magnetic fastener
N	Y10T 24/33	. having adhesive fastener
N	Y10T 24/34	. Combined diverse multipart fasteners
N	Y10T 24/3401	. . Buckle
N	Y10T 24/3403	. . . and buckles
N	Y10T 24/3404	. . . . having separate material adjustment means
N	Y10T 24/3405	. . . . having separate disconnect means
N	Y10T 24/3407	. . . . . Pivotal lever type
N	Y10T 24/3408	. . . . having disconnect structure
N	Y10T 24/3409	. . . . . Resilient cooperating means
N	Y10T 24/3411	. . . . and pin
N	Y10T 24/3412	. . . . Crossed belt accommodating
N	Y10T 24/3413	. . . and clasp
N	Y10T 24/3415	. . . and pin
N	Y10T 24/3416	. . . and hook
N	Y10T 24/3417	. . . . having disconnect means
N	Y10T 24/3419	. . . . having penetrating prong
N	Y10T 24/342	. . . . Buckle having plural receiving slots
N	Y10T 24/3421	. . . including a button fastening element
N	Y10T 24/3423	. . . and separable fastening means for attached fastener
N	Y10T 24/3424	. . . . Snap fastener
N	Y10T 24/3425	. . . having roller means
N	Y10T 24/3427	. . Clasp
N	Y10T 24/3428	. . . having pivoted members
N	Y10T 24/3429	. . . . Cam type member
N	Y10T 24/3431	. . . . Plural clasps
N	Y10T 24/3432	. . . . . and toggle operator
N	Y10T 24/3433	. . . . . Spring biased
N	Y10T 24/3435	. . . . . . Coil
N	Y10T 24/3436	. . . . . and cam
N	Y10T 24/3437	. . . . . Coil spring biased
N	Y10T 24/3439	. . . Plural clasps
N	Y10T 24/344	. . . . Resilient type clasp
N	Y10T 24/3441	. . . . . and cam
N	Y10T 24/3443	. . . . . Spring biased jaw
N	Y10T 24/3444	. . . . . Circular work engageable
N	Y10T 24/3445	. . . . . and pin attachment
N	Y10T 24/3447	. . . . . and disconnect means
N	Y10T 24/3448	. . . including a button fastening element
N	Y10T 24/3449	. . . and hook
N	Y10T 24/3451	. . . . having intermediate connector allowing movement
N	Y10T 24/3452	. . . . . and adjustment means

- N Y10T 24/3453 *having gripping configuration on clasp jaw*
- N Y10T 24/3455 *Penetrating type*
- N Y10T 24/3456 *having cam*
- N Y10T 24/3457 *having separable jaws*
- N Y10T 24/3459 . . . *and penetrating prong*
- N Y10T 24/346 . . . *and pin*
- N Y10T 24/3461 *having separate pin loss prevention means*
- N Y10T 24/3463 *Pin coextensive, coplanar, and contiguous with clasp jaw*
- N Y10T 24/3464 *Pin coextensive, coplanar, and contiguous with clasp jaw*
- N Y10T 24/3465 *Pin forms part of clasp jaw*
- N Y10T 24/3467 . . *Pin*
- N Y10T 24/3468 . . . *and pin*
- N Y10T 24/3469 *and disconnect means*
- N Y10T 24/3471 *Hook and eye type*
- N Y10T 24/3472 *and hook*
- N Y10T 24/3473 *having connector allowing movement*
- N Y10T 24/3475 *having intermediate connector allowing movement*
- N Y10T 24/3476 . . . *and hook*
- N Y10T 24/3477 *having intermediate connector allowing movement*
- N Y10T 24/3479 *and adjustment means*
- N Y10T 24/348 *Hook having locking means*
- N Y10T 24/3481 . . . *including a button fastening element*
- N Y10T 24/3483 . . . *and penetrating prong*
- N Y10T 24/3484 . . *Hook*
- N Y10T 24/3485 . . . *and hook*
- N Y10T 24/3487 *having biasing spring*
- N Y10T 24/3488 *Separately connected*
- N Y10T 24/3489 *having securing means*
- N Y10T 24/3491 *Sliding*
- N Y10T 24/3492 *Snap type*
- N Y10T 24/3493 *Pivoted*
- N Y10T 24/3495 . . . *having penetrating prong*
- N Y10T 24/3496 . . . *including a button fastening element*
- N Y10T 24/3497 . . *Button fastening element including another fastener element*
- N Y10T 24/3499 . . *Penetrating prong*
- N Y10T 24/35 . . *Interchangeable button loop and pin*
- N Y10T 24/36 . . *Button with fastener*
- N Y10T 24/3602 . . *Loss-preventing devices*
- N Y10T 24/3604 . . *Adjustable*
- N Y10T 24/3606 . . *Cloth shanks and covers*
- N Y10T 24/3609 . . *Multiple attachment*
- N Y10T 24/3611 . . *Deflecting prong or rivet*
- N Y10T 24/3613 . . . *Anvil or plate*
- N Y10T 24/3615 . . . *Integral*

- N Y10T 24/3617 . . *Hinged leaf*
- N Y10T 24/3619 . . . *Axially rotating*
- N Y10T 24/3621 . . . *Double*
- N Y10T 24/3623 . . . *Sliding*
- N Y10T 24/3626 . . *Sliding bar*
- N Y10T 24/3628 . . *Integral or rigid stud*
- N Y10T 24/363 . . . *Bent sheet metal [integral]*
- N Y10T 24/3632 . . *Link*
- N Y10T 24/3634 . . . *Integral rubber button, extendable shank*
- N Y10T 24/3636 . . . *Extendably connected*
- N Y10T 24/3638 . . . *Pivoted leaf*
- N Y10T 24/364 . . . *Releasably locked*
- N Y10T 24/3643 . . . *French cuff*
- N Y10T 24/3645 . . . *Tufting*
- N Y10T 24/3647 . . . *Integral piece*
- N Y10T 24/3649 . . *Pin attached*
- N Y10T 24/3651 . . *Separable*
- N Y10T 24/3653 . . . *Screw*
- N Y10T 24/3655 . . . *Spring*
- N Y10T 24/3657 *Resilient head*
- N Y10T 24/366 *Resilient socket*
- N Y10T 24/3662 *Rotating head*
- N Y10T 24/3664 *with operating devices*
- N Y10T 24/3666 . . *Separate thread bar*
- N Y10T 24/3668 . . *Spiral fastener*
- N Y10T 24/367 . . *Covers*
- N Y10T 24/3672 . . . *Metal or plastic caps*
- N Y10T 24/3674 . . *Pads*
- N Y10T 24/3677 . . *Flexible button*
- N Y10T 24/3679 . . *Swivel button*
- N Y10T 24/3681 . . *Tufting type*
- N Y10T 24/3683 . . *Button with cavity for friction grip fastener*
- N Y10T 24/3685 . . *Button with shank for friction grip fastener*
- N Y10T 24/3687 . . *Heat or adhesive secured type*
- N Y10T 24/3689 . . *Thread or wire through apertured button*
- N Y10T 24/3691 . . *Eye shank type button*
- N Y10T 24/3694 . . *Ornamental type*
- N Y10T 24/3696 . . *for cuff or collar*
- N Y10T 24/3698 . . *Fabric embracing*
- N Y10T 24/37 . . *Drawstring, laced-fastener, or separate essential cooperating device therefor*
- N Y10T 24/3703 . . *Includes separate device for holding drawn portion of lacing*
- N Y10T 24/3705 . . . *Device engages tie in lacing*
- N Y10T 24/3708 *and fully covers tie*
- N Y10T 24/3711 . . . *Device engages element or formation on lacing*

- N Y10T 24/3713 . . . *having relatively movable holding components or surfaces*
- N Y10T 24/3716 *with pivotal connection therebetween*
- N Y10T 24/3718 *with integral resilient linking structure therebetween*
- N Y10T 24/3721 *formed from wire*
- N Y10T 24/3724 . . . *having lacing wound thereabout or wedged therein*
- N Y10T 24/3726 . . *with holding means fixedly mounted on lacing*
- N Y10T 24/3729 . . . *and forming lacing tips*
- N Y10T 24/3732 . . *Includes lacing holding structure within directing means therefor*
- N Y10T 24/3734 . . *having diverse shaped directing means for lacing*
- N Y10T 24/3737 . . *having lacing directing means in particular pattern*
- N Y10T 24/3739 . . *Includes lacing guiding roller within directing means*
- N Y10T 24/3742 . . *having eyelet type directing means*
- N Y10T 24/3745 . . . *with permanently deformed mounting structure*
- N Y10T 24/3747 *Mounting structure formed from different material than directing passage*
- N Y10T 24/375 . . *having hook shaped directing means*
- N Y10T 24/3753 . . . *and movable component or surface for closing throat*
- N Y10T 24/3755 . . . *Mounted by structure allowing bodily movement thereof*
- N Y10T 24/3758 . . . *formed from wire*
- N Y10T 24/3761 . . . *with mounting structure formed from different material*
- N Y10T 24/3763 . . . *with permanently deformed mounting structure*
- N Y10T 24/3766 *Expanding stud*
- N Y10T 24/3768 . . *having loop or sleeve shaped directing means*
- N Y10T 24/3771 . . . *Entirely formed from flaccid material*
- N Y10T 24/3774 . . . *Mounted by structure allowing bodily movement thereof*
- N Y10T 24/3776 . . . *formed from wire*
- N Y10T 24/3779 . . . *with permanently deformed mounting structure*
- N Y10T 24/3782 *Loop or sleeve closed when mounted*
- N Y10T 24/3784 *Expanding stud*
- N Y10T 24/3787 . . *having elastic segment in lacing*
- N Y10T 24/3789 . . *having means covering tip of lacing*
- N Y10T 24/3792 . . . *Tasseled*
- N Y10T 24/3795 . . . *with plural components*
- N Y10T 24/3797 . . . *with permanently deformed mounting structure*
- N Y10T 24/38 . *Strap cable or pipe button*
- N Y10T 24/39 . *Cord and rope holders*
- N Y10T 24/3902 . . *Chain*
- N Y10T 24/3904 . . . *Bead chain fasteners*
- N Y10T 24/3907 . . *Sheathed strand*
- N Y10T 24/3909 . . *Plural-strand cord or rope*
- N Y10T 24/3911 . . *Friction disk*
- N Y10T 24/3913 . . *Knot engaging*
- N Y10T 24/3916 . . *One-piece*
- N Y10T 24/3918 . . . *Wedge slot*
- N Y10T 24/392 . . . *Wire*

N	Y10T 24/3922	. . . . Cord runs through center of coil
N	Y10T 24/3924	. . . Sheet material
N	Y10T 24/3927	. . . Slack adjuster
N	Y10T 24/3929	. . . Rubber
N	Y10T 24/3931	. . . Wire
N	Y10T 24/3933	. . . Swagged, deformable
N	Y10T 24/3936	. . Pivoted part
N	Y10T 24/3938	. . . Lever tension
N	Y10T 24/394	. . . Cam lever
N	Y10T 24/3942	. . . . Laterally shifted rope
N	Y10T 24/3944	. . . . Cam engaging or disengaging
N	Y10T 24/3947	. . . . Fixed and movable jaws, movable jaw pulled
N	Y10T 24/3949	. . . . Link-connected parallel jaws
N	Y10T 24/3951	. . . . Dual cam
N	Y10T 24/3953	. . . Pivotal means with plate aperture
N	Y10T 24/3956	. . . Jaws locked together by cam, wedge, lever, or screw
N	Y10T 24/3958	. . Screw clamp
N	Y10T 24/396	. . . Screw clamp with snubber
N	Y10T 24/3962	. . . Tangential bolt
N	Y10T 24/3964	. . . J-shaped bolt
N	Y10T 24/3967	. . . Bolt perpendicular to cable axis
N	Y10T 24/3969	. . Sliding part or wedge
N	Y10T 24/3971	. . . Rope looped about movable member
N	Y10T 24/3973	. . . Rope clamped between cone and socket
N	Y10T 24/3976	. . . Sliding ball
N	Y10T 24/3978	. . . Screw actuated
N	Y10T 24/398	. . Bendable, ductible
N	Y10T 24/3982	. . Safety release
N	Y10T 24/3984	. . Alignable aperture and spring pressed moving element
N	Y10T 24/3987	. . Loop, adjustable
N	Y10T 24/3989	. . Snubbers, cleats by dielectric loss
N	Y10T 24/3991	. . Loop engaging
N	Y10T 24/3993	. . Ball or roller
N	Y10T 24/3996	. . Sliding wedge
N	Y10T 24/3998	. . Helical preform
N	Y10T 24/40	. Buckles
N	Y10T 24/4002	. . Harness
N	Y10T 24/4005	. . . Combined buckles and snap hooks
N	Y10T 24/4007	. . . Lock
N	Y10T 24/4009	. . . . Key
N	Y10T 24/4012	. . . Clamping
N	Y10T 24/4014	. . . . One-piece
N	Y10T 24/4016	. . . . Pivoted part or lever
N	Y10T 24/4019	. . . . Sliding part or wedge

N	Y10T 24/4021	. . . Cross bails
N	Y10T 24/4023	. . . . Pivoted stud plate
N	Y10T 24/4026	. . . . Rigid stud
N	Y10T 24/4028	. . . Penetrating tongue
N	Y10T 24/403	. . . . Guarded
N	Y10T 24/4033	. . . . One-piece
N	Y10T 24/4035	. . . . Multiple
N	Y10T 24/4037	. . . . Pivoted
N	Y10T 24/404	. . . . . Lever actuated
N	Y10T 24/4042	. . . . . Stud
N	Y10T 24/4044	. . . . Sliding part or wedge
N	Y10T 24/4047	. . . Strap loops and attaching devices
N	Y10T 24/4049	. . . Loop shields
N	Y10T 24/4051	. . Garment shielded
N	Y10T 24/4053	. . Combined pressure bar and guard
N	Y10T 24/4056	. . . Hook attached
N	Y10T 24/4058	. . Penetrating prong
N	Y10T 24/406	. . . One-piece
N	Y10T 24/4063	. . . . Hook attached
N	Y10T 24/4065	. . . Pivoted
N	Y10T 24/4067	. . . . Hook attached
N	Y10T 24/407	. . . Slide
N	Y10T 24/4072	. . Pivoted lever
N	Y10T 24/4074	. . . Hook attached
N	Y10T 24/4077	. . . Looped strap
N	Y10T 24/4079	. . Sliding part of wedge
N	Y10T 24/4081	. . . Hook attached
N	Y10T 24/4084	. . . Looped strap
N	Y10T 24/4086	. . Looped strap
N	Y10T 24/4088	. . One-piece
N	Y10T 24/4091	. . . Hook attached
N	Y10T 24/4093	. . . Looped strap
N	Y10T 24/4095	. . Fabric covered
N	Y10T 24/4098	. . Ornamental and/or object supported
N	Y10T 24/41	. Pierced earring fastener
N	Y10T 24/42	. Independent, headed, aperture pass-through fastener
N	Y10T 24/43	. Fastener with revolving component wrapping structure-to-be-secured about fastener
N	Y10T 24/44	. Clasp, clip, support-clamp, or required component thereof
N	Y10T 24/44009	. . Gripping member adapted for tool actuation or release
N	Y10T 24/44017	. . with specific mounting means for attaching to rigid or semirigid supporting structure or structure-to-be-secured
N	Y10T 24/44026	. . . for cooperating with aperture in supporting structure or structure-to-be-secured
N	Y10T 24/44034	. . Dissociable gripping members

- N Y10T 24/44043 . . . Channel and inserted bar
- N Y10T 24/44051 having operator or locking means
- N Y10T 24/4406 Resilient channel or bar
- N Y10T 24/44068 . . having gripping member actuated by fluid force
- N Y10T 24/44077 . . having inserted and receiving interlocking members connected by bendable, nonbiasing strap
- N Y10T 24/44085 . . . Discrete flaccid strap
- N Y10T 24/44094 with distinct means for preventing separation of members
- N Y10T 24/44103 Slidably mounted
- N Y10T 24/44111 with separate flaccid flap or pocket for protecting structure-to-be-secured
- N Y10T 24/4412 with separate, cavity-blocking gate on receiving member
- N Y10T 24/44128 Resilient inserted or receiving member
- N Y10T 24/44137 Inserted or receiving member substantially covered or coated for protection or to promote gripping
- N Y10T 24/44145 Resilient inserted member
- N Y10T 24/44154 having engaging face formed from nonmetallic material
- N Y10T 24/44162 having head and neck type engaging face
- N Y10T 24/44171 having internal supporting or reinforcing element
- N Y10T 24/44179 Circular head or neck
- N Y10T 24/44188 having wedge shaped, inserted and receiving members
- N Y10T 24/44197 with specific means for attaching to flaccid strap or supporting strap
- N Y10T 24/44205 On the inserted member
- N Y10T 24/44214 having necked button sliding along length of closed, variable width loop
- N Y10T 24/44222 . . having flaccid gripping member
- N Y10T 24/44231 . . . formed from elastic material
- N Y10T 24/44239 . . Encircling gripping member including semirigid band and operator for tightening
- N Y10T 24/44248 . . Encircling gripping member including semirigid band and means for adjusting girth
- N Y10T 24/44256 . . with specifically shaped, nongripping, rigid structure for connecting independently operable clasps, clips, or support-clamps
- N Y10T 24/44265 . . Gripping member face integral with or rigidly affixed to screw-driving portion
- N Y10T 24/44274 . . having either discrete flaccid or thin, nonbiasing, integral, connecting hinge
- N Y10T 24/44282 . . having equally spaced or continual gripping faces revolving about central axis
- N Y10T 24/44291 . . including pivoted gripping member
- N Y10T 24/44299 . . . Pivoted member also slides
- N Y10T 24/44308 Tapered face
- N Y10T 24/44316 . . . Pivoting gripping member either supports or coacts with sliding engaging face
- N Y10T 24/44325 . . . having three or more pivotally connected gripping members
- N Y10T 24/44333 . . . having toggle operator for moving
- N Y10T 24/44342 . . . having rigid linking arm pivotally connected to each gripping member
- N Y10T 24/4435 with extended lever portion
- N Y10T 24/44359 having lever end modified for attachment to support
- N Y10T 24/44368 . . . Pivoted gripping member applies camming force
- N Y10T 24/44376 . . . Spring or resiliently biased about pivot

- N Y10T 24/44385 *Distinct spring*
- N Y10T 24/44393 *Attached solely by spring*
- N Y10T 24/44402 *with operator for moving pivoted member*
- N Y10T 24/4441 *Camming or wedging element*
- N Y10T 24/44419 *Pivoted or rotated element*
- N Y10T 24/44427 *with position locking-means for gripping members*
- N Y10T 24/44436 *including pivoted arm*
- N Y10T 24/44444 *having specific surface material or irregularity on or along engaging face*
- N Y10T 24/44453 *having specific handle structure*
- N Y10T 24/44462 *Coil spring*
- N Y10T 24/4447 *having coil portion coaxial or parallel with pivotal axis*
- N Y10T 24/44479 *Flat or leaf spring*
- N Y10T 24/44487 . . . *Closed by gravity or weight of structure-to-be-secured*
- N Y10T 24/44496 . . . *with operator means for moving pivoted member*
- N Y10T 24/44504 *Threaded cylindrical rod and mating cavity*
- N Y10T 24/44513 *Camming or wedging element*
- N Y10T 24/44521 *Pivoted or rotated element*
- N Y10T 24/4453 . . . *with position locking-means for gripping members*
- N Y10T 24/44538 *Integral locking-means*
- N Y10T 24/44547 . . . *having inserted and receiving interlocking engaging faces*
- N Y10T 24/44556 *Resilient gripping member*
- N Y10T 24/44564 . . . *having specific surface material or irregularity on or along engaging face*
- N Y10T 24/44573 . . *including track or way guided and retained gripping member*
- N Y10T 24/44581 . . . *Biased by distinct spring*
- N Y10T 24/4459 . . . *with operator for moving guided member*
- N Y10T 24/44598 *Threaded cylindrical rod and mating cavity*
- N Y10T 24/44607 . . . *Track or way oblique to path of gripping member*
- N Y10T 24/44615 . . . *with position locking-means for gripping members*
- N Y10T 24/44624 *Integral locking-means*
- N Y10T 24/44632 . . . *with specific mounting means for attaching to flaccid supporting structure or structure-to-be-secured*
- N Y10T 24/44641 . . *having gripping member formed from, biased by, or mounted on resilient member*
- N Y10T 24/4465 . . . *Integrally combined, independently operable, diverse clasps, clips, or support-clamps*
- N Y10T 24/44658 . . . *with specific means for mounting to flaccid supporting structure or structure-to-be-secured*
- N Y10T 24/44667 *Mounting means made entirely from integral wire portion of resilient gripping member*
- N Y10T 24/44675 *Wire coiled about flaccid supporting structure*
- N Y10T 24/44684 . . . *with operator for moving biased engaging face*
- N Y10T 24/44692 *Camming or wedging element*
- N Y10T 24/44701 *Encircling sleeve type element*
- N Y10T 24/44709 *Pivoted or rotated element*

- N Y10T 24/44718 Element pivots or rotates in plane parallel to plane bisecting opposed engaging faces
- N Y10T 24/44726 Elongated element with pivot between cam and handle portions
- N Y10T 24/44735 for moving engaging face of U-shaped gripping member
- N Y10T 24/44744 . . . with position locking-means for engaging faces
- N Y10T 24/44752 Integral locking-means
- N Y10T 24/44761 Pivoted lock member
- N Y10T 24/44769 . . . Opposed engaging faces on gripping member formed from single piece of resilient material
- N Y10T 24/44778 Piece totally forms clasp, clip, or support-clamp and has shaped, wirelike, or bandlike configuration with uniform cross section throughout its length
- N Y10T 24/44786 Opposed faces located in and bias towards common plane in nonuse position
- N Y10T 24/44795 Resilient gripping member having tightly twisted portion
- N Y10T 24/44803 Resilient gripping member having coiled portion
- N Y10T 24/44812 Convolutions of coil form faces
- N Y10T 24/44821 Relatively movable segments of resilient gripping member contact and cross in nonuse position
- N Y10T 24/44829 Segments form opposed engaging faces
- N Y10T 24/44838 having specific handle structure
- N Y10T 24/44846 having specific handle structure
- N Y10T 24/44855 Terminal end of resilient member having engagement or disengagement enhancing structural modifications
- N Y10T 24/44863 having specific surface irregularity on or along engaging face
- N Y10T 24/44872 having specific handle structure
- N Y10T 24/4488 Movably attached to gripping member
- N Y10T 24/44889 Interlocking faces
- N Y10T 24/44897 with reinforcing member
- N Y10T 24/44906 having specific surface irregularity on or along engaging face
- N Y10T 24/44915 Corrugated or toothed face
- N Y10T 24/44923 Clasp, clip, or support-clamp cut or shaped from a single sheet of resilient, uniformly thick, planar material
- N Y10T 24/44932 . . . having specific surface material or irregularity on or along engaging face
- N Y10T 24/4494 . . . having specific handle structure
- N Y10T 24/44949 . . . including resilient biasing wire
- N Y10T 24/44957 Coiled wire
- N Y10T 24/44966 . . having gripping member shifted by operator
- N Y10T 24/44974 . . . Threaded cylindrical rod and mating cavity
- N Y10T 24/44983 . . formed from single rigid piece of material
- N Y10T 24/44991 . . . having specific surface irregularity on or along engaging face
- N Y10T 24/45 . . Separable-fastener or required component thereof [e.g., projection and cavity to complete interlock]
- N Y10T 24/45005 . . with third detached member completing interlock [e.g., hook type]
- N Y10T 24/4501 . . . Quick connect or release [e.g., spring and detent]
- N Y10T 24/45016 . . . for jewelry
- N Y10T 24/45021 . . . including eyelet [e.g., shoes]

- N Y10T 24/45026 . . . for key holder
- N Y10T 24/45031 . . . for tire chain, strap, etc. [e.g., rotatable or sliding spring gate]
- N Y10T 24/45037 . . . for apparel and related accessories
- N Y10T 24/45042 Button, button related
- N Y10T 24/45047 Snap [e.g., key hole type]
- N Y10T 24/45052 Post and receiver [e.g., pin and slot]
- N Y10T 24/45058 Hook [e.g., within cavity]
- N Y10T 24/45063 Belt, strap, etc. [e.g., buckle or snap fastener]
- N Y10T 24/45068 Glove
- N Y10T 24/45073 Purse, wallet, etc.
- N Y10T 24/45079 . . . Belt, strap, harness, etc.
- N Y10T 24/45084 for safety belt buckle, strap, harness, etc.
- N Y10T 24/45089 . . . Sliding or rotating element
- N Y10T 24/45094 Element having key slot
- N Y10T 24/45099 . . . Resilient element [e.g., snap type]
- N Y10T 24/45105 for upholstery, panel, trim strip, etc. [e.g., spring biased]
- N Y10T 24/4511 Link with pivoted gate
- N Y10T 24/45115 . . . Hook
- N Y10T 24/4512 Snap with spring bias [e.g., gate]
- N Y10T 24/45126 for connecting chains [e.g., opposed pivoted hook]
- N Y10T 24/45131 for heavy load bearing device [e.g., chain, rope, cable, etc.]
- N Y10T 24/45136 Haim, harness, whiffletree, rein, etc.
- N Y10T 24/45141 . . . for chain, rope, cable, etc.
- N Y10T 24/45147 Coupler with sliding socket to complete interlock
- N Y10T 24/45152 . . Each mating member having similarly shaped, sized, and operated interlocking or intermeshable face
- N Y10T 24/45157 . . . Zipper-type [e.g., slider]
- N Y10T 24/45162 for garment [e.g., with ribs and grooves interlocking elements]
- N Y10T 24/45168 for container [e.g., bag]
- N Y10T 24/45173 . . . Resilient element
- N Y10T 24/45178 Snap [e.g., identical elements]
- N Y10T 24/45183 . . . Clasp [e.g., spring type]
- N Y10T 24/45188 for jewelry [e.g., buckle type]
- N Y10T 24/45194 for belt or strap
- N Y10T 24/45199 . . . Hook
- N Y10T 24/45204 for belt, strap, etc. [e.g., with pivoted gate locking member]
- N Y10T 24/45209 for apparel
- N Y10T 24/45215 . . . Slot and tab or tongue
- N Y10T 24/4522 . . . Sliding or rotating element
- N Y10T 24/45225 . . including member having distinct formations and mating member selectively interlocking therewith
- N Y10T 24/4523 . . . Hook
- N Y10T 24/45236 Multiple catch [e.g., with pivoted gate]
- N Y10T 24/45241 . . . Slot and tab or tongue
- N Y10T 24/45246 having teeth or serrations [e.g., sliding with respect to each other]

- N Y10T 24/45251 . . . Resilient element [e.g., with spring]
- N Y10T 24/45257 Snap with cavity
- N Y10T 24/45262 . . . Pin, post and receiver
- N Y10T 24/45267 . . . Notched clasp [e.g., with receiving slot]
- N Y10T 24/45272 . . . Projection passes through cavity then moves toward noninserted portion of its member to complete interlock [e.g., snap hook]
- N Y10T 24/45277 Entire projection member forms loop or ring when interlocked
- N Y10T 24/45283 Includes slidable gate closing entrance throat
- N Y10T 24/45288 Hook type projection member
- N Y10T 24/45293 Plural hooks entering opposite sides of same cavity
- N Y10T 24/45298 Hooks formed solely from wire
- N Y10T 24/45304 Noninserted portion of projection member includes movably connected gate for closing access throat
- N Y10T 24/45309 Threaded gate
- N Y10T 24/45314 Revolvably mounted disc shaped gate
- N Y10T 24/45319 Pivotaly connected gate
- N Y10T 24/45325 Gate swings transversely to plane of hook
- N Y10T 24/4533 Gate also slides relative to pivot
- N Y10T 24/45335 having means biasing gate about pivot
- N Y10T 24/4534 and position locking-means for gate
- N Y10T 24/45346 Includes distinct biasing spring
- N Y10T 24/45351 Coil type spring
- N Y10T 24/45356 Coiled about pivotal axis of gate
- N Y10T 24/45361 having position locking-means for gate
- N Y10T 24/45366 Locking-means pivotaly connected
- N Y10T 24/45372 Locking-means slidably mounted
- N Y10T 24/45377 Gate closes when structure-to-be-secured is tensioned
- N Y10T 24/45382 Track or way guided gate
- N Y10T 24/45387 having means biasing gate
- N Y10T 24/45393 Guide of gate encircles shank
- N Y10T 24/45398 Cavity in shank forms track or way
- N Y10T 24/45403 with position locking-means for gate
- N Y10T 24/45408 Resilient, self-biased gate
- N Y10T 24/45414 with position locking-means for gate
- N Y10T 24/45419 Gate and hook formed from plastic
- N Y10T 24/45424 Gate and hook formed solely from wire
- N Y10T 24/45429 Gate and hook formed from single piece of sheet metal
- N Y10T 24/45435 Projection pivotaly attached to shank or mounting structure
- N Y10T 24/4544 Projection slidably mounted to shank or mounting structure
- N Y10T 24/45445 Projection self-biased towards shank or mounting structure
- N Y10T 24/4545 and formed solely from wire
- N Y10T 24/45455 Cooperating with relatively stationary wire gate
- N Y10T 24/45461 . . . Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]
- N Y10T 24/45466 . . . having electric or fluid powered, actuation or release, of interlock

- N Y10T 24/45471 . . . Projection having movable connection between components thereof or variable configuration
- N Y10T 24/45476 with additional, similar projection for engaging different cavity
- N Y10T 24/45482 and operator therefor
- N Y10T 24/45487 including camming or wedging element on projection member
- N Y10T 24/45492 Pivotaly attached element
- N Y10T 24/45497 including pivotal connection between projection components
- N Y10T 24/45503 Component slides relative to connection
- N Y10T 24/45508 and spring or resilient extension biasing about pivot
- N Y10T 24/45513 including slidably guided connection between nonself-biasing projection components
- N Y10T 24/45518 and distinct spring biasing component
- N Y10T 24/45524 including resiliently biased projection component or surface segment
- N Y10T 24/45529 Requiring manual force applied against bias to interlock or disengage
- N Y10T 24/45534 having connected leading edge and separated trailing arms
- N Y10T 24/45539 Cooperating with cavity having side walls and axially biased component capping end
- N Y10T 24/45545 forming total external surface of projection
- N Y10T 24/4555 and encircling hollow central area
- N Y10T 24/45555 having separate mounting means inserted into area
- N Y10T 24/4556 Plastic deformation of means or surface required for mounting
- N Y10T 24/45565 having separate mounting means encompassing cross section of projection
- N Y10T 24/45571 having dome-shaped head and expansion slit along side
- N Y10T 24/45576 and connected surface at tip of head
- N Y10T 24/45581 having inserted end formed by oppositely biased surface segments
- N Y10T 24/45586 Constructed from wire
- N Y10T 24/45592 having both resiliently biased and rigid components forming external surface of projection
- N Y10T 24/45597 . . . Projection member including noninserted spring for engaging and pushing against receiving member
- N Y10T 24/45602 . . . Receiving member includes either movable connection between interlocking components or variable configuration cavity
- N Y10T 24/45607 with additional cavity for engaging different projection
- N Y10T 24/45613 having common means actuating or releasing interlocking components or surfaces
- N Y10T 24/45618 and interlocking with independently associated or dissociated projection members
- N Y10T 24/45623 and operator therefor
- N Y10T 24/45628 for plural, oppositely shifting, similar interlocking components or segments
- N Y10T 24/45634 Operator includes camming or wedging element
- N Y10T 24/45639 including pivotally connected element on receiving member
- N Y10T 24/45644 for shifting pivotally connected interlocking component
- N Y10T 24/45649 Element and component pivot about same axis
- N Y10T 24/45654 for shifting slidably connected and guided, nonself-biasing interlocking component

- N Y10T 24/4566 including slidably connected and guided element on receiving member
- N Y10T 24/45665 for shifting pivotally connected interlocking component
- N Y10T 24/4567 for shifting slidably connected and guided, nonself-biasing, interlocking component
- N Y10T 24/45675 having pivotally connected interlocking component
- N Y10T 24/45681 Blocking removal of formation on projection from complementary formation on side wall of cavity
- N Y10T 24/45686 and position locking-means therefor
- N Y10T 24/45691 and relatively movable handle therefor
- N Y10T 24/45696 Requiring manual force thereon to interlock or disengage
- N Y10T 24/45702 Plural, oppositely shifting, similar interlocking components
- N Y10T 24/45707 having aperture therein alignable with parallel access opening
- N Y10T 24/45712 having interlocking portion thereof housed continuously within cavity
- N Y10T 24/45717 having cavity with side walls and axially biased component capping end
- N Y10T 24/45723 having slidably connected, nonself-biasing interlocking component
- N Y10T 24/45728 Blocking removal of formation on projection from complementary formation on side wall of cavity
- N Y10T 24/45733 and position locking-means therefor
- N Y10T 24/45738 and relatively movable handle therefor
- N Y10T 24/45743 Requiring manual force thereon to interlock or disengage
- N Y10T 24/45749 Plural, oppositely shifting, similar interlocking components
- N Y10T 24/45754 having closed aperture therethrough alignable with parallel access opening
- N Y10T 24/45759 having flaccid component defining access opening of cavity
- N Y10T 24/45764 Component formed solely by flaccid cord
- N Y10T 24/4577 with nonflaccid component
- N Y10T 24/45775 having resiliently biased interlocking component or segment
- N Y10T 24/4578 Cavity or projection rotates about axis of cavity to dissociate
- N Y10T 24/45785 Requiring manual force applied against bias to interlock or disengage
- N Y10T 24/45791 and partially blocking separate, nonresilient access opening of cavity
- N Y10T 24/45796 and closed elongated access opening for guiding transverse projection travel after insertion
- N Y10T 24/45801 Nonresilient walls define opening
- N Y10T 24/45806 formed from wire
- N Y10T 24/45812 and access opening with gapped perimeter for allowing movement of noninserted projection support therepast
- N Y10T 24/45817 Cavity constructed solely from wire
- N Y10T 24/45822 Partially blocking separate, nonresilient, access opening of cavity
- N Y10T 24/45827 and bodily shifted into or out of interlock location by manual force thereon
- N Y10T 24/45832 formed from wire
- N Y10T 24/45838 having curved or bent engaging section conforming to contour of projection
- N Y10T 24/45843 Similar, distinct sections
- N Y10T 24/45848 having distinct sections engaging projection at spaced points
- N Y10T 24/45853 including separate, nonprojection-engaging spring for biasing

- N Y10T 24/45859 *Biased component or segment entirely formed from wire*
- N Y10T 24/45864 *having portion of cavity deformed during mounting*
- N Y10T 24/45869 *and cooperating with separate mounting component*
- N Y10T 24/45874 *having axially extending expansion slit along side of cavity*
- N Y10T 24/4588 *Means for mounting projection or cavity portion*
- N Y10T 24/45885 *Allows bodily movement facilitating interlock*
- N Y10T 24/4589 *About pivotal connection*
- N Y10T 24/45895 *Includes resilient component separate from portion*
- N Y10T 24/45901 *Allows relocation of portion*
- N Y10T 24/45906 *having component of means permanently deformed during mounting operation*
- N Y10T 24/45911 *and formed from or fixedly attached to projection or cavity portion*
- N Y10T 24/45916 *Cooperates with detached component of means*
- N Y10T 24/45921 *having shape facilitating impaling of mounting surface*
- N Y10T 24/45927 *and inserted into or through cavity or projection*
- N Y10T 24/45932 *and encircling cavity or projection*
- N Y10T 24/45937 *Consisting of thermally fusible substance*
- N Y10T 24/45942 *having threaded formation*
- N Y10T 24/45948 *having specific structure for cooperating with stitching*
- N Y10T 24/45953 *having shape facilitating impaling of mounting surface*
- N Y10T 24/45958 *Plural distinct cavities or projections*
- N Y10T 24/45963 *Hook type*
- N Y10T 24/45969 *Hook-shaped projection member passing through cavity*
- N Y10T 24/45974 *formed from single piece of sheet metal*
- N Y10T 24/45979 *formed solely from wire*
- N Y10T 24/45984 *Cavity having specific shape*
- N Y10T 24/4599 *including closed elongated access opening for guiding transverse projection travel after insertion*
- N Y10T 24/45995 *having access opening with gapped perimeter for allowing movement of noninserted projection support therepast*
- N Y10T 24/46 *Pin or separate essential cooperating device therefor*
- N Y10T 24/4602 *with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]*
- N Y10T 24/4604 *having distinct guiding, holding, or protecting means for penetrated portion*
- N Y10T 24/4605 *Means detachable from or flaccidly connected to pin [e.g., hatpin type]*
- N Y10T 24/4607 *for pin having plural penetrating portions*
- N Y10T 24/4609 *including relatively movable guiding, holding, or protecting components or surfaces*
- N Y10T 24/4611 *having operator for moving holding component or surface*
- N Y10T 24/4613 *Moves pivoting holding component*
- N Y10T 24/4614 *Moves slidably guided, nonself-biasing, holding component*
- N Y10T 24/4616 *having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces*
- N Y10T 24/4618 *with pivotal connection therebetween*
- N Y10T 24/462 *with slidable connection between nonself-biasing components*
- N Y10T 24/4621 *having resiliently biased component or surface*

- N Y10T 24/4623 Coiled about longitudinal axis of held portion
- N Y10T 24/4625 and aperture therein alignable with another spaced aperture of means
- N Y10T 24/4627 and nonresilient structure for guiding portion thereto
- N Y10T 24/4629 including structure for cooperating with formation [e.g., cavity] formed on penetrating portion
- N Y10T 24/463 for pin having plural penetrating portions
- N Y10T 24/4632 Each independently movable towards and into cooperation with means
- N Y10T 24/4634 including relatively movable guiding, holding, or protecting components or surfaces
- N Y10T 24/4636 with connection allowing component to revolve about axis of held penetrating portion
- N Y10T 24/4638 with pivotal connection therebetween
- N Y10T 24/4639 having position locking means therefor
- N Y10T 24/4641 Spring or resiliently biased
- N Y10T 24/4643 with slidable connection between nonself-biasing components
- N Y10T 24/4645 Component slides parallel to axis of held penetrating portion
- N Y10T 24/4646 Means engages formation formed on penetrating portion
- N Y10T 24/4648 having nonresilient and resilient components
- N Y10T 24/465 Means formed from single resilient wire
- N Y10T 24/4652 Means formed from resilient sheet metal
- N Y10T 24/4654 with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
- N Y10T 24/4655 Includes slidable connection
- N Y10T 24/4657 with pivotal connection between penetrating portion and means
- N Y10T 24/4659 Connection also permits sliding movement
- N Y10T 24/4661 Resiliently biased about connection
- N Y10T 24/4663 with slidable connection intermediate penetrating portion and means
- N Y10T 24/4664 having resilient bridging structure between portion and means
- N Y10T 24/4666 Means includes structure for cooperating with formation [e.g., cavity] formed on portion
- N Y10T 24/4668 and penetrating portion formed from wire
- N Y10T 24/467 Bridging structure includes elongated nonwire element
- N Y10T 24/4671 Wire also forms coiled bridging structure about which portion moves
- N Y10T 24/4673 including distinct device for cooperating with coil
- N Y10T 24/4675 having means also formed from same wire
- N Y10T 24/4677 with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
- N Y10T 24/4679 having penetrating portion retractable or of changeable length
- N Y10T 24/468 having interconnected distinct penetrating portions
- N Y10T 24/4682 Connection allows movement therebetween
- N Y10T 24/4684 Slidable connection
- N Y10T 24/4686 Resilient connection
- N Y10T 24/4688 formed from common wire
- N Y10T 24/4689 and pointing in same direction
- N Y10T 24/4691 Penetrating portion includes relatively movable structure for resisting extraction

- N Y10T 24/4693 · · *having specific wire penetrating portion*
- N Y10T 24/4695 · · · *Wire curved or bent*
- N Y10T 24/4696 · · *having distinct head structure*
- N Y10T 24/4698 · · · *Movably connected to penetrating portion*
- N Y10T 24/47 · *Strap-end-attaching devices*
- N Y10T 24/4709 · · *Bendable sheet material*
- N Y10T 24/4718 · · *Watch pintle connected*
- N Y10T 24/4727 · · *Webbing to tube [lawn chair]*
- N Y10T 24/4736 · · *Buckle connected*
- N Y10T 24/4745 · · *End clasp*
- N Y10T 24/4755 · · *Hook*
- N Y10T 24/4764 · · *Ring-loop*
- N Y10T 24/4773 · · *Cargo tiedown*
- N Y10T 24/4782 · · *Watch strap*
- N Y10T 24/4791 · · *Enlarged end epoxy*
- N Y10T 24/48 · *Pivoted edge stays*
- N Y10T 24/49 · *Fastener destructively secured by reshaping distortion force [e.g., ductile fastener]*
- N Y10T 24/492 · · *Distorted structure having shape facilitating impaling*
- N Y10T 24/493 · · · *and distinct fastener structure cooperating with impaled structure*
- N Y10T 24/495 · · · · *Detached cooperating structure*
- N Y10T 24/497 · · · *including plural impaling elements*
- N Y10T 24/498 · · · · *Elements form single aperture [e.g., split shank type]*
- N Y10T 24/50 · *Readily interlocking, two-part fastener requiring either destructive or tool disengagement*
- N Y10T 24/505 · · *including additional fastener structure linking parts*
- N Y10T 24/51 · *Hanger on portable article support for manual attachment thereof to overhead support [e.g., drapery hook]*

- N Y10T 29/00 -
Y10T 29/00** **Former US Class 29 Series**
- N Y10T 29/00** **Metal working**
- N Y10T 29/10 · *Battery-grid making*
- N Y10T 29/11 · *Bias [i.e. , helically] cutting of tubular stock*
- N Y10T 29/1106 · · *including orbital cutter*
- N Y10T 29/1113 · · · *within stock support*
- N Y10T 29/1119 · · · *with orbiting strip accumulator*
- N Y10T 29/1125 · · *including means to inflate stock*
- N Y10T 29/1131 · · *with means to feed stock along support or mandrel*
- N Y10T 29/1138 · · · *Single means produces compound motion*
- N Y10T 29/1144 · · · · *Endless belt drive means*
- N Y10T 29/115 · · · *Axially*
- N Y10T 29/1156 · · · *Rotatably*
- N Y10T 29/1163 · · *with means to rotate and store stock supply*
- N Y10T 29/1169 · · · *Axis of rotation parallel to support or mandrel*
- N Y10T 29/1175 · · *with means for arcuate shift of mandrel*

- N Y10T 29/1181 · · *including means to handle produced strip or web*
- N Y10T 29/1188 · · · *with common adjustment for cutter*
- N Y10T 29/1194 · · *Method*
- N Y10T 29/12 · *Buckle making*
- N Y10T 29/13 · *Button-fastener making*
- N Y10T 29/14 · *Shredding metal or metal wool article making*
- N Y10T 29/142 · · *Metal wool making*
- N Y10T 29/143 · · · *Shaving or longitudinal cutting*
- N Y10T 29/145 · · · · *Soap-pad making*
- N Y10T 29/147 · · *Metal wool bundling*
- N Y10T 29/148 · · · *Soap-pad making*
- N Y10T 29/15 · *Cord heddle making*
- N Y10T 29/16 · *Cotter-pin making*
- N Y10T 29/17 · *Crankshaft making apparatus*
- N Y10T 29/18 · *Expanded metal making*
- N Y10T 29/185 · · *by use of reciprocating perforator*
- N Y10T 29/19 · *Eyebolt or hook making*
- N Y10T 29/20 · *Fence barb making*
- N Y10T 29/203 · · *by use of reciprocating cutter or die*
- N Y10T 29/207 · · *by use of rotary cutter or die*
- N Y10T 29/21 · *Finger-ring forming or sizing*
- N Y10T 29/22 · *Fishhook making*
- N Y10T 29/23 · *Gem and jewel setting*
- N Y10T 29/24 · *Hinge making or assembling*
- N Y10T 29/25 · *Lacing-stud making*
- N Y10T 29/26 · *Paper-fastener making*
- N Y10T 29/27 · *Plow or cultivator iron making*
- N Y10T 29/28 · *Puddlers balls making*
- N Y10T 29/29 · *Railway-chair making*
- N Y10T 29/30 · *Foil or other thin sheet-metal making or treating*
- N Y10T 29/301 · · *Method*
- N Y10T 29/302 · · · *Clad or other composite foil or thin metal making*
- N Y10T 29/303 · · · *with assembling or disassembling of a pack*
- N Y10T 29/304 · · · · *Using transitory solid cover material*
- N Y10T 29/305 · · · · *including bond prevention treatment*
- N Y10T 29/306 · · · · *Disassembling of a pack*
- N Y10T 29/307 · · · *by shaving or longitudinal cutting*
- N Y10T 29/308 · · · *Using transitory material*
- N Y10T 29/309 · · *Means for opening or separating a pack*
- N Y10T 29/31 · *Spectacle-frame making*
- N Y10T 29/32 · *Spiral cutting of flat stock*
- N Y10T 29/33 · *Stereotype-plate finishing*
- N Y10T 29/34 · *Means for forming clench-tongue [eg, for tieband]*
- N Y10T 29/35 · *Tire upsetting, with cutting, punching, etc.*

- N Y10T 29/36 · *toothed-cylinder making apparatus [e.g. , texture working cylinder]*
- N Y10T 29/37 · *Impeller making apparatus*
- N Y10T 29/38 · *Type finishing and grooving*
- N Y10T 29/39 · *Venetian blind assembling*
- N Y10T 29/40 · *Umbrella-frame making*
- N Y10T 29/41 · *Barrier layer or semiconductor device making*
- N Y10T 29/413 · · *Barrier layer device making*
- N Y10T 29/417 · · · *Electrolytic device making [e.g., capacitor]*
- N Y10T 29/42 · *Piezoelectric device making*
- N Y10T 29/43 · *Electric condenser making*
- N Y10T 29/435 · · *Solid dielectric type*
- N Y10T 29/44 · *Filing*
- N Y10T 29/442 · · *of key article*
- N Y10T 29/444 · · *Continuous band type*
- N Y10T 29/446 · · *Reciprocating type*
- N Y10T 29/448 · · *File-blank stripper*
- N Y10T 29/45 · *Scale remover or preventor*
- N Y10T 29/4506 · · *for hollow workpiece*
- N Y10T 29/4511 · · · *Interior surface*
- N Y10T 29/4517 · · *Rolling deformation or deflection*
- N Y10T 29/4522 · · · *for wire or rod*
- N Y10T 29/4528 · · *with rotary head*
- N Y10T 29/4533 · · *Fluid impingement*
- N Y10T 29/4539 · · · *with heater*
- N Y10T 29/4544 · · · *Liquid jet*
- N Y10T 29/455 · · · *Airblast*
- N Y10T 29/4556 · · *Chainer*
- N Y10T 29/4561 · · *Scraper or scalper*
- N Y10T 29/4567 · · *Brush type*
- N Y10T 29/4572 · · *Mechanically powered operator*
- N Y10T 29/4578 · · · *Tack or needle type*
- N Y10T 29/4583 · · · *Hammer*
- N Y10T 29/4589 · · · *Blade or chisel*
- N Y10T 29/4594 · · *Hand tool*
- N Y10T 29/46 · *Burning in, wearing in, or oil burnishing*
- N Y10T 29/47 · *Burnishing*
- N Y10T 29/471 · · *of water laid fibrous article [e.g., paper]*
- N Y10T 29/473 · · · *Heated burnishing member*
- N Y10T 29/474 · · · · *Burnishing tool reciprocates across work surface*
- N Y10T 29/476 · · *Continuous feed*
- N Y10T 29/477 · · *of gear article*
- N Y10T 29/479 · · *by shot peening or blasting*
- N Y10T 29/48 · *Upholstered article making*
- N Y10T 29/481 · · *Method*

- N Y10T 29/482 . . Tufting
- N Y10T 29/483 . . . with means to clench fastener
- N Y10T 29/484 . . . with means to insert guide pin or fastener
- N Y10T 29/486 . . Cover stretching
- N Y10T 29/487 . . Edge-roll forming
- N Y10T 29/488 . . form or holder
- N Y10T 29/489 . . . with follower
- N Y10T 29/49 . . Method of mechanical manufacture
- N Y10T 29/49002 . . Electrical device making
- N Y10T 29/49004 . . . including measuring or testing of device or component part
- N Y10T 29/49005 . . . Acoustic transducer
- N Y10T 29/49007 . . . Indicating transducer
- N Y10T 29/49009 . . . Dynamoelectric machine
- N Y10T 29/49011 Commutator or slip ring assembly
- N Y10T 29/49012 Rotor
- N Y10T 29/49014 . . . Superconductor
- N Y10T 29/49016 . . . Antenna or wave energy "plumbing" making
- N Y10T 29/49018 with other electrical component
- N Y10T 29/4902 . . . Electromagnet, transformer or inductor
- N Y10T 29/49021 Magnetic recording reproducing transducer [e.g., tape head, core, etc.]
- N Y10T 29/49023 including disassembly step
- N Y10T 29/49025 Making disc drive
- N Y10T 29/49027 Mounting preformed head/core onto other structure
- N Y10T 29/49028 Mounting multitrack head
- N Y10T 29/4903 with bonding
- N Y10T 29/49032 Fabricating head structure or component thereof
- N Y10T 29/49034 Treating to affect magnetic properties
- N Y10T 29/49036 including measuring or testing
- N Y10T 29/49037 Using reference point/surface to facilitate measuring
- N Y10T 29/49039 with dual gap materials
- N Y10T 29/49041 with significant slider/housing shaping or treating
- N Y10T 29/49043 Depositing magnetic layer or coating
- N Y10T 29/49044 Plural magnetic deposition layers
- N Y10T 29/49046 with etching or machining of magnetic material
- N Y10T 29/49048 Machining magnetic material [e.g., grinding, etching, polishing]
- N Y10T 29/4905 Employing workholding means
- N Y10T 29/49052 by etching
- N Y10T 29/49053 Multitrack heads having integral holding means
- N Y10T 29/49055 with bond/laminating preformed parts, at least two magnetic
- N Y10T 29/49057 Using glass bonding material
- N Y10T 29/49059 with work positioning means
- N Y10T 29/4906 Providing winding
- N Y10T 29/49062 Multilayered winding
- N Y10T 29/49064 by coating

N	Y10T 29/49066	. . . . .	Preformed winding
N	Y10T 29/49067	. . . . .	Specified diverse magnetic materials
N	Y10T 29/49069	. . . .	Data storage inductor or core
N	Y10T 29/49071	. . . .	by winding or coiling
N	Y10T 29/49073	. . . .	by assembling coil and core
N	Y10T 29/49075	. . . .	including permanent magnet or core
N	Y10T 29/49076	. . . . .	From comminuted material
N	Y10T 29/49078	. . . . .	Laminated
N	Y10T 29/4908	. . . .	Acoustic transducer
N	Y10T 29/49082	. . .	Resistor making
N	Y10T 29/49083	. . . .	Heater type
N	Y10T 29/49085	. . . .	Thermally variable
N	Y10T 29/49087	. . . .	with envelope or housing
N	Y10T 29/49089	. . . . .	Filling with powdered insulation
N	Y10T 29/49091	. . . . .	with direct compression of powdered insulation
N	Y10T 29/49092	. . . . .	Powdering the insulation
N	Y10T 29/49094	. . . . .	by oxidation
N	Y10T 29/49096	. . . . .	with winding
N	Y10T 29/49098	. . . . .	Applying terminal
N	Y10T 29/49099	. . . .	Coating resistive material on a base
N	Y10T 29/49101	. . . .	Applying terminal
N	Y10T 29/49103	. . . .	Strain gauge making
N	Y10T 29/49105	. . .	Switch making
N	Y10T 29/49107	. . .	Fuse making
N	Y10T 29/49108	. . .	Electric battery cell making
N	Y10T 29/4911	. . . .	including sealing
N	Y10T 29/49112	. . . .	including laminating of indefinite length material
N	Y10T 29/49114	. . . .	including adhesively bonding
N	Y10T 29/49115	. . . .	including coating or impregnating
N	Y10T 29/49117	. . .	Conductor or circuit manufacturing
N	Y10T 29/49119	. . . .	Brush
N	Y10T 29/49121	. . . .	Beam lead frame or beam lead device
N	Y10T 29/49123	. . . .	Co-axial cable
N	Y10T 29/49124	. . . .	On flat or curved insulated base, e.g., printed circuit, etc.
N	Y10T 29/49126	. . . . .	Assembling bases
N	Y10T 29/49128	. . . . .	Assembling formed circuit to base
N	Y10T 29/4913	. . . . .	Assembling to base an electrical component, e.g., capacitor, etc.
N	Y10T 29/49131	. . . . .	by utilizing optical sighting device
N	Y10T 29/49133	. . . . .	with component orienting
N	Y10T 29/49135	. . . . .	and shaping, e.g., cutting or bending, etc.
N	Y10T 29/49137	. . . . .	Different components
N	Y10T 29/49139	. . . . .	by inserting component lead or terminal into base aperture
N	Y10T 29/4914	. . . . .	with deforming of lead or terminal
N	Y10T 29/49142	. . . . .	including metal fusion

N	Y10T 29/49144	. . . . . by metal fusion
N	Y10T 29/49146	. . . . . with encapsulating, e.g., potting, etc.
N	Y10T 29/49147	. . . . . Assembling terminal to base
N	Y10T 29/49149	. . . . . by metal fusion bonding
N	Y10T 29/49151	. . . . . by deforming or shaping
N	Y10T 29/49153	. . . . . with shaping or forcing terminal into base aperture
N	Y10T 29/49155	. . . . . Manufacturing circuit on or in base
N	Y10T 29/49156	. . . . . with selective destruction of conductive paths
N	Y10T 29/49158	. . . . . with molding of insulated base
N	Y10T 29/4916	. . . . . Simultaneous circuit manufacturing
N	Y10T 29/49162	. . . . . by using wire as conductive path
N	Y10T 29/49163	. . . . . with sintering of base
N	Y10T 29/49165	. . . . . by forming conductive walled aperture in base
N	Y10T 29/49167	. . . . . with deforming of conductive path
N	Y10T 29/49169	. . . . . Assembling electrical component directly to terminal or elongated conductor
N	Y10T 29/49171	. . . . . with encapsulating
N	Y10T 29/49172	. . . . . by molding of insulating material
N	Y10T 29/49174	. . . . . Assembling terminal to elongated conductor
N	Y10T 29/49176	. . . . . with molding of electrically insulating material
N	Y10T 29/49178	. . . . . by shrinking of cover
N	Y10T 29/49179	. . . . . by metal fusion bonding
N	Y10T 29/49181	. . . . . by deforming
N	Y10T 29/49183	. . . . . of ferrule about conductor and terminal
N	Y10T 29/49185	. . . . . of terminal
N	Y10T 29/49187	. . . . . with forming eyelet from elongated conductor
N	Y10T 29/49188	. . . . . with penetrating portion
N	Y10T 29/4919	. . . . . Through insulation
N	Y10T 29/49192	. . . . . with insulation removal
N	Y10T 29/49194	. . . . . Assembling elongated conductors, e.g., splicing, etc.
N	Y10T 29/49195	. . . . . with end-to-end orienting
N	Y10T 29/49197	. . . . . including fluid evacuating or pressurizing
N	Y10T 29/49199	. . . . . including deforming of joining bridge
N	Y10T 29/49201	. . . . . with overlapping orienting
N	Y10T 29/49202	. . . . . including oppositely facing end orienting
N	Y10T 29/49204	. . . . . Contact or terminal manufacturing
N	Y10T 29/49206	. . . . . by powder metallurgy
N	Y10T 29/49208	. . . . . by assembling plural parts
N	Y10T 29/4921	. . . . . with bonding
N	Y10T 29/49211	. . . . . of fused material
N	Y10T 29/49213	. . . . . Metal
N	Y10T 29/49215	. . . . . by impregnating a porous mass
N	Y10T 29/49217	. . . . . by elastic joining
N	Y10T 29/49218	. . . . . with deforming

N	Y10T 29/4922	. . . . . with molding of insulation
N	Y10T 29/49222	. . . . . forming array of contacts or terminals
N	Y10T 29/49224	. . . . . with coating
N	Y10T 29/49226	. . . Electret making
N	Y10T 29/49227	. . . Insulator making
N	Y10T 29/49229	. . Prime mover or fluid pump making
N	Y10T 29/49231	. . . I.C. [internal combustion] engine making
N	Y10T 29/49233	. . . . Repairing, converting, servicing or salvaging
N	Y10T 29/49234	. . . . Rotary or radial engine making
N	Y10T 29/49236	. . . Fluid pump or compressor making
N	Y10T 29/49238	. . . . Repairing, converting, servicing or salvaging
N	Y10T 29/4924	. . . . Scroll or peristaltic type
N	Y10T 29/49242	. . . . Screw or gear type, e.g., Moineau type
N	Y10T 29/49243	. . . . Centrifugal type
N	Y10T 29/49245	. . . . Vane type or other rotary, e.g., fan
N	Y10T 29/49247	. . . Valve lifter making
N	Y10T 29/49249	. . . Piston making
N	Y10T 29/4925	. . . . Repairing, converting, servicing or salvaging
N	Y10T 29/49252	. . . . Multi-element piston making
N	Y10T 29/49254	. . . . . Utilizing a high energy beam, e.g., laser, electron beam
N	Y10T 29/49256	. . . . . with assembly or composite article making
N	Y10T 29/49258	. . . . . with thermal barrier or heat flow provision
N	Y10T 29/49259	. . . . . with fiber reinforced structure
N	Y10T 29/49261	. . . . . by composite casting or molding
N	Y10T 29/49263	. . . . . by coating or cladding
N	Y10T 29/49265	. . . . Ring groove forming or finishing
N	Y10T 29/49266	. . . . Gudgeon pin, wrist pin, piston pin, or boss therefor
N	Y10T 29/49268	. . . . with other attaching provision for connecting rod
N	Y10T 29/4927	. . . Cylinder, cylinder head or engine valve sleeve making
N	Y10T 29/49272	. . . . with liner, coating, or sleeve
N	Y10T 29/49274	. . . Piston ring or piston packing making
N	Y10T 29/49275	. . . . including forging or hammering
N	Y10T 29/49277	. . . . including casting or molding
N	Y10T 29/49279	. . . . including rolling or die forming, e.g., drawing, punching
N	Y10T 29/49281	. . . . including coating or plating
N	Y10T 29/49282	. . . . including grinding or honing
N	Y10T 29/49284	. . . . including machining or angular cutting
N	Y10T 29/49286	. . . Crankshaft making
N	Y10T 29/49288	. . . Connecting rod making
N	Y10T 29/4929	. . . . including metallurgical bonding
N	Y10T 29/49291	. . . . including metal forging or die shaping
N	Y10T 29/49293	. . . Camshaft making
N	Y10T 29/49295	. . . Push rod or rocker arm making
N	Y10T 29/49297	. . . Seal or packing making

- N Y10T 29/49298 . . . Poppet or I.C. engine valve or valve seat making
- N Y10T 29/493 Valve guide making
- N Y10T 29/49302 Repairing, converting, servicing or salvaging
- N Y10T 29/49304 Valve tappet making
- N Y10T 29/49306 Valve seat making
- N Y10T 29/49307 Composite or hollow valve stem or head making
- N Y10T 29/49309 including forging
- N Y10T 29/49311 including extruding
- N Y10T 29/49313 including casting
- N Y10T 29/49314 with assembly or composite article making
- N Y10T 29/49316 . . Impeller making
- N Y10T 29/49318 . . . Repairing or disassembling
- N Y10T 29/4932 . . . Turbomachine making
- N Y10T 29/49321 Assembling individual fluid flow interacting members, e.g., blades, vanes, buckets, on rotary support member
- N Y10T 29/49323 Assembling fluid flow directing devices, e.g., stators, diaphragms, nozzles
- N Y10T 29/49325 Shaping integrally bladed rotor
- N Y10T 29/49327 . . . Axial blower or fan
- N Y10T 29/49329 . . . Centrifugal blower or fan
- N Y10T 29/4933 . . . Fluid coupling device
- N Y10T 29/49332 . . . Propeller making
- N Y10T 29/49334 Utilizing hollow tube blank
- N Y10T 29/49336 . . . Blade making
- N Y10T 29/49337 Composite blade
- N Y10T 29/49339 Hollow blade
- N Y10T 29/49341 with cooling passage
- N Y10T 29/49343 Passage contains tubular insert
- N Y10T 29/49345 . . Catalytic device making
- N Y10T 29/49346 . . Rocket or jet device making
- N Y10T 29/49348 . . Burner, torch or metallurgical lance making
- N Y10T 29/4935 . . Heat exchanger or boiler making
- N Y10T 29/49352 . . . Repairing, converting, servicing or salvaging
- N Y10T 29/49353 . . . Heat pipe device making
- N Y10T 29/49355 . . . Solar energy device making
- N Y10T 29/49357 . . . Regenerator or recuperator making
- N Y10T 29/49359 . . . Cooling apparatus making, e.g., air conditioner, refrigerator
- N Y10T 29/49361 . . . Tube inside tube
- N Y10T 29/49362 . . . Tube wound about tube
- N Y10T 29/49364 . . . Tube joined to flat sheet longitudinally, i.e., tube sheet
- N Y10T 29/49366 . . . Sheet joined to sheet
- N Y10T 29/49368 with inserted tubes
- N Y10T 29/49369 Utilizing bond inhibiting material
- N Y10T 29/49371 with subsequent fluid expansion
- N Y10T 29/49373 . . . Tube joint and tube plate structure

- N Y10T 29/49375 including conduit expansion or inflation
- N Y10T 29/49377 . . . Tube with heat transfer means
- N Y10T 29/49378 Finned tube
- N Y10T 29/4938 Common fin traverses plurality of tubes
- N Y10T 29/49382 Helically finned
- N Y10T 29/49384 Internally finned
- N Y10T 29/49385 Made from unitary workpiece, i.e., no assembly
- N Y10T 29/49387 . . . Boiler making
- N Y10T 29/49389 . . . Header or manifold making
- N Y10T 29/49391 . . . Tube making or reforming
- N Y10T 29/49393 . . . with metallurgical bonding
- N Y10T 29/49394 . . Accumulator making
- N Y10T 29/49396 . . Condenser, evaporator or vaporizer making
- N Y10T 29/49398 . . Muffler, manifold or exhaust pipe making
- N Y10T 29/494 . . Fluidic or fluid actuated device making
- N Y10T 29/49401 . . Fluid pattern dispersing device making, e.g., ink jet
- N Y10T 29/49403 . . Tapping device making
- N Y10T 29/49405 . . Valve or choke making
- N Y10T 29/49407 . . . Repairing, converting, servicing or salvaging
- N Y10T 29/49409 . . . Valve seat forming
- N Y10T 29/4941 . . . Valve stem or tire valve making
- N Y10T 29/49412 . . . with assembly, disassembly or composite article making
- N Y10T 29/49414 Joining plural semi-circular components
- N Y10T 29/49416 with material shaping or cutting
- N Y10T 29/49417 including molding or casting
- N Y10T 29/49419 including machining or drilling
- N Y10T 29/49421 including metallurgical bonding
- N Y10T 29/49423 including metal deforming
- N Y10T 29/49425 including metallurgical bonding
- N Y10T 29/49426 . . . including metal shaping and diverse operation
- N Y10T 29/49428 . . Gas and water specific plumbing component making
- N Y10T 29/4943 . . . Plumbing fixture making
- N Y10T 29/49432 . . . Nozzle making
- N Y10T 29/49433 Sprayer
- N Y10T 29/49435 . . . Flexible conduit or fitting therefor
- N Y10T 29/49437 . . . Flue connector device making
- N Y10T 29/49439 . . . Trap making
- N Y10T 29/4944 . . . Return connector device making
- N Y10T 29/49442 . . . T-shaped fitting making
- N Y10T 29/49444 . . . Elbow or L-shaped fitting making
- N Y10T 29/49446 . . . Ferrule making or reforming
- N Y10T 29/49448 . . Agricultural device making
- N Y10T 29/49449 . . . Traction apparatus, e.g., for tractor
- N Y10T 29/49451 . . . Harvester guard

- N Y10T 29/49453 . . . Pulley making
- N Y10T 29/49455 Assembly
- N Y10T 29/49456 with shaping
- N Y10T 29/49458 Disc splitting to form pulley rim groove
- N Y10T 29/4946 Groove forming in sheet metal pulley rim
- N Y10T 29/49462 . . . Gear making
- N Y10T 29/49464 Assembling of gear into force transmitting device
- N Y10T 29/49465 Gear mounting
- N Y10T 29/49467 Gear shaping
- N Y10T 29/49469 Worm gear
- N Y10T 29/49471 Roll forming
- N Y10T 29/49472 Punching or stamping
- N Y10T 29/49474 Die-press shaping
- N Y10T 29/49476 Gear tooth cutting
- N Y10T 29/49478 Gear blank making
- N Y10T 29/4948 with specific gear material
- N Y10T 29/49481 . . . Wheel making
- N Y10T 29/49483 Railway or trolley wheel making
- N Y10T 29/49485 Multiple part or composite
- N Y10T 29/49487 with axle or hub
- N Y10T 29/49488 Steering wheel
- N Y10T 29/4949 Material winding, e.g., reel, spool
- N Y10T 29/49492 Land wheel
- N Y10T 29/49494 Assembling tire to wheel body
- N Y10T 29/49496 Disc type wheel
- N Y10T 29/49497 Assembling wheel disc to rim and hub
- N Y10T 29/49499 Assembling wheel disc to rim
- N Y10T 29/49501 with disc shaping
- N Y10T 29/49503 Integral rim and disc making
- N Y10T 29/49504 Disc shaping
- N Y10T 29/49506 Tensioned spoke type wheel making
- N Y10T 29/49508 Tensioning all spokes simultaneously
- N Y10T 29/4951 Tensioning spokes in series
- N Y10T 29/49512 Tensioning spokes individually
- N Y10T 29/49513 Compression, e.g., nontension, spoke type wheel making
- N Y10T 29/49515 Joining spokes to rim and hub
- N Y10T 29/49517 Joining spokes to rim
- N Y10T 29/49519 Joining spokes to hub
- N Y10T 29/4952 Making plural spokes from a single blank
- N Y10T 29/49522 Individual spoke making
- N Y10T 29/49524 Rim making
- N Y10T 29/49526 with assembling
- N Y10T 29/49528 Demountable rim making
- N Y10T 29/49529 Die-press shaping

- N Y10T 29/49531 Roller forming
- N Y10T 29/49533 Hub making
- N Y10T 29/49535 with assembling
- N Y10T 29/49536 Hub shaping
- N Y10T 29/49538 Tire making
- N Y10T 29/4954 Wheel trim making, e.g., wheel cover, hubcap
- N Y10T 29/49542 with means for retaining trim member on wheel
- N Y10T 29/49544 . . Roller making
- N Y10T 29/49545 . . . Repairing or servicing
- N Y10T 29/49547 . . . Assembling preformed components
- N Y10T 29/49549 Work contacting surface element assembled to core
- N Y10T 29/49551 Work contacting surface wound about core
- N Y10T 29/49552 with prestressing of component by heat differential, e.g., shrink, fit
- N Y10T 29/49554 Work contacting surface having annular axial sections
- N Y10T 29/49556 Work contacting surface element assembled to end support members
- N Y10T 29/49558 Includes securing removable cover on roller
- N Y10T 29/4956 . . . Fabricating and shaping roller work contacting surface element
- N Y10T 29/49561 toothed roller
- N Y10T 29/49563 with coating or casting about a core
- N Y10T 29/49565 . . . One-piece roller making
- N Y10T 29/49567 . . Dental appliance making
- N Y10T 29/49568 . . . Orthodontic device making
- N Y10T 29/4957 . . Sound device making
- N Y10T 29/49572 . . . Hearing aid component making
- N Y10T 29/49574 . . . Musical instrument or tuning fork making
- N Y10T 29/49575 . . . including diaphragm or support therefor
- N Y10T 29/49577 . . . Phonograph component making
- N Y10T 29/49579 . . Watch or clock making
- N Y10T 29/49581 . . . having arbor, pinion, or balance
- N Y10T 29/49583 . . . having indicia, face, or dial
- N Y10T 29/49584 . . . having case, cover, or back
- N Y10T 29/49586 . . . having crown, stem, or pendent
- N Y10T 29/49588 . . Jewelry or locket making
- N Y10T 29/4959 . . . Human adornment device making
- N Y10T 29/49591 Bracelet making
- N Y10T 29/49593 Finger ring making
- N Y10T 29/49595 . . . Latch, clasp, or fastener component making
- N Y10T 29/49597 . . . Ornamental stock making
- N Y10T 29/49599 . . Knob or knob shank making
- N Y10T 29/496 . . Multiperforated metal article making
- N Y10T 29/49602 . . . Coil wound wall screen
- N Y10T 29/49604 . . . Filter
- N Y10T 29/49606 . . Turnbuckle making
- N Y10T 29/49607 . . Spring-head clip making

- N Y10T 29/49609 . . Spring making
- N Y10T 29/49611 . . . for vehicle or clutch
- N Y10T 29/49613 . . . for human comfort
- N Y10T 29/49615 . . . Resilient shock or vibration absorber utility
- N Y10T 29/49616 . . Structural member making
- N Y10T 29/49618 . . . Restoring existing member, e.g., reinforcing, repairing
- N Y10T 29/4962 . . . Grille making
- N Y10T 29/49622 . . . Vehicular structural member making
- N Y10T 29/49623 . . . Static structure, e.g., a building component
- N Y10T 29/49625 Openwork, e.g., a truss, joist, frame, lattice-type or box beam
- N Y10T 29/49627 Frame component
- N Y10T 29/49629 Panel
- N Y10T 29/49631 Columnar member
- N Y10T 29/49632 Metal reinforcement member for nonmetallic, e.g., concrete, structural element
- N Y10T 29/49634 Beam or girder
- N Y10T 29/49636 . . Process for making bearing or component thereof
- N Y10T 29/49638 . . . Repairing
- N Y10T 29/49639 . . . Fluid bearing
- N Y10T 29/49641 . . . Linear bearing
- N Y10T 29/49643 . . . Rotary bearing
- N Y10T 29/49645 Thrust bearing
- N Y10T 29/49647 Plain bearing
- N Y10T 29/49648 Self-adjusting or self-aligning, including ball and socket type, bearing and component making
- N Y10T 29/4965 Deforming socket to secure ball
- N Y10T 29/49652 Die-press shaping
- N Y10T 29/49654 having liner
- N Y10T 29/49655 having liner
- N Y10T 29/49657 Socket making
- N Y10T 29/49659 by molding or casting
- N Y10T 29/49661 Nonmetallic socket
- N Y10T 29/49663 by assembling
- N Y10T 29/49664 Ball making
- N Y10T 29/49666 with metallurgical bonding
- N Y10T 29/49668 Sleeve or bushing making
- N Y10T 29/4967 Nonmetallic
- N Y10T 29/49671 Strip or blank material shaping
- N Y10T 29/49673 Die-press shaping
- N Y10T 29/49675 having inner lining layer
- N Y10T 29/49677 having liner
- N Y10T 29/49679 Anti-friction bearing or component thereof
- N Y10T 29/4968 Assembling of race, cage, and rolling anti-friction members
- N Y10T 29/49682 Assembling of race and rolling anti-friction members
- N Y10T 29/49684 with race making

- N Y10T 29/49686 *Assembling of cage and rolling anti-friction members*
- N Y10T 29/49687 *with cage making*
- N Y10T 29/49689 *Race making*
- N Y10T 29/49691 *Cage making*
- N Y10T 29/49693 *Roller making*
- N Y10T 29/49694 *Ball making*
- N Y10T 29/49696 . . . *Mounting*
- N Y10T 29/49698 . . . *Demounting*
- N Y10T 29/497 . . . *Pre-usage process, e.g., preloading, aligning*
- N Y10T 29/49702 . . . *Lubricating*
- N Y10T 29/49703 . . . *Sealing*
- N Y10T 29/49705 . . . *Coating or casting*
- N Y10T 29/49707 . . . *Bearing surface treatment*
- N Y10T 29/49709 . . . *Specific metallic composition*
- N Y10T 29/4971 . . . *Nonmetallic bearing element*
- N Y10T 29/49712 . . *Ball making*
- N Y10T 29/49714 . . . *Hollow ball*
- N Y10T 29/49716 . . *Converting*
- N Y10T 29/49718 . . *Repairing*
- N Y10T 29/49719 . . . *Seal or element thereof*
- N Y10T 29/49721 . . . *with disassembling*
- N Y10T 29/49723 *including reconditioning of part*
- N Y10T 29/49725 *by shaping*
- N Y10T 29/49726 *Removing material*
- N Y10T 29/49728 *and by a metallurgical operation, e.g., welding, diffusion bonding, casting*
- N Y10T 29/4973 *Replacing of defective part*
- N Y10T 29/49732 . . . *by attaching repair preform, e.g., remaking, restoring, or patching*
- N Y10T 29/49734 *and removing damaged material*
- N Y10T 29/49735 *Mechanically attaching preform with separate fastener*
- N Y10T 29/49737 *Metallurgically attaching preform*
- N Y10T 29/49739 *Mechanically attaching preform by separate fastener*
- N Y10T 29/49741 *Screw threaded fastener*
- N Y10T 29/49742 *Metallurgically attaching preform*
- N Y10T 29/49744 *Screw threaded preform*
- N Y10T 29/49746 . . . *by applying fluent material, e.g., coating, casting*
- N Y10T 29/49748 . . . *by shaping, e.g., bending, extruding, turning, etc.*
- N Y10T 29/4975 *including heating*
- N Y10T 29/49751 . . *Scrap recovering or utilizing*
- N Y10T 29/49753 . . . *Metalworking to consolidate scrap*
- N Y10T 29/49755 . . . *Separating one material from another*
- N Y10T 29/49757 *by burning or heating*
- N Y10T 29/49758 . . *During simulated operation or operating conditions*
- N Y10T 29/4976 . . . *Temperature*

- N Y10T 29/49762 . . Center locating and shaping
- N Y10T 29/49764 . . with testing or indicating
- N Y10T 29/49766 . . . torquing threaded assemblage or determining torque herein
- N Y10T 29/49767 Determining relative number of threaded member rotations
- N Y10T 29/49769 . . . Using optical instrument [excludes mere human eyeballing]
- N Y10T 29/49771 . . . Quantitative measuring or gauging
- N Y10T 29/49773 by radioactive tracing
- N Y10T 29/49774 by vibratory or oscillatory movement
- N Y10T 29/49776 Pressure, force, or weight determining
- N Y10T 29/49778 . . . with aligning, guiding, or instruction
- N Y10T 29/4978 Assisting assembly or disassembly
- N Y10T 29/49782 . . of a slide fastener
- N Y10T 29/49783 . . . of slider
- N Y10T 29/49785 . . . of interlocking element
- N Y10T 29/49787 . . Obtaining plural composite product pieces from preassembled workpieces
- N Y10T 29/49789 . . Obtaining plural product pieces from unitary workpiece
- N Y10T 29/4979 . . . Breaking through weakened portion
- N Y10T 29/49792 . . . Dividing through modified portion
- N Y10T 29/49794 . . . Dividing on common outline
- N Y10T 29/49796 . . . Coacting pieces
- N Y10T 29/49798 . . . Dividing sequentially from leading end, e.g., by cutting or breaking
- N Y10T 29/49799 . . Providing transitory integral holding or handling portion
- N Y10T 29/49801 . . Shaping fiber or fibered material
- N Y10T 29/49803 . . Magnetically shaping
- N Y10T 29/49805 . . Shaping by direct application of fluent pressure
- N Y10T 29/49806 . . . Explosively shaping
- N Y10T 29/49808 . . Shaping container end to encapsulate material
- N Y10T 29/4981 . . Utilizing transitory attached element or associated separate material
- N Y10T 29/49812 . . . Temporary protective coating, impregnation, or cast layer
- N Y10T 29/49813 . . Shaping mating parts for reassembly in different positions
- N Y10T 29/49815 . . Disassembling
- N Y10T 29/49817 . . . with other than ancillary treating or assembling
- N Y10T 29/49819 . . . with conveying of work or disassembled work part
- N Y10T 29/49821 . . . by altering or destroying work part or connector
- N Y10T 29/49822 . . . by applying force
- N Y10T 29/49824 to elastically deform work part or connector
- N Y10T 29/49826 . . Assembling or joining
- N Y10T 29/49828 . . . Progressively advancing of work assembly station or assembled portion of work
- N Y10T 29/49829 Advancing work to successive stations [i.e., assembly line]
- N Y10T 29/49831 Advancing station
- N Y10T 29/49833 . . . Punching, piercing or reaming part by surface of second part
- N Y10T 29/49835 with shaping
- N Y10T 29/49837 of first part

- N Y10T 29/49838 . . . by stringing
- N Y10T 29/4984 . . . Retaining clearance for motion between assembled parts
- N Y10T 29/49842 Between tube-forming helical coils
- N Y10T 29/49844 Through resilient media
- N Y10T 29/49845 by deforming interlock
- N Y10T 29/49847 by folding part into plural ears
- N Y10T 29/49849 by wrapping around
- N Y10T 29/49851 of link closure
- N Y10T 29/49853 of sphere, i.e., ball, in socket
- N Y10T 29/49854 Ball point pen making
- N Y10T 29/49856 Allowing assembled sphere to move in single plane only
- N Y10T 29/49858 of flange into tubular socket
- N Y10T 29/4986 Outwardly deforming internally fitted rod
- N Y10T 29/49861 . . . Sizing mating parts during final positional association
- N Y10T 29/49863 . . . with prestressing of part
- N Y10T 29/49865 by temperature differential [e.g., shrink fit]
- N Y10T 29/49867 of skin on frame member
- N Y10T 29/49869 by flexing
- N Y10T 29/4987 Elastic joining of parts
- N Y10T 29/49872 Confining elastic part in socket
- N Y10T 29/49874 Prestressing rod, filament or strand
- N Y10T 29/49876 by snap fit
- N Y10T 29/49877 . . . of flexible wall, expansible chamber devices [e.g., bellows]
- N Y10T 29/49879 . . . Spaced wall tube or receptacle
- N Y10T 29/49881 . . . of separate helix [e.g., screw thread]
- N Y10T 29/49883 . . . Ribbing
- N Y10T 29/49885 . . . with coating before or during assembling
- N Y10T 29/49886 to roughen surface
- N Y10T 29/49888 . . . Subsequently coating
- N Y10T 29/4989 . . . with spreading of cable strands
- N Y10T 29/49892 . . . Joining plate edge perpendicularly to frame
- N Y10T 29/49893 . . . Peripheral joining of opposed mirror image parts to form a hollow body
- N Y10T 29/49895 . . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
- N Y10T 29/49897 Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
- N Y10T 29/49899 by multiple cooperating aligning means
- N Y10T 29/49901 Sequentially associating parts on stationary aligning means
- N Y10T 29/49902 by manipulating aligning means
- N Y10T 29/49904 . . . Assembling a subassembly, then assembling with a second subassembly
- N Y10T 29/49906 . . . Metal deforming with nonmetallic bonding
- N Y10T 29/49908 . . . Joining by deforming
- N Y10T 29/49909 Securing cup or tube between axially extending concentric annuli
- N Y10T 29/49911 by expanding inner annulus
- N Y10T 29/49913 by constricting outer annulus

- N Y10T 29/49915 Overedge assembling of seated part
- N Y10T 29/49917 by necking in cup or tube wall
- N Y10T 29/49918 At cup or tube end
- N Y10T 29/4992 by flaring inserted cup or tube end
- N Y10T 29/49922 by bending over projecting prongs
- N Y10T 29/49924 of parallel side-by-side elongated members
- N Y10T 29/49925 Inward deformation of aperture or hollow body wall
- N Y10T 29/49927 Hollow body is axially joined cup or tube
- N Y10T 29/49929 Joined to rod
- N Y10T 29/49931 Joined to overlapping ends of plural rods
- N Y10T 29/49933 . After thinning
- N Y10T 29/49934 by axially applying force
- N Y10T 29/49936 Surface interlocking
- N Y10T 29/49938 Radially expanding part in cavity, aperture, or hollow body
- N Y10T 29/4994 Radially expanding internal tube
- N Y10T 29/49941 Peripheral edge joining of abutting plates
- N Y10T 29/49943 Riveting
- N Y10T 29/49945 by driven force fit
- N Y10T 29/49947 by applying separate fastener
- N Y10T 29/49948 Multipart cooperating fastener [e.g., bolt and nut]
- N Y10T 29/4995 Nonthreaded
- N Y10T 29/49952 At least one part is nonmetallic
- N Y10T 29/49954 Fastener deformed after application
- N Y10T 29/49956 Riveting
- N Y10T 29/49957 At least one part nonmetallic
- N Y10T 29/49959 Nonresilient fastener
- N Y10T 29/49961 At least one part nonmetallic
- N Y10T 29/49963 Threaded fastener
- N Y10T 29/49964 At least one part nonmetallic
- N Y10T 29/49966 with supplemental joining
- N Y10T 29/49968 Metal fusion joining
- N Y10T 29/4997 At least one part nonmetallic
- N Y10T 29/49972 with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]
- N Y10T 29/49973 Compressing ingot while still partially molten
- N Y10T 29/49975 Removing defects
- N Y10T 29/49977 From center of ingot to leave hollow blank
- N Y10T 29/49979 After deforming
- N Y10T 29/4998 Combined manufacture including applying or shaping of fluent material
- N Y10T 29/49982 Coating
- N Y10T 29/49984 and casting
- N Y10T 29/49986 Subsequent to metal working
- N Y10T 29/49988 Metal casting
- N Y10T 29/49989 Followed by cutting or removing material

- N Y10T 29/49991 Combined with rolling
- N Y10T 29/49993 Filling of opening
- N Y10T 29/49995 Shaping one-piece blank by removing material
- N Y10T 29/49996 Successive distinct removal operations
- N Y10T 29/49998 Work holding
- N Y10T 29/50 Convertible metal working machine
- N Y10T 29/505 Vise type
- N Y10T 29/51 Plural diverse manufacturing apparatus including means for metal shaping or assembling
- N Y10T 29/5101 Slide fastener or slide fastener element
- N Y10T 29/5102 Binding or covering and cutting
- N Y10T 29/5103 Cutting covering material only
- N Y10T 29/5104 Type of machine
- N Y10T 29/5105 Drill press
- N Y10T 29/5107 Drilling and other
- N Y10T 29/5108 Portable
- N Y10T 29/5109 Lathe
- N Y10T 29/511 Grinding attachment
- N Y10T 29/5111 Pulley or wheel
- N Y10T 29/5112 Convertible
- N Y10T 29/5113 Commutator
- N Y10T 29/5114 Lathe and tool
- N Y10T 29/5115 Planer
- N Y10T 29/5116 forging and bending, cutting or punching
- N Y10T 29/5117 Fastener [zipper]
- N Y10T 29/5118 Riveting
- N Y10T 29/512 Ball making
- N Y10T 29/5121 Wire working
- N Y10T 29/5122 with means to feed work during tool contact
- N Y10T 29/5123 including nonrotary flying tool
- N Y10T 29/5124 with means to feed work intermittently from one tool station to another
- N Y10T 29/5125 Stock turret
- N Y10T 29/5126 Swiss type
- N Y10T 29/5127 Blank turret
- N Y10T 29/5128 Rotary work - vertical axis
- N Y10T 29/5129 Rotary work - horizontal axis
- N Y10T 29/513 Stationary work
- N Y10T 29/5132 Belt drive
- N Y10T 29/5133 Crankshaft
- N Y10T 29/5134 Collapsible tube
- N Y10T 29/5135 Endless belt
- N Y10T 29/5136 Separate tool stations for selective or successive operation on work
- N Y10T 29/5137 including assembling or disassembling station
- N Y10T 29/5138 and means to machine work part to fit cooperating work part

- N Y10T 29/5139 and means to sever work prior to disassembling
- N Y10T 29/514 comprising means to strip insulation from wire
- N Y10T 29/5141 and means to stake electric wire to commutator or armature in assembling of electric motor or generator
- N Y10T 29/5142 and means to sever work from supply
- N Y10T 29/5143 and means to machine product
- N Y10T 29/5145 to sever product to length
- N Y10T 29/5146 . . Common reciprocating support for spaced tools
- N Y10T 29/5147 . . including composite tool
- N Y10T 29/5148 . . . including severing means
- N Y10T 29/5149 to sever electric terminal from supply strip
- N Y10T 29/515 to trim electric component
- N Y10T 29/5151 Means comprising hand-manipulatable implement
- N Y10T 29/5152 . . with turret mechanism
- N Y10T 29/5153 . . . Multiple turret
- N Y10T 29/5154 . . . tool turret
- N Y10T 29/5155 Rotary tool holder
- N Y10T 29/5157 Sliding tool holder
- N Y10T 29/5158 Fluid operated
- N Y10T 29/5159 Cam operated
- N Y10T 29/516 Longitudinal turret axis
- N Y10T 29/5161 Transverse turret axis
- N Y10T 29/5162 Lever operated
- N Y10T 29/5163 Rack-and-pinion operated
- N Y10T 29/5164 Screw operated
- N Y10T 29/5165 . . . including rotating and/or locking means
- N Y10T 29/5166 Frictional and positive
- N Y10T 29/5167 Lock means for tool or work turrets
- N Y10T 29/5168 . . Multiple-tool holder
- N Y10T 29/517 . . . Laterally movable stock holder
- N Y10T 29/5171 . . . Axial tool and transversely movable slide rest
- N Y10T 29/5172 Rotary tool spindle
- N Y10T 29/5173 . . . Longitudinally and transversely movable
- N Y10T 29/5174 Rotary tool spindle
- N Y10T 29/5175 . . . Oscillating tool
- N Y10T 29/5176 . . including machining means
- N Y10T 29/5177 . . . and work-holder for assembly
- N Y10T 29/5178 . . Attachment
- N Y10T 29/5179 . . Speed controller
- N Y10T 29/518 . . Carriage stop mechanism
- N Y10T 29/5182 . . Flash remover
- N Y10T 29/5183 . . Welding strip ends
- N Y10T 29/5184 . . Casting and working
- N Y10T 29/5185 . . Tube making

- N Y10T 29/5186 . . Covering
- N Y10T 29/5187 . . Wire working
- N Y10T 29/5188 . . Radiator making
- N Y10T 29/5189 . . Printing plate
- N Y10T 29/519 . . Turret
- N Y10T 29/5191 . . Assembly
- N Y10T 29/5192 . . Armature
- N Y10T 29/5193 . . Electrical connector or terminal
- N Y10T 29/5195 . . Tire valve or spark plug
- N Y10T 29/5196 . . Multiple station with conveyor
- N Y10T 29/5197 . . Multiple stations working strip material
- N Y10T 29/5198 . . Continuous strip
- N Y10T 29/5199 . . Work on tubes
- N Y10T 29/52 . . Plural diverse manufacturing apparatus
- N Y10T 29/53 . . Means to assemble or disassemble
- N Y10T 29/53004 . . with means to regulate operation by use of templet, tape, card or other replaceable information supply
- N Y10T 29/53009 . . . with comparator
- N Y10T 29/53013 Computer input
- N Y10T 29/53017 . . . Web or strand-carried information supply
- N Y10T 29/53022 . . with means to test work or product
- N Y10T 29/53026 . . with randomly actuated stopping or disabling means
- N Y10T 29/5303 . . . Responsive to condition of work or product
- N Y10T 29/53035 . . . Responsive to operative [e.g., safety device, etc.]
- N Y10T 29/53039 . . with control means energized in response to activator stimulated by condition sensor
- N Y10T 29/53043 . . . including means to divert defective work part
- N Y10T 29/53048 . . . Multiple station assembly or disassembly apparatus
- N Y10T 29/53052 including position sensor
- N Y10T 29/53057 . . . Responsive to timer
- N Y10T 29/53061 . . . Responsive to work or work-related machine element
- N Y10T 29/53065 with means to fasten by deformation
- N Y10T 29/5307 Self-piercing work part
- N Y10T 29/53074 with means to fasten by elastic joining
- N Y10T 29/53078 with means to fasten by frictional fitting
- N Y10T 29/53083 including means to apply magnetic force directly to position or hold work
- N Y10T 29/53087 . . with signal, scale, illuminator, or optical viewer
- N Y10T 29/53091 . . . for work-holder for assembly or disassembly
- N Y10T 29/53096 . . including means to provide a controlled environment
- N Y10T 29/531 . . Nuclear device
- N Y10T 29/53104 . . Roller or ball bearing
- N Y10T 29/53109 . . . including deforming means
- N Y10T 29/53113 . . Heat exchanger
- N Y10T 29/53117 . . . including means to manipulate heat exchanger tube bundle
- N Y10T 29/53122 . . . including deforming means

N	Y10T 29/53126	. . Means to place sheath on running-length core
N	Y10T 29/5313	. . Means to assemble electrical device
N	Y10T 29/53135	. . . Storage cell or battery
N	Y10T 29/53139	. . . . including deforming means
N	Y10T 29/53143	. . . Motor or generator
N	Y10T 29/53148	. . . . Means to assemble commutator
N	Y10T 29/53152	. . . . Means to position insulation
N	Y10T 29/53157	. . . . Means to stake wire to commutator or armature
N	Y10T 29/53161	. . . . including deforming means
N	Y10T 29/53165	. . . Magnetic memory device
N	Y10T 29/5317	. . . Laminated device
N	Y10T 29/53174	. . . Means to fasten electrical component to wiring board, base, or substrate
N	Y10T 29/53178	. . . . Chip component
N	Y10T 29/53183	. . . . Multilead component
N	Y10T 29/53187	. . . Multiple station assembly apparatus
N	Y10T 29/53191	. . . Means to apply vacuum directly to position or hold work part
N	Y10T 29/53196	. . . Means to apply magnetic force directly to position or hold work part
N	Y10T 29/532	. . . Conductor
N	Y10T 29/53204	. . . . Electrode
N	Y10T 29/53209	. . . . Terminal or connector
N	Y10T 29/53213	. . . . . Assembled to wire-type conductor
N	Y10T 29/53217	. . . . . Means to simultaneously assemble multiple, independent conductors to terminal
N	Y10T 29/53222	. . . . . Means comprising hand-manipulatable implement
N	Y10T 29/53226	. . . . . . Fastening by deformation
N	Y10T 29/5323	. . . . . . Fastening by elastic joining
N	Y10T 29/53235	. . . . . . Means to fasten by deformation
N	Y10T 29/53239	. . . . . . Means to fasten by elastic joining
N	Y10T 29/53243	. . . . Multiple, independent conductors
N	Y10T 29/53248	. . . . Switch or fuse
N	Y10T 29/53252	. . . Means to simultaneously fasten three or more parts
N	Y10T 29/53257	. . . Means comprising hand-manipulatable implement
N	Y10T 29/53261	. . . Means to align and advance work part
N	Y10T 29/53265	. . . with work-holder for assembly
N	Y10T 29/5327	. . . Means to fasten by deforming
N	Y10T 29/53274	. . Means to disassemble electrical device
N	Y10T 29/53278	. . . Storage cell or battery
N	Y10T 29/53283	. . . Means comprising hand-manipulatable implement
N	Y10T 29/53287	. . Means to place traveler on ring or ring on bobbin of a textile machine
N	Y10T 29/53291	. . Slide fastener
N	Y10T 29/53296	. . . Means to assemble stop onto stringer
N	Y10T 29/533	. . . Means to assemble slider onto stringer
N	Y10T 29/53304	. . . Means to assemble teeth onto stringer
N	Y10T 29/53309	. . . Disassembly means

- N Y10T 29/53313 . . Means to interrelatedly feed plural work parts from plural sources without manual intervention
- N Y10T 29/53317 . . . Box or pallet assembly means
- N Y10T 29/53322 . . . Means to assemble container
- N Y10T 29/53326 Handle to container
- N Y10T 29/5333 Label to container
- N Y10T 29/53335 Pressurized dispensing container
- N Y10T 29/53339 Hypodermic syringe
- N Y10T 29/53343 including fluid component
- N Y10T 29/53348 . . . Running-length work
- N Y10T 29/53352 Means including orbiting running-length work supply
- N Y10T 29/53357 Pipe section
- N Y10T 29/53361 Assembled to article
- N Y10T 29/53365 . . . Multiple station assembly apparatus
- N Y10T 29/5337 . . . including assembly pallet
- N Y10T 29/53374 . . . including turret-type conveyer
- N Y10T 29/53378 . . . including converging conveyers
- N Y10T 29/53383 . . . and means to fasten work parts together
- N Y10T 29/53387 by deforming
- N Y10T 29/53391 by elastic joining
- N Y10T 29/53396 by friction fit
- N Y10T 29/534 . . Multiple station assembly or disassembly apparatus
- N Y10T 29/53404 . . . including turret-type conveyer
- N Y10T 29/53409 . . . including converging conveyers
- N Y10T 29/53413 and primary central conveyer
- N Y10T 29/53417 . . . Means to fasten work parts together
- N Y10T 29/53422 by deforming
- N Y10T 29/53426 by elastic joining
- N Y10T 29/5343 . . Means to drive self-piercing work part
- N Y10T 29/53435 . . including assembly pallet
- N Y10T 29/53439 . . including provision to utilize thermal expansion of work
- N Y10T 29/53443 . . Means to assemble or disassemble container and fluid component
- N Y10T 29/53448 . . Vehicle wheel
- N Y10T 29/53452 . . . Railway wheel
- N Y10T 29/53457 . . Tumbler lock
- N Y10T 29/53461 . . toy doll
- N Y10T 29/53465 . . Film or tape cartridge
- N Y10T 29/5347 . . Crystal to watch or clock
- N Y10T 29/53474 . . Means to insert or extract pen point
- N Y10T 29/53478 . . with magazine supply
- N Y10T 29/53483 . . . and magnetic work-holder or positioner
- N Y10T 29/53487 . . . Assembling means comprising hand-manipulatable implement
- N Y10T 29/53491 One work part comprising living tissue
- N Y10T 29/53496 comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter

N	Y10T 29/535	. . . . One work part comprising nut or screw
N	Y10T 29/53504	. . . . One work part comprising paper clip
N	Y10T 29/53509	. . . . Means to assemble tire stud into tire tread
N	Y10T 29/53513	. . . . Means to fasten by deforming
N	Y10T 29/53517	. . . . . Fastening sinker to fishing line
N	Y10T 29/53522	. . . Means to fasten by deforming
N	Y10T 29/53526	. . Running-length work
N	Y10T 29/5353	. . . Assembled on core
N	Y10T 29/53535	. . including means to vibrate work
N	Y10T 29/53539	. . including work conveyer
N	Y10T 29/53543	. . . including transporting track
N	Y10T 29/53548	. . . . and work carrying vehicle
N	Y10T 29/53552	. . Valve applying or removing
N	Y10T 29/53557	. . . Engine valve unit puller or applier
N	Y10T 29/53561	. . . Engine valve spring compressor [only]
N	Y10T 29/53565	. . . . Plural spring engagement
N	Y10T 29/5357	. . . . Screw operated
N	Y10T 29/53574	. . . . . Parallel or tong type, side entrance
N	Y10T 29/53578	. . . . Lever operated
N	Y10T 29/53583	. . . . . Single jaw or valve engagement
N	Y10T 29/53587	. . . . . Plier type
N	Y10T 29/53591	. . . to or from wheel rim of resilient tire or tube
N	Y10T 29/53596	. . . Removal tool
N	Y10T 29/536	. . Piston ring inserter or remover
N	Y10T 29/53604	. . . Plier-type operation
N	Y10T 29/53609	. . . . with ring encirclement
N	Y10T 29/53613	. . Spring applier or remover
N	Y10T 29/53617	. . . Transmission spring
N	Y10T 29/53622	. . . Helical spring
N	Y10T 29/53626	. . . Flat spiral spring [e.g., watch or clock type]
N	Y10T 29/5363	. . . Circular spring
N	Y10T 29/53635	. . . Leaf spring
N	Y10T 29/53639	. . Means to stake watch or clock
N	Y10T 29/53643	. . . Plier type
N	Y10T 29/53648	. . Brake lining to brake shoe
N	Y10T 29/53652	. . Tube and coextensive core
N	Y10T 29/53657	. . to apply or remove a resilient article [e.g., tube, sleeve, etc.]
N	Y10T 29/53661	. . . Nipple to nursing bottle
N	Y10T 29/53665	. . . Well protector to sucker rod
N	Y10T 29/5367	. . Coupling to conduit
N	Y10T 29/53674	. . Loose-leaf sheet binder
N	Y10T 29/53678	. . Compressing parts together face to face
N	Y10T 29/53683	. . Spreading parts apart or separating them from face to face engagement
N	Y10T 29/53687	. . by rotation of work part

- N Y10T 29/53691 . . . Means to insert or remove helix
- N Y10T 29/53696 . . Means to string
- N Y10T 29/537 . . . tool handle and tool
- N Y10T 29/53704 . . . tool chuck and tool
- N Y10T 29/53709 . . Overedge assembling means
- N Y10T 29/53713 . . . Belt-hook attacher
- N Y10T 29/53717 . . . Annular work
- N Y10T 29/53722 with radially acting tool inside annular work
- N Y10T 29/53726 with second workpiece inside annular work one workpiece moved to shape the other
- N Y10T 29/5373 comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
- N Y10T 29/53735 including near side fastener shaping tool
- N Y10T 29/53739 Pneumatic- or fluid-actuated tool
- N Y10T 29/53743 Liquid
- N Y10T 29/53748 and gas
- N Y10T 29/53752 having rotary drive mechanism
- N Y10T 29/53757 having allochiral actuating handles
- N Y10T 29/53761 having repositionable annulus engaging tool
- N Y10T 29/53765 including near side fastener shaping tool
- N Y10T 29/5377 . . . Riveter
- N Y10T 29/53774 Single header
- N Y10T 29/53778 Pipe joiner
- N Y10T 29/53783 . . . Clip applier
- N Y10T 29/53787 . . . Binding or covering
- N Y10T 29/53791 Edge binding
- N Y10T 29/53796 . . Puller or pusher means, contained force multiplying operator
- N Y10T 29/538 . . . Hubcap and hub
- N Y10T 29/53804 . . . Battery post and terminal
- N Y10T 29/53809 . . . Cotter pin and cooperating member
- N Y10T 29/53813 Plier type means
- N Y10T 29/53817 . . . Valve stem pin or key and another member
- N Y10T 29/53822 . . . Machine key and another member
- N Y10T 29/53826 . . . Arbor-type press means
- N Y10T 29/5383 . . . having fluid operator
- N Y10T 29/53835 . . . having wedge operator
- N Y10T 29/53839 . . . having percussion or explosive operator
- N Y10T 29/53843 Tube, sleeve, or ferrule inserting or removing
- N Y10T 29/53848 . . . having screw operator
- N Y10T 29/53852 C-frame
- N Y10T 29/53857 Central screw, work-engagers around screw
- N Y10T 29/53861 Work-engager arms along or parallel to screw
- N Y10T 29/53865 with arm connecting engaging means
- N Y10T 29/5387 Pivotal arms
- N Y10T 29/53874 Pivotal grippers on screw

- N Y10T 29/53878 Tubular or tube segment forms work-engager
 - N Y10T 29/53883 Screw threaded work-engager
 - N Y10T 29/53887 Movable grippers on screw
 - N Y10T 29/53891 Plate or bar forms work-engager
 - N Y10T 29/53896 . . . having lever operator
 - N Y10T 29/539 Plier type means
 - N Y10T 29/53904 . . Means comprising piston ring group contractor or holder
 - N Y10T 29/53909 . . Means comprising hand manipulatable tool
 - N Y10T 29/53913 . . . Aligner or center
 - N Y10T 29/53917 Tube with tube
 - N Y10T 29/53922 Auto wheel with auto chassis
 - N Y10T 29/53926 Clutch plates
 - N Y10T 29/5393 . . . Means comprising impact receiving tool
 - N Y10T 29/53935 C-frame
 - N Y10T 29/53939 Thread protector [e.g., wheel axle type]
 - N Y10T 29/53943 . . . Hand gripper for direct push or pull
 - N Y10T 29/53948 Centrifugal separator
 - N Y10T 29/53952 Tube sleeve or ferrule applying or removing
 - N Y10T 29/53957 Thread-tapping grip
 - N Y10T 29/53961 . . with work-holder for assembly
 - N Y10T 29/53965 . . . for assembling a luminescent mantle
 - N Y10T 29/5397 . . . and assembling press [e.g., truss assembling means, etc.]
 - N Y10T 29/53974 . . . having means to permit support movement while work is thereon
 - N Y10T 29/53978 . . including means to relatively position plural work parts
 - N Y10T 29/53983 . . Work-supported apparatus
 - N Y10T 29/53987 . . Tube, sleeve or ferrule
 - N Y10T 29/53991 . . Work gripper, anvil, or element
 - N Y10T 29/53996 . . by deforming
 - N Y10T 29/54 . . Miscellaneous apparatus
- N Y10T 74/00 - Y10T 74/00** **Former US Class 74 Series**
- N Y10T 74/00** **Machine element or mechanism**
- N Y10T 74/10 . . High frequency vibratory devices
 - N Y10T 74/11 . . Tripping mechanism
 - N Y10T 74/111 . . Speed controlled
 - N Y10T 74/113 . . . Valve gear trips [e.g., steam engine "Corliss" type]
 - N Y10T 74/114 . . Retarded
 - N Y10T 74/115 . . . Plural, sequential, trip actuations
 - N Y10T 74/116 . . . Clock train
 - N Y10T 74/118 Winding knob trip [e.g., alarm mechanism]
 - N Y10T 74/119 . . Hit and miss
 - N Y10T 74/12 . . Gyroscopes
 - N Y10T 74/1204 . . with caging or parking means
 - N Y10T 74/1207 . . . Rotor spin and cage release type

- N Y10T 74/1211 . . . and resetting means
- N Y10T 74/1214 . . with gimbal lock preventing means
- N Y10T 74/1218 . . Combined
- N Y10T 74/1221 . . Multiple gyroscopes
- N Y10T 74/1225 . . . with rotor drives
- N Y10T 74/1229 . . Gyroscope control
- N Y10T 74/1232 . . . Erecting
- N Y10T 74/1236 by plural diverse forces
- N Y10T 74/1239 by jet
- N Y10T 74/1243 by weight
- N Y10T 74/1246 by friction
- N Y10T 74/125 by magnetic field
- N Y10T 74/1254 by motor torque
- N Y10T 74/1257 . . . Damping
- N Y10T 74/1261 . . with pick off
- N Y10T 74/1264 . . . Optical
- N Y10T 74/1268 . . . Pneumatic
- N Y10T 74/1271 . . . Conducting liquid
- N Y10T 74/1275 . . . Electrical
- N Y10T 74/1279 . . . Electrical and magnetic
- N Y10T 74/1282 . . with rotor drive
- N Y10T 74/1286 . . Vertical gyroscopes
- N Y10T 74/1289 . . Horizontal gyroscopes
- N Y10T 74/1293 . . Flexure hinges for gyros
- N Y10T 74/1296 . . Flywheel structure
- N Y10T 74/13 . . Machine starters
- N Y10T 74/131 . . Automatic
- N Y10T 74/132 . . . Separate power mesher
- N Y10T 74/133 . . . Holders
- N Y10T 74/134 . . . Clutch connection
- N Y10T 74/136 . . . Worm and wheel
- N Y10T 74/137 . . . Reduction gearing
- N Y10T 74/138 . . Radial meshing
- N Y10T 74/139 . . Cam operated
- N Y10T 74/14 . . Rotary member or shaft indexing, e.g., tool or work turret
- N Y10T 74/1406 . . with safety device or drive disconnect
- N Y10T 74/1412 . . with locating point adjusting
- N Y10T 74/1418 . . Preselected indexed position
- N Y10T 74/1424 . . . Sequential
- N Y10T 74/1429 Skip position
- N Y10T 74/1435 Held by torque
- N Y10T 74/1441 Geneva or mutilated gear drive
- N Y10T 74/1447 Velocity control
- N Y10T 74/1453 Interlocked rotator and brake

N	Y10T 74/1459	. . . . . Diverse-type brakes
N	Y10T 74/1465	. . . . . with axially acting friction brake
N	Y10T 74/1471	. . Plural operators or input drives
N	Y10T 74/1476	. . with means to axially shift shaft
N	Y10T 74/1482	. . Single revolution input effects desired fractional output
N	Y10T 74/1488	. . Control means
N	Y10T 74/1494	. . Locking means
N	Y10T 74/15	. Intermittent grip type mechanical movement
N	Y10T 74/1502	. . Escapement
N	Y10T 74/1503	. . Rotary to intermittent unidirectional motion
N	Y10T 74/1505	. . . Automatically controlled
N	Y10T 74/1506	. . . . Speed
N	Y10T 74/1508	. . . Rotary crank or eccentric drive
N	Y10T 74/151	. . . . Adjustable
N	Y10T 74/1511	. . . . Lever transmitter
N	Y10T 74/1513	. . . . . Adjustable leverage
N	Y10T 74/1515	. . . . Rack and pinion transmitter
N	Y10T 74/1516	. . . . . Adjustable throw
N	Y10T 74/1518	. . . . Rotary cam drive
N	Y10T 74/1519	. . . . . Adjustable throw
N	Y10T 74/1521	. . . . . Radial cam
N	Y10T 74/1523	. . . . . Radial cam
N	Y10T 74/1524	. . . Intermittently engaged clutch
N	Y10T 74/1526	. . Oscillation or reciprocation to intermittent unidirectional motion
N	Y10T 74/1527	. . . Screw and nut devices
N	Y10T 74/1529	. . . Slide actuator
N	Y10T 74/1531	. . . . Multiple acting
N	Y10T 74/1532	. . . Rack actuator
N	Y10T 74/1534	. . . . Multiple acting
N	Y10T 74/1535	. . . . . Inwardly facing racks
N	Y10T 74/1537	. . . . Oscillating
N	Y10T 74/1539	. . . . . Multiple acting
N	Y10T 74/154	. . . . . Inwardly facing racks
N	Y10T 74/1542	. . . Strap actuator
N	Y10T 74/1544	. . . . Multiple acting
N	Y10T 74/1545	. . . . . Spring or weight return
N	Y10T 74/1547	. . . . Single acting
N	Y10T 74/1548	. . . . . Engine starter type
N	Y10T 74/155	. . . . . Spring or weight return
N	Y10T 74/1552	. . . . . Spring or weight return
N	Y10T 74/1553	. . . Lever actuator
N	Y10T 74/1555	. . . . Rotary driven element
N	Y10T 74/1556	. . . . . Multiple acting
N	Y10T 74/1558	. . Grip units and features

- N Y10T 74/156 . . . Compound movement handle
- N Y10T 74/1561 Reversible
- N Y10T 74/1563 Transverse pivots
- N Y10T 74/1565 . . . Gripper releasing devices
- N Y10T 74/1566 Power pawl lifter
- N Y10T 74/1568 Automatic
- N Y10T 74/1569 Idle stroke
- N Y10T 74/1571 Cooperating holding pawl
- N Y10T 74/1573 Power stroke
- N Y10T 74/1574 Cooperating holding pawl
- N Y10T 74/1576 Holding pawl lifter
- N Y10T 74/1577 . . . Gripper mountings, lever
- N Y10T 74/1579 Reversible
- N Y10T 74/1581 Multiple acting
- N Y10T 74/1582 Single ratchet or clutch
- N Y10T 74/1584 . . . Gripper mountings, slide
- N Y10T 74/1585 Multiple acting
- N Y10T 74/1587 . . . Grip features
- N Y10T 74/1589 Driving band
- N Y10T 74/159 Clamping
- N Y10T 74/1592 Driven band and gripper
- N Y10T 74/1594 Positive grip
- N Y10T 74/1595 Driving ratchet-bar or rack
- N Y10T 74/1597 Multiple acting
- N Y10T 74/1598 Driven ratchet-bar and power dog
- N Y10T 74/16 . . Alternating-motion driven device with means during operation to adjust stroke
- N Y10T 74/1608 . . Constant length stroke with means to displace end limits
- N Y10T 74/1616 . . . Cyclical displacement responsive to the alternating-motion
- N Y10T 74/1625 . . Stroke adjustable to zero and/or reversible in phasing
- N Y10T 74/1633 . . . Plural driving means to jointly drive the driven device
- N Y10T 74/1642 . . . Device driven from selected points on oscillating link
- N Y10T 74/165 . . . Driving lever with adjustable pivot point
- N Y10T 74/1658 . . . Eccentric and strap drive, shiftable eccentric
- N Y10T 74/1667 Changing the extent of eccentricity
- N Y10T 74/1675 . . . Crank pin drive, shiftable pin
- N Y10T 74/1683 . . . Cam and follower drive
- N Y10T 74/1692 Axial-type cam [e.g., wabblers type]
- N Y10T 74/17 . . Rotary driven device adjustable during operation relative to its supporting structure
- N Y10T 74/173 . . Screw and nut adjusting means
- N Y10T 74/177 . . Rack and pinion adjusting means
- N Y10T 74/18 . . Mechanical movements
- N Y10T 74/18008 . . Oscillating to reciprocating and alternating rotary
- N Y10T 74/18016 . . Oscillating to reciprocating and intermittent rotary

- N Y10T 74/18024 . . Rotary to reciprocating and rotary
- N Y10T 74/18032 . . . Rotary to reciprocating or rotary
- N Y10T 74/1804 . . Rotary to reciprocating and alternating rotary
- N Y10T 74/18048 . . Rotary to reciprocating and intermittent rotary
- N Y10T 74/18056 . . Rotary to or from reciprocating or oscillating
- N Y10T 74/18064 . . . Head motions
- N Y10T 74/18072 . . . Reciprocating carriage motions
- N Y10T 74/1808 Phonograph type
- N Y10T 74/18088 . . . Rack and pinion type
- N Y10T 74/18096 Shifting rack
- N Y10T 74/18104 Shiftable pinion
- N Y10T 74/18112 Segmental pinion
- N Y10T 74/1812 Alternately rotated pinion
- N Y10T 74/18128 Clutchable gears
- N Y10T 74/18136 Bevel
- N Y10T 74/18144 . . . Overcoming dead center
- N Y10T 74/18152 . . . Belt or chain carried member
- N Y10T 74/1816 . . . Crank, lever, toggle, and slide
- N Y10T 74/18168 . . . Crank, lazy-tong, and slide
- N Y10T 74/18176 . . . Crank, pitman, lever, and slide
- N Y10T 74/18182 Pump jack type
- N Y10T 74/18184 . . . Crank, pitman, and lever
- N Y10T 74/182 Multiple levers
- N Y10T 74/18208 . . . Crank, pitman, and slide
- N Y10T 74/18216 . . . Crank, lever, and slide
- N Y10T 74/18224 Rack connections
- N Y10T 74/18232 . . . Crank and lever
- N Y10T 74/1824 Slidable connections
- N Y10T 74/18248 . . . Crank and slide
- N Y10T 74/18256 Slidable connections [e.g., scotch yoke]
- N Y10T 74/18264 . . . Crank and multiple pitmans
- N Y10T 74/18272 . . . Planetary gearing and slide
- N Y10T 74/1828 . . . Cam, lever, and slide
- N Y10T 74/18288 . . . Cam and lever
- N Y10T 74/18296 . . . Cam and slide
- N Y10T 74/18304 Axial cam
- N Y10T 74/18312 Grooved
- N Y10T 74/1832 Multiple screw
- N Y10T 74/18328 Alternately rotated screw
- N Y10T 74/18336 Wabblor type
- N Y10T 74/18344 . . . Unbalanced weights
- N Y10T 74/18352 . . . Trammel-pitman
- N Y10T 74/1836 . . Rotary to rotary
- N Y10T 74/18368 . . . Inertia or centrifugal transmitters

- N Y10T 74/18376 . . . Crank, pitman, lever, and crank
- N Y10T 74/18384 . . . Crank, lever, and crank
- N Y10T 74/18392 . . . Crank, pitman, and crank
- N Y10T 74/184 . . . Cranks, link connected
- N Y10T 74/18408 . . . Cranks, slidable connections
- N Y10T 74/18416 . . Rotary to alternating rotary
- N Y10T 74/18424 . . . Mangle connections
- N Y10T 74/18432 Shiftable driven gear
- N Y10T 74/1844 Central teeth
- N Y10T 74/18448 Mutilated gearing connections
- N Y10T 74/18456 . . . Crank, pitman, and lever
- N Y10T 74/18464 . . . Reciprocating rack connections
- N Y10T 74/18472 Crank and pitman actuator
- N Y10T 74/1848 Simple crank actuator
- N Y10T 74/18488 . . . Oscillating rack connections
- N Y10T 74/18496 Mangle actuated
- N Y10T 74/18504 Crank and pitman actuator
- N Y10T 74/18512 . . . Flexible connector type
- N Y10T 74/1852 . . . Associated inertia devices
- N Y10T 74/18528 . . Rotary to intermittent unidirectional motion
- N Y10T 74/18536 . . . Space machines
- N Y10T 74/18544 . . Rotary to gyratory
- N Y10T 74/18552 . . . Unbalanced weight
- N Y10T 74/1856 . . Reciprocating or oscillating to intermittent unidirectional motion
- N Y10T 74/18568 . . Reciprocating or oscillating to or from alternating rotary
- N Y10T 74/18576 . . . including screw and nut
- N Y10T 74/18584 Shaft shorter than nut
- N Y10T 74/18592 Auxiliary drive [e.g., fluid piston, etc.] for load
- N Y10T 74/186 Alternate power path operable on failure of primary
- N Y10T 74/18608 Single input split into two intermediate outputs that are subsequently superposed into a single output
- N Y10T 74/18616 Single input, plural outputs
- N Y10T 74/18624 Plural inputs, single output
- N Y10T 74/18632 Plural nuts driving shaft
- N Y10T 74/1864 Shaft and nut driven
- N Y10T 74/18648 Carriage surrounding, guided by, and primarily supported by member other than screw [e.g., linear guide, etc.]
- N Y10T 74/18656 Carriage surrounded, guided, and primarily supported by member other than screw [e.g., linear guide, etc.]
- N Y10T 74/18664 Shaft moves through rotary drive means
- N Y10T 74/18672 Plural screws in series [e.g., telescoping, etc.]
- N Y10T 74/1868 Deflection related
- N Y10T 74/18688 Limit stop
- N Y10T 74/18696 including means to selectively transmit power [e.g., clutch, etc.]
- N Y10T 74/18704 Means to selectively lock or retard screw or nut

- N Y10T 74/18712 Contamination related
- N Y10T 74/1872 Imperforate enclosure
- N Y10T 74/18728 Backlash
- N Y10T 74/18736 Pressurized fluid introduced between nut and screw
- N Y10T 74/18744 Lubrication
- N Y10T 74/18752 Manually driven
- N Y10T 74/1876 . . . including inertia device
- N Y10T 74/18768 with rack and pinion
- N Y10T 74/18776 Rectilinear rack
- N Y10T 74/18784 . . . including bevel gears
- N Y10T 74/18792 . . . including worm
- N Y10T 74/188 . . . including spur gear
- N Y10T 74/18808 with rack
- N Y10T 74/18816 Curvilinear rack
- N Y10T 74/18824 with biasing means
- N Y10T 74/18832 . . . including flexible drive connector [e.g., belt, chain, strand, etc.]
- N Y10T 74/1884 with sprocket wheel
- N Y10T 74/18848 with pulley
- N Y10T 74/18856 . . Oscillating to oscillating
- N Y10T 74/18864 . . . Snap action
- N Y10T 74/18872 Plate spring
- N Y10T 74/1888 . . . Geared connections
- N Y10T 74/18888 . . Reciprocating to or from oscillating
- N Y10T 74/18896 . . . Snap action
- N Y10T 74/18904 Plate spring
- N Y10T 74/18912 . . . Compound lever and slide
- N Y10T 74/1892 . . . Lever and slide
- N Y10T 74/18928 Straight line motions
- N Y10T 74/18936 Slidable connections
- N Y10T 74/18944 Link connections
- N Y10T 74/18952 toggle transmissions
- N Y10T 74/1896 Cam connections
- N Y10T 74/18968 Flexible connections
- N Y10T 74/18976 . . . Rack and pinion
- N Y10T 74/18984 . . . Inclined ramp
- N Y10T 74/18992 . . Reciprocating to reciprocating
- N Y10T 74/19 . . Gearing
- N Y10T 74/19005 . . Nonplanetary gearing differential type [e.g., gearless differentials]
- N Y10T 74/19009 . . Single gearing unit includes fluid drive
- N Y10T 74/19014 . . Plural prime movers selectively coupled to common output
- N Y10T 74/19019 . . Plural power paths from prime mover
- N Y10T 74/19023 . . Plural power paths to and/or from gearing
- N Y10T 74/19028 . . . Alternate input connections single hand crank
- N Y10T 74/19033 . . . Fluid drive divides or combines alternate paths

- N Y10T 74/19037 . . . One path includes fluid drive
- N Y10T 74/19042 . . . Friction-type gearing
- N Y10T 74/19047 . . . Worm-type gearing
- N Y10T 74/19051 . . . Single driven plural drives
- N Y10T 74/19056 Parallel
- N Y10T 74/1906 Nonparallel
- N Y10T 74/19065 Aligned
- N Y10T 74/1907 Parallel and aligned
- N Y10T 74/19074 . . . Single drive plural driven
- N Y10T 74/19079 Parallel
- N Y10T 74/19084 Spur
- N Y10T 74/19088 Bevel
- N Y10T 74/19093 Spur and bevel
- N Y10T 74/19098 Helical
- N Y10T 74/19102 Belt or chain
- N Y10T 74/19107 Nonparallel
- N Y10T 74/19112 Aligned
- N Y10T 74/19116 Vehicle
- N Y10T 74/19121 Concentric
- N Y10T 74/19126 . . . Plural drivers plural driven
- N Y10T 74/1913 Bevel
- N Y10T 74/19135 Spur
- N Y10T 74/1914 . . . Alternate drivers and driven
- N Y10T 74/19144 . . . Miscellaneous [plural power paths]
- N Y10T 74/19149 . . with fluid drive
- N Y10T 74/19153 . . . Condition responsive control
- N Y10T 74/19158 . . . with one or more controllers for gearing, fluid drive, or clutch
- N Y10T 74/19163 with interrelated controls
- N Y10T 74/19167 . . In series plural interchangeably locked nonplanetary units
- N Y10T 74/19172 . . Reversal of direction of power flow changes power transmission to alternate path
- N Y10T 74/19177 . . . Input and output exchange functions
- N Y10T 74/19181 . . toothed gear and recirculated unconnected elements
- N Y10T 74/19186 . . Alternating rotary or continuous
- N Y10T 74/19191 . . Alternating rotary
- N Y10T 74/19195 . . . Progressive
- N Y10T 74/192 . . . Shiftable and/or slidable gears
- N Y10T 74/19205 . . . Clutchable gears
- N Y10T 74/1921 On single driven member
- N Y10T 74/19214 On single driving member
- N Y10T 74/19219 . . Interchangeably locked
- N Y10T 74/19223 . . . Disconnectable counter shaft
- N Y10T 74/19228 . . . Multiple concentric clutch shafts
- N Y10T 74/19233 . . . Plurality of counter shafts

N	Y10T 74/19237	. . . Internal-external gears
N	Y10T 74/19242	. . . Combined gear and clutch
N	Y10T 74/19247	. . . . Preselector
N	Y10T 74/19251	. . . Control mechanism
N	Y10T 74/19256	. . . . Automatic
N	Y10T 74/1926	. . . . . Speed responsive
N	Y10T 74/19265	. . . . . Governor
N	Y10T 74/1927	. . . . . with belt gearing
N	Y10T 74/19274	. . . . . torque responsive
N	Y10T 74/19279	. . . . Cam operated
N	Y10T 74/19284	. . . Meshing assisters
N	Y10T 74/19288	. . . . Double clutch and interposed transmission
N	Y10T 74/19293	. . . Longitudinally slidable
N	Y10T 74/19298	. . . . Multiple spur gears
N	Y10T 74/19302	. . . . . with tumbler gear
N	Y10T 74/19307	. . . . . Selective
N	Y10T 74/19312	. . . . . Direct clutch and drive
N	Y10T 74/19316	. . . . . Progressive
N	Y10T 74/19321	. . . . . Direct clutch and drive
N	Y10T 74/19326	. . . . . Fluid operated
N	Y10T 74/1933	. . . . Multiple bevel gears
N	Y10T 74/19335	. . . . Single spur gear
N	Y10T 74/1934	. . . . . Tumbler and cone
N	Y10T 74/19344	. . . . . Multiple cone
N	Y10T 74/19349	. . . . Single bevel gear
N	Y10T 74/19353	. . . . Pin or crown gears
N	Y10T 74/19358	. . . Laterally slidable gears
N	Y10T 74/19363	. . . . Rotary carriage
N	Y10T 74/19367	. . . . Swinging carriage
N	Y10T 74/19372	. . . Single forward and reverse speeds
N	Y10T 74/19377	. . . Slidable keys or clutches
N	Y10T 74/19381	. . . . Alternative clutch shaft
N	Y10T 74/19386	. . . . Multiple clutch shafts
N	Y10T 74/19391	. . . . . Progressive
N	Y10T 74/19395	. . . . . Keys simultaneously slidable
N	Y10T 74/194	. . . . . Selective
N	Y10T 74/19405	. . . . . Multiple forward and reverse
N	Y10T 74/19409	. . . . . Single forward and reverse
N	Y10T 74/19414	. . . . Single clutch shaft
N	Y10T 74/19419	. . . . . Progressive
N	Y10T 74/19423	. . . . . Multiple key
N	Y10T 74/19428	. . . . . Spur
N	Y10T 74/19433	. . . . . Fluid operated
N	Y10T 74/19437	. . . . . Electrically operated

N	Y10T 74/19442	. . . . . Single key
N	Y10T 74/19447	. . . . . Clutch and ratchet
N	Y10T 74/19451	. . . . . Spur gears
N	Y10T 74/19456	. . . . . Intermediate clutch
N	Y10T 74/1946	. . . . . Sliding clutch carrier
N	Y10T 74/19465	. . . . . Sliding clutch operator
N	Y10T 74/1947	. . . . . Selective
N	Y10T 74/19474	. . . . . Multiple key
N	Y10T 74/19479	. . . . . Spur gears
N	Y10T 74/19484	. . . . . Single speed forward and reverse
N	Y10T 74/19488	. . . . . Spur gears
N	Y10T 74/19493	. . . . . Bevel gears
N	Y10T 74/19498	. . . . . Bevel and idler gears
N	Y10T 74/19502	. . Pivotaly supported
N	Y10T 74/19507	. . . Windmill turntable
N	Y10T 74/19512	. . . Screw
N	Y10T 74/19516	. . . Spur
N	Y10T 74/19521	. . . Bevel
N	Y10T 74/19526	. . . . Wheel type
N	Y10T 74/1953	. . . . Wringer type
N	Y10T 74/19535	. . Follow-up mechanism
N	Y10T 74/1954	. . Eccentric driving shaft and axle
N	Y10T 74/19545	. . Central driving shaft in axle
N	Y10T 74/1955	. . Parallel shafts, adjustable gear mesh
N	Y10T 74/19555	. . Varying speed ratio
N	Y10T 74/1956	. . Adjustable
N	Y10T 74/19565	. . . Relative movable axes
N	Y10T 74/1957	. . . . Parallel shafts
N	Y10T 74/19575	. . . . Automatic control
N	Y10T 74/1958	. . . . . Parallel shafts
N	Y10T 74/19585	. . . Fixed axes
N	Y10T 74/1959	. . . . Parallel shafts
N	Y10T 74/19595	. . . . Automatic control
N	Y10T 74/196	. . . . . Parallel shafts
N	Y10T 74/19605	. . Reversing means
N	Y10T 74/19609	. . . Governor control
N	Y10T 74/19614	. . Disconnecting means
N	Y10T 74/19619	. . Displaceable elements
N	Y10T 74/19623	. . Backlash take-up
N	Y10T 74/19628	. . Pressure distributing
N	Y10T 74/19633	. . Yieldability in gear trains
N	Y10T 74/19637	. . with brake means for gearing
N	Y10T 74/19642	. . Directly cooperating gears
N	Y10T 74/19647	. . . Parallel axes or shafts

- N Y10T 74/19651 External type
- N Y10T 74/19656 Pin teeth
- N Y10T 74/1966 Intersecting axes
- N Y10T 74/19665 Bevel gear type
- N Y10T 74/1967 Rack and pinion
- N Y10T 74/19674 Spur and bevel
- N Y10T 74/19679 Spur
- N Y10T 74/19684 Motor and gearing
- N Y10T 74/19688 Bevel
- N Y10T 74/19693 Motor vehicle drive
- N Y10T 74/19698 Spiral
- N Y10T 74/19702 Screw and nut
- N Y10T 74/19707 Plural longitudinally variably spaced nuts
- N Y10T 74/19712 Threadless
- N Y10T 74/19716 Non-linear screw
- N Y10T 74/19721 Thread geometry
- N Y10T 74/19726 Thread pitch varies over axial length
- N Y10T 74/1973 Shaft thread is spirally wound wire
- N Y10T 74/19735 Nut disengageable from screw
- N Y10T 74/1974 Nut segments hinged parallel to shaft [e.g., clam shell-type, etc.]
- N Y10T 74/19744 Rolling element engaging thread
- N Y10T 74/19749 Recirculating rolling elements
- N Y10T 74/19753 Plural independent recirculating element paths
- N Y10T 74/19758 Single thread common to plural paths
- N Y10T 74/19763 Roller return path in shaft
- N Y10T 74/19767 Return path geometry
- N Y10T 74/19772 Rolling element deflector
- N Y10T 74/19777 Interconnected or cooperating rollers or roller structure
- N Y10T 74/19781 Non-recirculating rolling elements
- N Y10T 74/19786 Captured sphere
- N Y10T 74/19791 Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]
- N Y10T 74/19795 Parallel to shaft
- N Y10T 74/198 Perpendicular to shaft
- N Y10T 74/19805 Less than 360 degrees of contact between nut and screw
- N Y10T 74/19809 Independent nut segments
- N Y10T 74/19814 Integral deformable tangs engaging screw
- N Y10T 74/19819 Driven rack or shaft
- N Y10T 74/19823 Screw
- N Y10T 74/19828 Worm
- N Y10T 74/19833 Variable speed
- N Y10T 74/19837 Intermittent motion
- N Y10T 74/19842 Distribution of pressure
- N Y10T 74/19847 torque actuated safety devices

- N Y10T 74/19851 . . Gear and rotary bodies
- N Y10T 74/19856 . . . Laterally-spaced wheels
- N Y10T 74/1986 . . . Radially-spaced wheels
- N Y10T 74/19865 . . . with flywheel
- N Y10T 74/1987 . . Rotary bodies
- N Y10T 74/19874 . . . Mutilated
- N Y10T 74/19879 . . . Geneva
- N Y10T 74/19884 . . . Irregular teeth and bodies
- N Y10T 74/19888 . . . External and internal teeth
- N Y10T 74/19893 . . . Sectional
- N Y10T 74/19898 Backlash take-up
- N Y10T 74/19902 Screw and nut
- N Y10T 74/19907 Sound deadening
- N Y10T 74/19912 Differential disks
- N Y10T 74/19916 Multiple disks
- N Y10T 74/19921 Separate rim
- N Y10T 74/19926 Detachable
- N Y10T 74/1993 Segmental rim
- N Y10T 74/19935 Sheet metal
- N Y10T 74/1994 Diametrically split
- N Y10T 74/19944 Shaft-admitting insert
- N Y10T 74/19949 . . Teeth
- N Y10T 74/19953 . . . Worm and helical
- N Y10T 74/19958 . . . Bevel
- N Y10T 74/19963 . . . Spur
- N Y10T 74/19967 Yieldable
- N Y10T 74/19972 form
- N Y10T 74/19977 Antifriction
- N Y10T 74/19981 Roller
- N Y10T 74/19986 Twisted
- N Y10T 74/19991 . . Lubrication
- N Y10T 74/19995 . . . Teeth
- N Y10T 74/20 . Control lever and linkage systems
- N Y10T 74/20006 . . Resilient connections
- N Y10T 74/20012 . . Multiple controlled elements
- N Y10T 74/20018 . . . Transmission control
- N Y10T 74/20024 Fluid actuator
- N Y10T 74/2003 Electrical actuator
- N Y10T 74/20037 Occupant propelled vehicle
- N Y10T 74/20043 Transmission controlled by flexible cable
- N Y10T 74/20049 Transmission controlled by flexible cable
- N Y10T 74/20055 Foot operated
- N Y10T 74/20061 Multiple foot-operated controls
- N Y10T 74/20067 Control convertible between automatic and manual operation

- N Y10T 74/20073 Control of plural mechanisms [e.g., control of transmission and control of 4 - wheel drive]
- N Y10T 74/20079 Separate control levers
- N Y10T 74/20085 Restriction of shift, gear selection, or gear engagement
- N Y10T 74/20091 Prevention of reverse shift
- N Y10T 74/20098 Separate actuator to disengage restrictor
- N Y10T 74/20104 Shift element interlock
- N Y10T 74/20111 with detent, recess, notch, or groove
- N Y10T 74/20116 Resiliently biased interlock
- N Y10T 74/20122 Spherical restrictor
- N Y10T 74/20128 Resiliently biased restrictor
- N Y10T 74/20134 having vibration damper
- N Y10T 74/2014 Manually operated selector [e.g., remotely controlled device, lever, push button, rotary dial, etc.]
- N Y10T 74/20146 Control lever on steering column
- N Y10T 74/20152 Control lever movable through plural planes
- N Y10T 74/20159 Control lever movable through plural planes
- N Y10T 74/20165 Spherical mount [e.g., ball and socket]
- N Y10T 74/20171 Resiliently biased control lever
- N Y10T 74/20177 Particular element [e.g., shift fork, template, etc.]
- N Y10T 74/20183 Shift fork structure
- N Y10T 74/20189 . . . Foot operated
- N Y10T 74/20195 Offset extension
- N Y10T 74/20201 . . . Control moves in two planes
- N Y10T 74/20207 . . Multiple controlling elements for single controlled element
- N Y10T 74/20213 . . . Interconnected
- N Y10T 74/2022 Hand and foot
- N Y10T 74/20226 Accelerator
- N Y10T 74/20232 Marine
- N Y10T 74/20238 . . . Interlocked
- N Y10T 74/20244 Push button
- N Y10T 74/2025 Rod blocks actuation of rotary member
- N Y10T 74/20256 . . . Steering and controls assemblies
- N Y10T 74/20262 Rotary control shaft
- N Y10T 74/20268 Reciprocating control elements
- N Y10T 74/20274 Flexible
- N Y10T 74/2028 Handle bar type
- N Y10T 74/20287 Flexible control element
- N Y10T 74/20293 with horn control
- N Y10T 74/20299 . . . Antirattling elements
- N Y10T 74/20305 . . . Robotic arm
- N Y10T 74/20311 including power cable or connector
- N Y10T 74/20317 including electric motor
- N Y10T 74/20323 including flaccid drive element
- N Y10T 74/20329 Joint between elements

N	Y10T 74/20335	. . . . . Wrist
N	Y10T 74/20341	. . . Power elements as controlling elements
N	Y10T 74/20348	. . . . Planar surface with orthogonal movement and rotation
N	Y10T 74/20354	. . . . Planar surface with orthogonal movement only
N	Y10T 74/2036	. . . . Pair of power elements
N	Y10T 74/20366	. . . Power and manual controlling elements
N	Y10T 74/20372	. . . Manual controlling elements
N	Y10T 74/20378	. . . . Planar surface with orthogonal movement or rotation
N	Y10T 74/20384	. . . . Levers
N	Y10T 74/2039	. . . . . Pair of levers
N	Y10T 74/20396	. . Hand operated
N	Y10T 74/20402	. . . Flexible transmitter [e.g., Bowden cable]
N	Y10T 74/20408	. . . . Constant tension sustaining
N	Y10T 74/20414	. . . . . Hydraulic control
N	Y10T 74/2042	. . . . and hand operator
N	Y10T 74/20426	. . . . . Slidable
N	Y10T 74/20432	. . . . . for moving a mirror
N	Y10T 74/20438	. . . . . Single rotatable lever [e.g., for bicycle brake or derailleur]
N	Y10T 74/20444	. . . . including rolling antifriction elements
N	Y10T 74/2045	. . . . and sheath support, connector, or anchor
N	Y10T 74/20456	. . . . Specific cable or sheath structure
N	Y10T 74/20462	. . . . Specific cable connector or guide
N	Y10T 74/20468	. . . Sliding rod
N	Y10T 74/20474	. . . Rotatable rod, shaft, or post
N	Y10T 74/2048	. . . . Gear, drum, and cable
N	Y10T 74/20486	. . . . Drum and cable
N	Y10T 74/20492	. . . . Gear
N	Y10T 74/20498	. . . . . Variable ratio
N	Y10T 74/20504	. . . . . Screw and nut
N	Y10T 74/2051	. . . . Adjustable
N	Y10T 74/20516	. . . . Mountings
N	Y10T 74/20522	. . . . . Antenna
N	Y10T 74/20528	. . Foot operated
N	Y10T 74/20534	. . . Accelerator
N	Y10T 74/2054	. . . Signal
N	Y10T 74/20546	. . Knee operated
N	Y10T 74/20552	. . . Elbow
N	Y10T 74/20558	. . Variable output force
N	Y10T 74/20564	. . . Flexible
N	Y10T 74/2057	. . . Variable input leverage
N	Y10T 74/20576	. . Elements
N	Y10T 74/20582	. . . Levers
N	Y10T 74/20588	. . . . toggle
N	Y10T 74/20594	. . . . . Lazy tongs

N	Y10T 74/206	. . . . Adjustable
N	Y10T 74/20606	. . . . Swing posts
N	Y10T 74/20612	. . . . Hand
N	Y10T 74/20618	. . . . . Jointed
N	Y10T 74/20624	. . . . . Adjustable
N	Y10T 74/2063	. . . . Stops
N	Y10T 74/20636	. . . Detents
N	Y10T 74/20642	. . . . Hand crank
N	Y10T 74/20648	. . . . Interrelated lever release
N	Y10T 74/20654	. . . . Gear
N	Y10T 74/2066	. . . . Friction
N	Y10T 74/20666	. . . . Lever engaging
N	Y10T 74/20672	. . . . Lever engaging rack
N	Y10T 74/20678	. . . . . Pivoted
N	Y10T 74/20684	. . . . . Lever carried pawl
N	Y10T 74/2069	. . . . . Handle release
N	Y10T 74/20696	. . . . . Finger lever release
N	Y10T 74/20702	. . . . . Slidable
N	Y10T 74/20708	. . . . . Pedal controlled
N	Y10T 74/20714	. . . . Lever carried rack
N	Y10T 74/2072	. . . . . Pivoted
N	Y10T 74/20726	. . . . . Pedal controlled
N	Y10T 74/20732	. . . Handles
N	Y10T 74/20738	. . . . Extension
N	Y10T 74/20744	. . . . Hand crank
N	Y10T 74/2075	. . . . . Extensible
N	Y10T 74/20756	. . . . . Collapsible
N	Y10T 74/20762	. . . . Shaft connections
N	Y10T 74/20768	. . . . . Engine starter type
N	Y10T 74/20774	. . . . . Holders
N	Y10T 74/2078	. . . . Handle bars
N	Y10T 74/20786	. . . . . Spring biased or supported
N	Y10T 74/20792	. . . . . Folding or adjustable
N	Y10T 74/20798	. . . . . Sectional
N	Y10T 74/20804	. . . . . Simultaneously movable
N	Y10T 74/2081	. . . . . Continuous
N	Y10T 74/20816	. . . . . with handle latch
N	Y10T 74/20822	. . . . . Attachments and accessories
N	Y10T 74/20828	. . . . . Handholds and grips
N	Y10T 74/20834	. . . . Hand wheels
N	Y10T 74/2084	. . . . . Knob or dial
N	Y10T 74/20846	. . . . . Slidable
N	Y10T 74/20852	. . . . . Pivoted
N	Y10T 74/20858	. . . . . Releasable

- N Y10T 74/20864 *Handles*
- N Y10T 74/2087 *Rim grips and covers*
- N Y10T 74/20876 *Caps and covers*
- N Y10T 74/20882 *Rocker arms*
- N Y10T 74/20888 *Pedals*
- N Y10T 74/20894 *Treadles*
- N Y10T 74/209 *Extension*
- N Y10T 74/20906 *Offset*
- N Y10T 74/20912 *Pads and covers*
- N Y10T 74/20918 *Foot rests*
- N Y10T 74/20924 *Controller checks*
- N Y10T 74/2093 *Slot closers and lever guards*
- N Y10T 74/21 *Elements*
- N Y10T 74/2101 *Cams*
- N Y10T 74/2102 *Adjustable*
- N Y10T 74/2104 *Flexible strip*
- N Y10T 74/2105 *Memory devices*
- N Y10T 74/2106 *Timer devices*
- N Y10T 74/2107 *Follower*
- N Y10T 74/2109 *Balancing for drum, e.g., washing machine or arm-type structure, etc., centrifuge, etc.*
- N Y10T 74/211 *Eccentric*
- N Y10T 74/2111 *Plural, movable relative to each other [including ball[s]]*
- N Y10T 74/2112 *Concentric*
- N Y10T 74/2114 *Adjustable*
- N Y10T 74/2115 *Radially*
- N Y10T 74/2116 *having anti-friction means, e.g., roller bearing, lubrication, etc.*
- N Y10T 74/2117 *Power generating-type flywheel*
- N Y10T 74/2119 *Structural detail, e.g., material, configuration, superconductor, discs, laminated, etc.*
- N Y10T 74/212 *Containing fiber or filament*
- N Y10T 74/2121 *Flywheel, motion smoothing-type*
- N Y10T 74/2122 *with fluid balancing means*
- N Y10T 74/2123 *and pressure compensation*
- N Y10T 74/2125 *and elastic device*
- N Y10T 74/2126 *and bearings*
- N Y10T 74/2127 *with electrical or magnetic damping*
- N Y10T 74/2128 *Damping using swinging masses, e.g., pendulum type, etc.*
- N Y10T 74/213 *Damping by increasing frictional force*
- N Y10T 74/2131 *Damping by absorbing vibration force [via rubber, elastomeric material, etc.]*
- N Y10T 74/2132 *Structural detail, e.g., fiber, held by magnet, etc.*
- N Y10T 74/2133 *Pawls and ratchets*
- N Y10T 74/2135 *Noiseless*
- N Y10T 74/2136 *Pivoted pawls*
- N Y10T 74/2137 *Single tooth*

N	Y10T 74/2138	. . . . Flexible single tooth
N	Y10T 74/214	. . . . Multiple tooth
N	Y10T 74/2141	. . . Sliding pawls
N	Y10T 74/2142	. . Pitmans and connecting rods
N	Y10T 74/2143	. . . Radial
N	Y10T 74/2144	. . . Yieldable
N	Y10T 74/2146	. . . . Longitudinal springs
N	Y10T 74/2147	. . . . Fluid cushion
N	Y10T 74/2148	. . . . Automatic release
N	Y10T 74/2149	. . . . . toggle link type
N	Y10T 74/2151	. . . Longitudinally adjustable
N	Y10T 74/2152	. . . Hollow rod, lubricated
N	Y10T 74/2153	. . . Sheet metal type
N	Y10T 74/2154	. . . Counterbalanced
N	Y10T 74/2156	. . . . Weight type
N	Y10T 74/2157	. . . . . Rotating
N	Y10T 74/2158	. . . . Spring
N	Y10T 74/2159	. . . Section coupled
N	Y10T 74/216	. . . Bearings, adjustable
N	Y10T 74/2162	. . . Engine type
N	Y10T 74/2163	. . . Idler arm
N	Y10T 74/2164	. . Cranks and pedals
N	Y10T 74/2165	. . . with attached gear
N	Y10T 74/2167	. . . Variable
N	Y10T 74/2168	. . . Pedals
N	Y10T 74/2169	. . . . Counterbalanced
N	Y10T 74/217	. . . . with toe or shoe clips
N	Y10T 74/2172	. . . . Adjustable or folding
N	Y10T 74/2173	. . Cranks and wrist pins
N	Y10T 74/2174	. . . Multiple throw
N	Y10T 74/2175	. . . . Sectional
N	Y10T 74/2177	. . . Sectional
N	Y10T 74/2178	. . . Yieldable
N	Y10T 74/2179	. . . Adjustable
N	Y10T 74/218	. . . . Automatically
N	Y10T 74/2181	. . . Variable
N	Y10T 74/2183	. . . Counterbalanced
N	Y10T 74/2184	. . . . Vibration dampers
N	Y10T 74/2185	. . . Lubricated
N	Y10T 74/2186	. . Gear casings
N	Y10T 74/2188	. . . Axle and torque tubes
N	Y10T 74/2189	. . . Cooling
N	Y10T 74/219	. . Guards
N	Y10T 74/2191	. . . for rotary member

- N Y10T 74/2193
 - • Guard mechanisms
- N Y10T 74/2194
 - • • Automatic
- N Y10T 74/2195
 - • • • Oscillating member actuator
- N Y10T 74/2196
 - • • • Reciprocating member actuator
- N Y10T 74/2198
 - • • Operator controlled
- N Y10T 74/2199
 - • • Set screw
- N Y10T 74/22
 - Miscellaneous
- N Y10T 82/00 -
Y10T 82/00**
 - **Former US Class 82 Series**
- N Y10T 82/00**
 - **Turning**
- N Y10T 82/10
 - Process of turning
- N Y10T 82/11
 - Talking machine tablet
- N Y10T 82/12
 - Radially moving rotating tool inside bore
- N Y10T 82/122
 - • Forming non-circular bore
- N Y10T 82/125
 - • Tool simultaneously moving axially
- N Y10T 82/128
 - • • Pivoted to tool-carrier
- N Y10T 82/13
 - Pattern section
- N Y10T 82/135
 - • Cam-controlled cutter
- N Y10T 82/14
 - Axial pattern
- N Y10T 82/141
 - • having transverse tool and templet guide
- N Y10T 82/142
 - • • with workpiece gauge
- N Y10T 82/143
 - • • having electrical actuator
- N Y10T 82/145
 - • • • And hydraulic actuator
- N Y10T 82/147
 - • • having hydraulic actuator
- N Y10T 82/148
 - • Pivoted tool rest
- N Y10T 82/149
 - • Profiled cutter
- N Y10T 82/15
 - Tapers
- N Y10T 82/152
 - • Offset work axis
- N Y10T 82/154
 - • Transversely shifted cutter
- N Y10T 82/156
 - • • Templet controlled
- N Y10T 82/158
 - • • Gear controlled
- N Y10T 82/16
 - Severing or cut-off
- N Y10T 82/16016
 - • Processes
- N Y10T 82/16032
 - • Automatic and/or triggered control
- N Y10T 82/16049
 - • Combined with means to sharpen tool[s]
- N Y10T 82/16065
 - • Combined with means to apply fluid
- N Y10T 82/16081
 - • Combined with means to heat tool and/or work
- N Y10T 82/16098
 - • with dust or chip handling
- N Y10T 82/16114
 - • including scrap cutting means
- N Y10T 82/16131
 - • Flying cutter type
- N Y10T 82/16147
 - • Cutting couple straddling work
- N Y10T 82/16163
 - • • with pattern, guide or cam means [noncircular product]
- N Y10T 82/16181
 - • • Plural cutting means [pairs, or pair, plus single]
- N Y10T 82/16196
 - • • Rotary shear pair

- N Y10T 82/16213 Tool axes parallel to axis of work rotation
- N Y10T 82/16229 . . Interrelated means for tool infeed and circumrotation
- N Y10T 82/16245 Dependent upon reaction to work
- N Y10T 82/16262 Infeed cam disk rotation geared to tool holder rotation
- N Y10T 82/16278 Axial infeed cam
- N Y10T 82/16295 including centrifugal balancing means
- N Y10T 82/16311 Scroll plate infeed cam
- N Y10T 82/16327 Infeed cam plate braked with respect to tool[s] carrier plate
- N Y10T 82/16344 Orbital cogwheel and fixed detent
- N Y10T 82/16361 Common gear means
- N Y10T 82/16377 including adjustable means to vary gear speed
- N Y10T 82/16393 with manual disconnect lever
- N Y10T 82/16409 with means to feed work
- N Y10T 82/16426 . . Infeed means
- N Y10T 82/16442 with means to circumrotate tool[s] about work
- N Y10T 82/16459 Fluid means for relative tool actuation
- N Y10T 82/16475 Gear means for tool actuation
- N Y10T 82/16491 including axial cam
- N Y10T 82/16508 with indicator
- N Y10T 82/16524 Bell crank linkage for tool[s] holder
- N Y10T 82/16541 Resilient means for tool actuation
- N Y10T 82/16557 with means for manual retraction
- N Y10T 82/16573 Hand crank for tool holder
- N Y10T 82/16591 Power driven eccentric
- N Y10T 82/16606 Fluid motor
- N Y10T 82/16622 Plural tools
- N Y10T 82/16639 Tool within work
- N Y10T 82/16655 with means to rotate tool[s]
- N Y10T 82/16672 including rotatable cutters supporting work
- N Y10T 82/16688 Planetating work mandrels
- N Y10T 82/16704 Pivoted tool carriage
- N Y10T 82/16721 with adjustable work stops
- N Y10T 82/16737 Eccentric periphery rotary tool
- N Y10T 82/16754 Means to feed work axially
- N Y10T 82/16771 Translatable work support carriage
- N Y10T 82/16786 with tool groove in support roll[s]
- N Y10T 82/16803 Rotatable tool[s] driven by contact with work
- N Y10T 82/16819 Axially movable tool support
- N Y10T 82/16836 Freely floating parallel to axis
- N Y10T 82/16852 with supplemental nonrotative tool
- N Y10T 82/16868 including clutch control for work rotation
- N Y10T 82/16885 including resilient means urging work against rotary support
- N Y10T 82/16901 Separate means for plural tools
- N Y10T 82/16918 Spring urged

N	Y10T 82/16934	. . . . For window shade
N	Y10T 82/16951	. . . Tool adjustment and/or stop
N	Y10T 82/16967	. . . with means to support and/or rotate work
N	Y10T 82/16983	. . . with means to feed work
N	Y10T 82/17	. Lathe for pulley
N	Y10T 82/18	. Lathe for wheel or axle
N	Y10T 82/185	. . In situ lathe for railroad wheel
N	Y10T 82/19	. Lathe for crank or crank pin
N	Y10T 82/192	. . Portable lathe for crank pin
N	Y10T 82/195	. . having work oscillator
N	Y10T 82/198	. . . having work driver
N	Y10T 82/20	. Lathe for screw cutting
N	Y10T 82/205	. . having swinging feed nut and tool bar
N	Y10T 82/21	. Portable lathe for brake drum, disc, or shoe
N	Y10T 82/22	. Portable lathe for pipe turning
N	Y10T 82/23	. Portable lathe for piston grooving
N	Y10T 82/24	. Bench lathe
N	Y10T 82/245	. . Watchmaker's lathe
N	Y10T 82/25	. Lathe
N	Y10T 82/2502	. . with program control
N	Y10T 82/2504	. . . And transmission
N	Y10T 82/2506	. . . And tool turret
N	Y10T 82/2508	. . with tool turret
N	Y10T 82/2511	. . Vertical
N	Y10T 82/2512	. . having facing tool fed transverse to work
N	Y10T 82/2514	. . with work feeder or remover
N	Y10T 82/2516	. . . Magazine type
N	Y10T 82/2518	. . . . Bar feeder
N	Y10T 82/2521	. . . Bar feeder
N	Y10T 82/2522	. . Portable
N	Y10T 82/2524	. . Multiple
N	Y10T 82/2527	. . having hollow cutter head
N	Y10T 82/2529	. . Revolvable cutter heads
N	Y10T 82/2531	. . Carriage feed
N	Y10T 82/2533	. . . Control
N	Y10T 82/2535	. . . . Electrical type
N	Y10T 82/2537	. . . Apron mechanism
N	Y10T 82/2539	. . . . Feednut control
N	Y10T 82/2541	. . . Slide rest
N	Y10T 82/2543	. . . . Multiple tool support
N	Y10T 82/2545	. . . . Tool relief
N	Y10T 82/2547	. . . Change gears
N	Y10T 82/2549	. . . Feedscrews and rods
N	Y10T 82/2552	. . Headstock

- N Y10T 82/2554 . . . Speed changing gear
 - N Y10T 82/2556 Speed change gears for maintaining constant cutting speed
 - N Y10T 82/2558 . . . Spindle reverser
 - N Y10T 82/2561 . . . Spindle or work angler
 - N Y10T 82/2562 . . . Spindle and bearings
 - N Y10T 82/2564 . . Tailstock
 - N Y10T 82/2566 . . Bed
 - N Y10T 82/2568 . . Center
 - N Y10T 82/2571 . . . Alignment adjuster
 - N Y10T 82/2572 . . Attachment
 - N Y10T 82/2574 . . . Stop [e.g., carriage, tool, work, etc.]
 - N Y10T 82/2577 Tool slide
 - N Y10T 82/2579 Collet or spindle
 - N Y10T 82/2581 Indexible [e.g., roll type, etc.]
 - N Y10T 82/2583 . . Tool and work rest
 - N Y10T 82/2585 . . Tool rest
 - N Y10T 82/2587 . . . Turret type holder [e.g., multiple tools, etc.]
 - N Y10T 82/2589 . . . Quick release tool or holder clamp
 - N Y10T 82/2591 . . . Tool post
 - N Y10T 82/2593 . . Work rest
 - N Y10T 82/2595 . . . with noise or vibration dampener
 - N Y10T 82/2597 . . . Center rest
 - N Y10T 82/26 . . Work driver
 - N Y10T 82/262 . . Lathe dog
 - N Y10T 82/264 . . . Cam grip
 - N Y10T 82/266 . . Mandrel
 - N Y10T 82/268 . . . Expansible
 - N Y10T 82/27 . . Centerer
 - N Y10T 82/28 . . Drill press attachment for turning
 - N Y10T 82/29 . . Attachment for cutting a valve
 - N Y10T 82/30 . . Miscellaneous
- N Y10T 117/00 - Y10T 117/00** **Former US Class 117 Series**
- N Y10T 117/00** ***Single-crystal, oriented-crystal, and epitaxy growth processes; non-coating apparatus therefor***
- N Y10T 117/10 . . Apparatus
 - N Y10T 117/1004 . . with means for measuring, testing, or sensing
 - N Y10T 117/1008 . . . with responsive control means
 - N Y10T 117/1012 . . . with a window or port for visual observation or examination
 - N Y10T 117/1016 . . with means for treating single-crystal [e.g., heat treating]
 - N Y10T 117/102 . . for forming a platelet shape or a small diameter, elongate, generally cylindrical shape [e.g., whisker, fiber, needle, filament]
 - N Y10T 117/1024 . . for crystallization from liquid or supercritical state
 - N Y10T 117/1028 . . . Crucibleless apparatus having means providing movement of discrete droplets or solid particles to thin-film precursor [e.g., Verneuil method]

- N Y10T 117/1032 . . . Seed pulling
- N Y10T 117/1036 including solid member shaping means other than seed or product [e.g., EDFG die]
- N Y10T 117/104 Means for forming a hollow structure [e.g., tube, polygon]
- N Y10T 117/1044 including means forming a flat shape [e.g., ribbon]
- N Y10T 117/1048 Pulling includes a horizontal component
- N Y10T 117/1052 including a sectioned crucible [e.g., double crucible, baffle]
- N Y10T 117/1056 including details of precursor replenishment
- N Y10T 117/106 including sealing means details
- N Y10T 117/1064 including a fully-sealed or vacuum-maintained crystallization chamber [e.g., ampoule]
- N Y10T 117/1068 including heating or cooling details [e.g., shield configuration]
- N Y10T 117/1072 including details of means providing product movement [e.g., shaft guides, servo means]
- N Y10T 117/1076 . . . having means for producing a moving solid-liquid-solid zone
- N Y10T 117/108 Including a solid member other than seed or product contacting the liquid [e.g., crucible, immersed heating element]
- N Y10T 117/1084 having details of a stabilizing feature
- N Y10T 117/1088 including heating or cooling details
- N Y10T 117/1092 . . . Shape defined by a solid member other than seed or product [e.g., Bridgman-Stockbarger]
- N Y10T 117/1096 . . . including pressurized crystallization means [e.g., hydrothermal]
- N Y10T 152/00 - Y10T 152/00** **Former US Class 152 Series**
- N Y10T 152/00** **Resilient tires and wheels**
- N Y10T 152/10 . . Tires, resilient
- N Y10T 152/10009 . . Emergency
- N Y10T 152/10018 . . with splash guards
- N Y10T 152/10027 . . with wear indicating feature
- N Y10T 152/10036 . . Cushion and pneumatic combined
- N Y10T 152/10045 . . . Metallic spring cushion
- N Y10T 152/10054 . . . Enclosed cushion
- N Y10T 152/10063 . . . Superimposed
- N Y10T 152/10072 Plungers
- N Y10T 152/10081 Edge-secured cushion
- N Y10T 152/1009 Guide flanges
- N Y10T 152/10099 Radial stops
- N Y10T 152/10108 Bolts or studs
- N Y10T 152/10117 . . . Integral
- N Y10T 152/10126 with removable inner tube
- N Y10T 152/10135 . . Armored
- N Y10T 152/10144 . . . Single tube tires internal
- N Y10T 152/10153 Metal
- N Y10T 152/10162 Plates
- N Y10T 152/10171 . . . Casing construction

N Y10T 152/1018 Embedded
 N Y10T 152/10189 Metal
 N Y10T 152/10198 Plates
 N Y10T 152/10207 Annular
 N Y10T 152/10216 Linked mat
 N Y10T 152/10225 Woven
 N Y10T 152/10234 . . . Interliners
 N Y10T 152/10243 Cotton, fabric, or rubber
 N Y10T 152/10252 Metal
 N Y10T 152/10261 Scale armor
 N Y10T 152/1027 Annular
 N Y10T 152/10279 . . Cushion
 N Y10T 152/10288 . . . Sectional
 N Y10T 152/10297 Annular
 N Y10T 152/10306 Superimposed
 N Y10T 152/10315 Superimposed
 N Y10T 152/10324 with apertured external binders
 N Y10T 152/10333 Radial bolt secured
 N Y10T 152/10342 Abutting sections
 N Y10T 152/10351 with annular internal binders
 N Y10T 152/1036 Interfitting
 N Y10T 152/10369 Indented at joints
 N Y10T 152/10378 . . . Casing enclosed core
 N Y10T 152/10387 Separate core
 N Y10T 152/10396 Removable
 N Y10T 152/10405 Sponge rubber
 N Y10T 152/10414 with core compression
 N Y10T 152/10423 Superimposed rings
 N Y10T 152/10432 Sectional transversely
 N Y10T 152/10441 Balls
 N Y10T 152/1045 Integral structure
 N Y10T 152/10459 Recessed
 N Y10T 152/10468 Chambered
 N Y10T 152/10477 Perforated
 N Y10T 152/10486 Chambered
 N Y10T 152/10495 . . Pneumatic tire or inner tube
 N Y10T 152/10504 . . . Asymmetric tire
 N Y10T 152/10513 . . . Tire reinforcement material characterized by short length fibers or the like
 N Y10T 152/10522 . . . Multiple chamber
 N Y10T 152/10531 Cylinder and piston
 N Y10T 152/1054 Mutually free walls
 N Y10T 152/10549 Interfitting
 N Y10T 152/10558 Balls
 N Y10T 152/10567 with simultaneous inflating means

- N Y10T 152/10576 *Annular chambers*
- N Y10T 152/10585 *with simultaneous inflating means*
- N Y10T 152/10594 *Mutually free walls*
- N Y10T 152/10603 *with simultaneous inflating means*
- N Y10T 152/10612 *with simultaneous inflating means*
- N Y10T 152/10621 . . . *Sectional casings*
- N Y10T 152/1063 *Circumferential*
- N Y10T 152/10639 *Rigid inner sections*
- N Y10T 152/10648 . . . *with means restricting relative movement between tire and inner tube [e.g., anti-creep feature, etc.]*
- N Y10T 152/10657 . . . *with means to protect inner tube from rim*
- N Y10T 152/10666 . . . *Automatic sealing of punctures [e.g., self-healing, etc.]*
- N Y10T 152/10675 *Using flowable coating or composition*
- N Y10T 152/10684 *On inner surface of tubeless tire*
- N Y10T 152/10693 *Sealant in plural layers or plural pockets*
- N Y10T 152/10702 *within or part of construction of inflating inner tube*
- N Y10T 152/10711 *Sealant in plural layers or plural pockets*
- N Y10T 152/1072 *by compression*
- N Y10T 152/10729 *with reinflating means*
- N Y10T 152/10738 . . . *with means to protect tire from rim*
- N Y10T 152/10747 . . . *Means other than rim closing the tire opening*
- N Y10T 152/10756 *Positive casing closure*
- N Y10T 152/10765 . . . *Characterized by belt or breaker structure*
- N Y10T 152/10774 *Consisting of only one ply*
- N Y10T 152/10783 *Reinforcing plies made up from wound narrow ribbons*
- N Y10T 152/10792 *Structure where each bias angle reinforcing cord ply has no opposingly angled ply*
- N Y10T 152/10801 *Structure made up of two or more sets of plies wherein the reinforcing cords in one set lie in a different angular position relative to those in other sets*
- N Y10T 152/1081 *Breaker or belt characterized by the chemical composition or physical properties of elastomer or the like*
- N Y10T 152/10819 . . . *Characterized by the structure of the bead portion of the tire*
- N Y10T 152/10828 *Chafer or sealing strips*
- N Y10T 152/10837 *Bead characterized by the radial extent of apex, flipper or chafer into tire sidewall*
- N Y10T 152/10846 *Bead characterized by the chemical composition and or physical properties of elastomers or the like*
- N Y10T 152/10855 . . . *Characterized by the carcass, carcass material, or physical arrangement of the carcass materials*
- N Y10T 152/10864 *Sidewall stiffening or reinforcing means other than main carcass plies or foldups thereof about beads*
- N Y10T 152/10873 *with two or more differing cord materials*
- N Y10T 152/10882 . . *Patches*
- N Y10T 152/10891 . . . *Mechanically secured*
- N Y10T 152/109 *Inside and outside, bolt connected*

- N Y10T 152/10909 . . . with plugs
- N Y10T 152/10918 . . . Bandages
- N Y10T 152/10927 Mechanically secured
- N Y10T 152/10936 to felly or rim

- N Y10T 156/00 - Y10T 156/00** **Former US Class 156 Series**

- N Y10T 156/00** **Adhesive bonding and miscellaneous chemical manufacture**
- N Y10T 156/10 . . Methods of surface bonding and/or assembly therefor
- N Y10T 156/1002 . . with permanent bending or reshaping or surface deformation of self sustaining lamina
- N Y10T 156/1003 . . . by separating laminae between spaced secured areas [e.g., honeycomb expanding]
- N Y10T 156/1005 . . . by inward collapsing of portion of hollow body
- N Y10T 156/1007 . . . Running or continuous length work
- N Y10T 156/1008 Longitudinal bending
- N Y10T 156/101 Prior to or during assembly with additional lamina
- N Y10T 156/1011 Overedge bending or overedge folding
- N Y10T 156/1013 and edge-joining of one piece blank to form tube
- N Y10T 156/1015 Folding
- N Y10T 156/1016 Transverse corrugating
- N Y10T 156/1018 Subsequent to assembly of laminae
- N Y10T 156/102 with deformation or cutting of corrugated lamina
- N Y10T 156/1021 Treating material of corrugated lamina or dry adhesive thereon to render tacky
- N Y10T 156/1023 Surface deformation only [e.g., embossing]
- N Y10T 156/1025 . . . to form undulated to corrugated sheet and securing to base with parts of shaped areas out of contact
- N Y10T 156/1026 . . . with slitting or removal of material at reshaping area prior to reshaping
- N Y10T 156/1028 . . . by bending, drawing or stretch forming sheet to assume shape of configured lamina while in contact therewith
- N Y10T 156/103 Encasing or enveloping the configured lamina
- N Y10T 156/1031 with preshaping of lamina
- N Y10T 156/1033 Flexible sheet to cylinder lamina
- N Y10T 156/1034 . . . Overedge bending of lamina about edges of sheetlike base
- N Y10T 156/1036 . . . Bending of one piece blank and joining edges to form article
- N Y10T 156/1038 Hollow cylinder article
- N Y10T 156/1039 . . . Surface deformation only of sandwich or lamina [e.g., embossed panels]
- N Y10T 156/1041 Subsequent to lamination
- N Y10T 156/1043 . . . Subsequent to assembly
- N Y10T 156/1044 of parallel stacked sheets only
- N Y10T 156/1046 Bending of one lamina only
- N Y10T 156/1048 to form dished or receptacle-like product
- N Y10T 156/1049 Folding only
- N Y10T 156/1051 . . . by folding
- N Y10T 156/1052 . . with cutting, punching, tearing or severing

- N Y10T 156/1054 . . . and simultaneously bonding [e.g., cut-seaming]
- N Y10T 156/1056 . . . Perforating lamina
- N Y10T 156/1057 Subsequent to assembly of laminae
- N Y10T 156/1059 . . . Splitting sheet lamina in plane intermediate of faces
- N Y10T 156/1061 . . . Spiral peeling
- N Y10T 156/1062 . . . Prior to assembly
- N Y10T 156/1064 Partial cutting [e.g., grooving or incising]
- N Y10T 156/1066 Cutting to shape joining edge surfaces only
- N Y10T 156/1067 Continuous longitudinal slitting
- N Y10T 156/1069 Bonding face to face of laminae cut from single sheet
- N Y10T 156/107 Punching and bonding pressure application by punch
- N Y10T 156/1072 Closure cap liner applying type
- N Y10T 156/1074 Separate cutting of separate sheets or webs
- N Y10T 156/1075 of plural laminae from single stock and assembling to each other or to additional lamina
- N Y10T 156/1077 Applying plural cut laminae to single face of additional lamina
- N Y10T 156/1079 Joining of cut laminae end-to-end
- N Y10T 156/108 . . . Flash, trim or excess removal
- N Y10T 156/1082 . . . Partial cutting bonded sandwich [e.g., grooving or incising]
- N Y10T 156/1084 . . . of continuous or running length bonded web
- N Y10T 156/1085 One web only
- N Y10T 156/1087 Continuous longitudinal slitting
- N Y10T 156/1089 . . . of discrete laminae to single face of additional lamina
- N Y10T 156/109 . . . Embedding of laminae within face of additional laminae
- N Y10T 156/1092 . . . All laminae planar and face to face
- N Y10T 156/1093 with covering of discrete laminae with additional lamina
- N Y10T 156/1095 Opposed laminae are running length webs
- N Y10T 156/1097 Lamina is running length web
- N Y10T 156/1098 Feeding of discrete laminae from separate sources
- N Y10T 156/11 . . Methods of delaminating, per se; i.e. , separating at bonding face
- N Y10T 156/1105 . . Delaminating process responsive to feed or shape at delamination
- N Y10T 156/1111 . . Using solvent during delaminating [e.g., water dissolving adhesive at bonding face during delamination, etc.]
- N Y10T 156/1116 . . . Using specified organic delamination solvent
- N Y10T 156/1121 . . Using vibration during delaminating
- N Y10T 156/1126 . . Using direct fluid current against work during delaminating
- N Y10T 156/1132 . . . Using vacuum directly against work during delaminating
- N Y10T 156/1137 . . . Using air blast directly against work during delaminating
- N Y10T 156/1142 . . Changing dimension during delaminating [e.g., crushing, expanding, warping, etc.]
- N Y10T 156/1147 . . . Using shrinking or swelling agent during delaminating
- N Y10T 156/1153 . . Temperature change for delamination [e.g., heating during delaminating, etc.]
- N Y10T 156/1158 . . . Electromagnetic radiation applied to work for delamination [e.g., microwave, uv, ir, etc.]
- N Y10T 156/1163 . . . Sintering for delamination

- N Y10T 156/1168 . . Gripping and pulling work apart during delaminating
- N Y10T 156/1174 . . . Using roller for delamination [e.g., roller pairs operating at differing speeds or directions, etc.]
- N Y10T 156/1179 . . . with poking during delaminating [e.g., jabbing, etc.]
- N Y10T 156/1184 Piercing layer during delaminating [e.g., cutting, etc.]
- N Y10T 156/1189 . . . with shearing during delaminating
- N Y10T 156/1195 . . . Delaminating from release surface
- N Y10T 156/12 . . Surface bonding means and/or assembly means with cutting, punching, piercing, severing or tearing
- N Y10T 156/125 . . Plural severing means each acting on a different work piece
- N Y10T 156/13 . . Severing followed by associating with part from same source
- N Y10T 156/1304 . . Means making hole or aperture in part to be laminated
- N Y10T 156/1309 . . . and securing separate part over hole or aperture
- N Y10T 156/1313 . . Cutting element simultaneously bonds [e.g., cut seaming]
- N Y10T 156/1317 . . Means feeding plural workpieces to be joined
- N Y10T 156/1322 . . . Severing before bonding or assembling of parts
- N Y10T 156/1326 Severing means or member secured thereto also bonds
- N Y10T 156/133 Delivering cut part to indefinite or running length web
- N Y10T 156/1335 Cutter also delivers cut piece
- N Y10T 156/1339 Delivering cut part in sequence to serially conveyed articles
- N Y10T 156/1343 . . . Cutting indefinite length web after assembly with discrete article
- N Y10T 156/1348 . . Work traversing type
- N Y10T 156/1352 . . . with liquid applying means
- N Y10T 156/1357 Slitting and severing
- N Y10T 156/1361 Cutting after bonding
- N Y10T 156/1365 . . . Fixed cutter
- N Y10T 156/137 . . Stamp from multiple row sheet type
- N Y10T 156/1374 . . with means projecting fluid against work
- N Y10T 156/1378 . . Cutter actuated by or secured to bonding element
- N Y10T 156/1383 . . . with liquid applicator
- N Y10T 156/1387 Common actuator for bonding and liquid applying means
- N Y10T 156/1391 Liquid applied to web before cutting
- N Y10T 156/1396 Roller applicator
- N Y10T 156/14 . . Surface bonding means and/or assembly means with shaping, scarifying, or cleaning joining surface only
- N Y10T 156/15 . . Combined or convertible surface bonding means and/or assembly means
- N Y10T 156/16 . . Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc.]
- N Y10T 156/17 . . Surface bonding means and/or assembly means with work feeding or handling means
- N Y10T 156/1702 . . For plural parts or plural areas of single part
- N Y10T 156/1705 . . . Lamina transferred to base from adhered flexible web or sheet type carrier
- N Y10T 156/1707 Discrete spaced laminae on adhered carrier
- N Y10T 156/171 Means serially presenting discrete base articles or separate portions of a single article
- N Y10T 156/1712 . . . Indefinite or running length work

- N Y10T 156/1715 Means joining indefinite length work edge to edge
- N Y10T 156/1717 Means applying adhesively secured tape to seam
- N Y10T 156/172 Means applying fluid adhesive to work edge
- N Y10T 156/1722 Means applying fluent adhesive or adhesive activator material between layers
- N Y10T 156/1724 At spaced areas
- N Y10T 156/1727 Plural indefinite length or running length workpieces
- N Y10T 156/1729 Fluid applied to nip between indefinite length webs
- N Y10T 156/1732 Fluid applied to plural workpieces
- N Y10T 156/1734 Means bringing articles into association with web
- N Y10T 156/1737 Discontinuous, spaced area, and/or patterned pressing
- N Y10T 156/1739 Webs of different width, longitudinally aligned
- N Y10T 156/1741 Progressive continuous bonding press [e.g., roll couples]
- N Y10T 156/1744 . . . Means bringing discrete articles into assembled relationship
- N Y10T 156/1746 Plural lines and/or separate means assembling separate sandwiches
- N Y10T 156/1749 All articles from single source only
- N Y10T 156/1751 At least three articles
- N Y10T 156/1754 At least two applied side by side to common base
- N Y10T 156/1756 Plural ranks
- N Y10T 156/1759 Sheet form common base
- N Y10T 156/1761 Stacked serially
- N Y10T 156/1763 Magazine stack directly contacting separate work
- N Y10T 156/1766 Magazine movable to work
- N Y10T 156/1768 Means simultaneously conveying plural articles from a single source and serially presenting them to an assembly station
- N Y10T 156/1771 Turret or rotary drum-type conveyer
- N Y10T 156/1773 For flexible sheets
- N Y10T 156/1776 Means separating articles from bulk source
- N Y10T 156/1778 Stacked sheet source
- N Y10T 156/178 Rotary or pivoted picker
- N Y10T 156/1783 Translating picker
- N Y10T 156/1785 . . Magazine stack directly contacting work
- N Y10T 156/1788 . . Work traversing type and/or means applying work to wall or static structure
- N Y10T 156/179 . . . with liquid applying means
- N Y10T 156/1793 . . . Grip or clamp for web end
- N Y10T 156/1795 . . . Implement carried web supply
- N Y10T 156/1798 . . with liquid adhesive or adhesive activator applying means
- N Y10T 156/18 . . Surface bonding means and/or assembly means with handle or handgrip
- N Y10T 156/19 . . Delaminating means
- N Y10T 156/1906 . . Delaminating means responsive to feed or shape at delamination
- N Y10T 156/1911 . . Heating or cooling delaminating means [e.g., melting means, freezing means, etc.]
- N Y10T 156/1917 . . . Electromagnetic radiation delaminating means [e.g., microwave, uv, ir, etc.]
- N Y10T 156/1922 . . Vibrating delaminating means
- N Y10T 156/1928 . . Differential fluid pressure delaminating means

- N Y10T 156/1933 . . . Spraying delaminating means [e.g., atomizer, etc.]
- N Y10T 156/1939 Air blasting delaminating means]
- N Y10T 156/1944 . . . Vacuum delaminating means [e.g., vacuum chamber, etc.]
- N Y10T 156/195 . . Delaminating roller means
- N Y10T 156/1956 . . . Roller pair delaminating means
- N Y10T 156/1961 . . Severing delaminating means [e.g., chisel, etc.]
- N Y10T 156/1967 . . . Cutting delaminating means
- N Y10T 156/1972 Shearing delaminating means
- N Y10T 156/1978 . . Delaminating bending means
- N Y10T 156/1983 . . . Poking delaminating means
- N Y10T 156/1989 . . . Corner edge bending delaminating means
- N Y10T 156/1994 . . Means for delaminating from release surface
- N Y10T 279/00 -
Y10T 279/00** **Former US Class 279 Series**
- N Y10T 279/00** **Chucks or sockets**
- N Y10T 279/10 . . Expanding
- N Y10T 279/1004 . . Collet type
- N Y10T 279/1008 . . . Fixed jaws and moving cam
- N Y10T 279/1012 . . . Fixed cam and moving jaws
- N Y10T 279/1016 . . Jaws mounted on flexible member; i.e., diaphragm
- N Y10T 279/1021 . . Fluid-pressure actuator
- N Y10T 279/1024 . . . Directly expanding jaws
- N Y10T 279/1029 Jaw is expansible chamber; i.e., bladder type
- N Y10T 279/1033 . . . Expanding jaws via mechanical connection
- N Y10T 279/1037 . . Axially moving actuator
- N Y10T 279/1041 . . . Wedge
- N Y10T 279/1045 Internal cone
- N Y10T 279/1049 with jaw positively interlocked with wedge; e.g., dovetail or T-slot
- N Y10T 279/1054 with resilient means contacting nonresilient jaw
- N Y10T 279/1058 Constricting band, annulus, or clip
- N Y10T 279/1062 . . . Toggle
- N Y10T 279/1066 . . . Axially compressible element expands radially
- N Y10T 279/1071 . . . Lever
- N Y10T 279/1074 . . Rotary actuator
- N Y10T 279/1079 . . . Clutch or self-actuating type
- N Y10T 279/1083 . . Jaw structure
- N Y10T 279/1087 . . . Resilient
- N Y10T 279/1091 . . . Ball or roller
- N Y10T 279/1095 . . . Pivoted
- N Y10T 279/11 . . Vacuum
- N Y10T 279/12 . . with fluid-pressure actuator
- N Y10T 279/1208 . . with measuring, indicating or control means
- N Y10T 279/1216 . . Jaw is expansible chamber; i.e., bladder type
- N Y10T 279/1224 . . Pneumatic type

- N Y10T 279/1233 • • Jaws mounted on flexible member; i.e., diaphragm
- N Y10T 279/1241 • • Socket type
- N Y10T 279/1249 • • • Collet
- N Y10T 279/1258 • • • • Fixed cam and moving jaws
- N Y10T 279/1266 • • • • Moving cam and fixed jaws
- N Y10T 279/1274 • • Radially reciprocating jaws
- N Y10T 279/1283 • • • Fluid pressure directly moves jaws
- N Y10T 279/1291 • • • Fluid pressure moves jaws via mechanical connection
- N Y10T 279/13 • Angularly adjustable or indexing
- N Y10T 279/14 • Eccentric
- N Y10T 279/15 • Threaded grip
- N Y10T 279/16 • Longitudinal screw clamp
- N Y10T 279/17 • Socket type
- N Y10T 279/17008 • • Multiple alternative
- N Y10T 279/17017 • • Self-centering of floating
- N Y10T 279/17025 • • • Radially reciprocating jaws
- N Y10T 279/17034 • • • Transverse holder and setscrew
- N Y10T 279/17042 • • Lost motion
- N Y10T 279/17051 • • • Swinging external yoke or detent
- N Y10T 279/17059 • • • • Rotary socket
- N Y10T 279/17068 • • • Rotary socket
- N Y10T 279/17076 • • • Spreading elements
- N Y10T 279/17085 • • • Key retainer
- N Y10T 279/17094 • • • Sleeve type retainer
- N Y10T 279/17102 • • • • Sleeve in socket
- N Y10T 279/17111 • • Fluid-conduit drill holding
- N Y10T 279/17119 • • Feed type
- N Y10T 279/17128 • • Self-grasping
- N Y10T 279/17136 • • • Yielding grasping jaws
- N Y10T 279/17145 • • • • Ball or roller
- N Y10T 279/17153 • • • • Spring jaws
- N Y10T 279/17162 • • • Yielding detent
- N Y10T 279/17171 • • • One-way-clutch type
- N Y10T 279/17179 • • • • Wedge
- N Y10T 279/17188 • • • • Side detent
- N Y10T 279/17196 • • • • • Ball or roller
- N Y10T 279/17205 • • Conical clamp threaded in socket
- N Y10T 279/17213 • • Transversely oscillating jaws
- N Y10T 279/17222 • • • Screw actuated
- N Y10T 279/17231 • • Pivoted jaws
- N Y10T 279/17239 • • • Moving-cam actuator
- N Y10T 279/17247 • • • • Threaded cam sleeve
- N Y10T 279/17256 • • • • Reciprocating cam sleeve
- N Y10T 279/17264 • • • Fixed cam and moving jaws

N Y10T 279/17273 Axial screw actuator
 N Y10T 279/17282 Threaded-sleeve actuator
 N Y10T 279/17291 . . Resilient split socket
 N Y10T 279/17299 . . . Threaded cam sleeve
 N Y10T 279/17307 . . . Reciprocating cam sleeve
 N Y10T 279/17316 . . . Unitary
 N Y10T 279/17324 Split at one end only
 N Y10T 279/17333 Transverse screw actuator
 N Y10T 279/17341 Cam actuator
 N Y10T 279/17351 Split end to end
 N Y10T 279/17358 with jaw pads or insert
 N Y10T 279/17367 . . . Nonresilient member biased by a resilient member
 N Y10T 279/17376 . . . Resilient member reinforced by another resilient member
 N Y10T 279/17384 . . with means to exclude contaminants; e.g., seal, shield
 N Y10T 279/17393 . . One movable side
 N Y10T 279/17401 . . . Sleeved
 N Y10T 279/17411 . . Spring biased jaws
 N Y10T 279/17418 . . . Unitary
 N Y10T 279/17427 Split at one end only
 N Y10T 279/17435 Split at both ends
 N Y10T 279/17444 Split end to end
 N Y10T 279/17452 with jaw pads or insert
 N Y10T 279/17461 . . . Nonresilient member biased by a resilient member
 N Y10T 279/17471 . . . Resilient member reinforced by another resilient member
 N Y10T 279/17478 . . . with means to exclude contaminants; e.g., seal, shield
 N Y10T 279/17487 . . . Moving-cam actuator
 N Y10T 279/17495 Threaded sleeve and wedge
 N Y10T 279/17504 Threaded cam sleeve
 N Y10T 279/17512 Loose jaws
 N Y10T 279/17521 Reciprocating cam sleeve
 N Y10T 279/17529 . . . Fixed cam and moving jaws
 N Y10T 279/17538 Threaded-sleeve actuator
 N Y10T 279/17547 Axial screw actuator
 N Y10T 279/17555 . . . Loose jaws
 N Y10T 279/17564 . . Loose jaws
 N Y10T 279/17572 . . . Moving-cam actuator
 N Y10T 279/17581 Threaded cam sleeve
 N Y10T 279/17589 Reciprocating cam sleeve
 N Y10T 279/17598 . . . Fixed cam and moving jaws
 N Y10T 279/17606 Threaded sleeve and body
 N Y10T 279/17615 . . Obliquely guided reciprocating jaws
 N Y10T 279/17623 . . . Threaded sleeve and jaw
 N Y10T 279/17632 Conical sleeve
 N Y10T 279/17641 . . . Threaded central cone and jaw

N	Y10T 279/17649	. . . Threaded sleeve and body
N	Y10T 279/17658	. . . Reciprocating jaw advancing sleeve
N	Y10T 279/17666	. . Radially reciprocating jaws
N	Y10T 279/17675	. . . Transverse-screw actuated
N	Y10T 279/17683	. . . . Interlaced jaws
N	Y10T 279/17692	. . . Moving-cam actuator
N	Y10T 279/17701	. . . . Threaded cam sleeve
N	Y10T 279/17709	. . . . Threaded sleeve and wedge
N	Y10T 279/17717	. . . . Rotary eccentric-cam sleeve
N	Y10T 279/17726	. . . . . Roller and rocking jaw
N	Y10T 279/17735	. . . . . Worm actuated
N	Y10T 279/17743	. . . . Reciprocating cam sleeve
N	Y10T 279/17752	. . . . . Ball or roller jaws
N	Y10T 279/17761	. . Side detent
N	Y10T 279/17769	. . . Pivoted or rotary
N	Y10T 279/17777	. . . . Sleeved
N	Y10T 279/17786	. . . Spring
N	Y10T 279/17794	. . . . Sleeved
N	Y10T 279/17803	. . . Rotary cam sleeve
N	Y10T 279/17811	. . . Reciprocating sleeve
N	Y10T 279/17821	. . . Set screw
N	Y10T 279/17829	. . . U-clamp
N	Y10T 279/17837	. . . Plural bolt
N	Y10T 279/17846	. . . Single transverse bolt
N	Y10T 279/17854	. . . Longitudinal clamping wedge
N	Y10T 279/17863	. . Shouldered-tang holding
N	Y10T 279/17871	. . . Cap
N	Y10T 279/17881	. . . . Screw
N	Y10T 279/17888	. . Tang offset within socket
N	Y10T 279/17897	. . Tang offset without socket
N	Y10T 279/17905	. . Bottomless
N	Y10T 279/17914	. . . Friction grip
N	Y10T 279/17923	. . Transverse pin
N	Y10T 279/17931	. . Screw threaded
N	Y10T 279/17941	. . . Nut lock
N	Y10T 279/17948	. . . . Threaded sleeve
N	Y10T 279/17957	. . Friction grip
N	Y10T 279/17965	. . . Drill type
N	Y10T 279/17974	. . Barbed or pronged tang
N	Y10T 279/17982	. . Molded or cast-in tang
N	Y10T 279/17991	. . Adjustable length or size
N	Y10T 279/18	. . Pivoted jaw
N	Y10T 279/182	. . Cam-sleeve actuated
N	Y10T 279/185	. . Internal-cone actuated

- N Y10T 279/188 • • Toggle actuated
- N Y10T 279/19 • Radially reciprocating jaws
- N Y10T 279/1906 • • with indicator
- N Y10T 279/1913 • • Transverse-screw actuated
- N Y10T 279/1921 • • • Annular rack
- N Y10T 279/1926 • • Spiral cam or scroll actuated
- N Y10T 279/1933 • • • Worm
- N Y10T 279/1941 • • • Bevel pinion
- N Y10T 279/1946 • • Rack-and-pinion actuated
- N Y10T 279/1953 • • Toggle actuated
- N Y10T 279/1961 • • Lever actuated
- N Y10T 279/1966 • • • Internal cone
- N Y10T 279/1973 • • Wedge actuated
- N Y10T 279/1981 • • External-cone actuated
- N Y10T 279/1986 • • Jaws
- N Y10T 279/1993 • • • with means to facilitate jaw removal
- N Y10T 279/20 • with safety feature
- N Y10T 279/21 • with measuring, indicating or control means
- N Y10T 279/22 • Double acting
- N Y10T 279/23 • with magnetic or electrostatic means
- N Y10T 279/24 • by centrifugal force
- N Y10T 279/243 • • to counterbalance jaws
- N Y10T 279/247 • • to grip tool or workpiece
- N Y10T 279/25 • Compensation for eccentricity
- N Y10T 279/26 • with centering means
- N Y10T 279/27 • Separate chuck-actuating power source
- N Y10T 279/275 • • Self-contained
- N Y10T 279/28 • for gear or spline molding
- N Y10T 279/29 • More than one set of gripping means
- N Y10T 279/30 • Torsion mandrel
- N Y10T 279/31 • Jaws mounted on flexible member; i.e. , diaphragm
- N Y10T 279/32 • Means to prevent jaw loosening
- N Y10T 279/33 • Member applies axial force component
- N Y10T 279/34 • Accessory or component
- N Y10T 279/3406 • • Adapter
- N Y10T 279/3412 • • • Drive conversion
- N Y10T 279/3418 • • • for particular tool or workpiece
- N Y10T 279/3425 • • Sliding cam chuck actuator
- N Y10T 279/3431 • • Chuck key
- N Y10T 279/3437 • • • Safety feature; e.g., ejector, interlock
- N Y10T 279/3443 • • • Key holding or attaching means
- N Y10T 279/3451 • • • Nonseparable or built-in
- N Y10T 279/3456 • • Padded or cushioned jaw
- N Y10T 279/3462 • • Jaw insert

- N Y10T 279/3468 · · · Machinable jaw
- N Y10T 279/3475 · · · · Locking or positioning means
- N Y10T 279/3481 · · Tool or workpiece ejector
- N Y10T 279/3487 · · Tool or work stop or locator
- N Y10T 279/3493 · · Protection means; e.g., cover, seal, overstress prevention, air blast
- N Y10T 279/35 · Miscellaneous

N Y10T 403/00 - Y10T 403/00 **Former US Class 403 Series**

N Y10T 403/00

Joins and connections

- N Y10T 403/10 · Selectively engageable hub to shaft connection
- N Y10T 403/11 · including frangible component
- N Y10T 403/12 · Selectively assembled, e.g. , convertible, etc.
- N Y10T 403/125 · · Selective orientation
- N Y10T 403/13 · Inflatable connector
- N Y10T 403/14 · with opening for access to connector or operator
- N Y10T 403/142 · · to threaded component
- N Y10T 403/145 · · · Transverse to thread axis
- N Y10T 403/148 · · to biased component
- N Y10T 403/15 · Closure or plug spaced from joint
- N Y10T 403/16 · with adjunctive protector, broken parts retainer, repair, assembly or disassembly feature
- N Y10T 403/1608 · · Holding means or protector functioning only during transportation, assembly or disassembly
- N Y10T 403/1616 · · Position or guide means
- N Y10T 403/1624 · · · Related to joint component
- N Y10T 403/1633 · · Utilizing fluid pressure
- N Y10T 403/1641 · · Back-off means, e.g., separator, etc.
- N Y10T 403/1649 · · Handle or handwheel
- N Y10T 403/1658 · · · Actuates retainer or blocker
- N Y10T 403/1666 · · tool-engaging or accommodating means or with tool
- N Y10T 403/1674 · · · for latch or retainer
- N Y10T 403/1683 · · Releasably captive nut or bolt
- N Y10T 403/1691 · · Means to lock bolt or nut when other is turned
- N Y10T 403/17 · with adjunctive shield
- N Y10T 403/18 · Structurally installed in diverse art device
- N Y10T 403/185 · · Head or base
- N Y10T 403/19 · Coupling supported by independent bearing
- N Y10T 403/20 · with indicator or inspection means
- N Y10T 403/21 · Utilizing thermal characteristic, e.g. , expansion or contraction, etc.
- N Y10T 403/213 · · Interposed material of intermediate coefficient of expansion
- N Y10T 403/217 · · Members having different coefficients of expansion
- N Y10T 403/22 · with fluid pressure responsive component
- N Y10T 403/23 · with ambient condition responsive control means
- N Y10T 403/24 · with independent handle or operator
- N Y10T 403/25 · with distinct fluid or article handling or directing feature

- N Y10T 403/251 • • External reservoir
- N Y10T 403/253 • • Pressure fitting
- N Y10T 403/255 • • including port or reservoir communicating with joint
- N Y10T 403/257 • • • Articulated member
- N Y10T 403/259 • • • • At joint interface
- N Y10T 403/26 • Non-adhering fluent material at joint
- N Y10T 403/27 • with strain-limiting means
- N Y10T 403/28 • Combined
- N Y10T 403/29 • Rotarily connected, differentially translatable members, e.g. , turn-buckle, etc.
- N Y10T 403/291 • • having tool-engaging means or operating handle
- N Y10T 403/293 • • having operating mechanism
- N Y10T 403/295 • • having locking means
- N Y10T 403/297 • • Differential pitch, similar hand
- N Y10T 403/299 • • Externally threaded actuator
- N Y10T 403/30 • Laterally related members connected by latch means, e.g. , scaffold connectors
- N Y10T 403/31 • Flexible diaphragm or bellows
- N Y10T 403/315 • • with additional connection or packing
- N Y10T 403/32 • Articulated members
- N Y10T 403/32008 • • Plural distinct articulation axes
- N Y10T 403/32016 • • • Three or more parallel axes
- N Y10T 403/32024 • • • Single adjustment for plural axes
- N Y10T 403/32032 • • • Plural ball and socket
- N Y10T 403/32041 • • • Universal
- N Y10T 403/32049 • • • • Non-coplanar axes
- N Y10T 403/32057 • • • Angular and linear
- N Y10T 403/32065 • • • • Screw and swivel
- N Y10T 403/32073 • • • • Pivot stud slidable in elongated opening
- N Y10T 403/32081 • • • Parallel rotary
- N Y10T 403/32091 • • • Plural translating connections
- N Y10T 403/32098 • • Branched
- N Y10T 403/32106 • • Member pivoted at rigid corner
- N Y10T 403/32114 • • including static joint
- N Y10T 403/32122 • • • Trunnion assembly to side of rod
- N Y10T 403/32131 • • • One member is plate or side
- N Y10T 403/32139 • • • • Secant, i.e., rod extending through plate
- N Y10T 403/32147 • • • • Plate or side forms bearing surface
- N Y10T 403/32155 • • • • Bearing component clamped to plate or side, e.g., bolted, etc.
- N Y10T 403/32163 • • • Articulate joint intermediate end joints
- N Y10T 403/32172 • • • • Variable angle
- N Y10T 403/32181 • • • • • Universal
- N Y10T 403/32188 • • • Angled or offset members
- N Y10T 403/32196 • • • Articulate joint is ball and socket
- N Y10T 403/32204 • • • • with threaded joint
- N Y10T 403/32213 • • • Articulate joint is a swivel

- N Y10T 403/32221 . . . Articulate joint comprises pivoted clevis or channel bar
- N Y10T 403/32229 . . . Articulate joint is a slide
- N Y10T 403/32237 . . including operator
- N Y10T 403/32245 . . Arcuate shank moves in complementary guide
- N Y10T 403/32254 . . Lockable at fixed position
- N Y10T 403/32262 . . . At selected angle
- N Y10T 403/32271 Movable brace between members
- N Y10T 403/32278 Members rotatable about oblique axes
- N Y10T 403/32286 Clamping screw traverses sliding complementary arcuate bearing surfaces
- N Y10T 403/32295 Securing yoke or ring spaced radially from locking means
- N Y10T 403/32303 Eyebolt
- N Y10T 403/32311 Ball and socket
- N Y10T 403/32319 including pivot stud
- N Y10T 403/32327 including radially spaced detent or latch component
- N Y10T 403/32336 Engaging notch or recess in outer periphery of component
- N Y10T 403/32344 Side of rod engages recess in radial face
- N Y10T 403/32352 Pivoted detent
- N Y10T 403/32361 Engaging recess in radial face
- N Y10T 403/32368 including radial interengaging tongue and slot or serrations
- N Y10T 403/32377 Radially spaced arcuate slot engages fastener
- N Y10T 403/32385 Locked by plural motions of one member
- N Y10T 403/32393 including bridging keeper
- N Y10T 403/32401 Locked by nesting parts
- N Y10T 403/32409 Members locked in axial alignment
- N Y10T 403/32418 Plural distinct positions
- N Y10T 403/32426 Plural distinct positions
- N Y10T 403/32434 Unidirectional movement, e.g., ratchet, etc.
- N Y10T 403/32442 At least one discrete position
- N Y10T 403/32451 Step-by-step adjustment
- N Y10T 403/32459 Retainer extends through aligned recesses
- N Y10T 403/32467 Telescoping members
- N Y10T 403/32475 having detent
- N Y10T 403/32483 Spring biased
- N Y10T 403/32491 Threaded
- N Y10T 403/32501 Cam or wedge
- N Y10T 403/32508 having transverse pin
- N Y10T 403/32516 Remotely actuated
- N Y10T 403/32524 Self-locking
- N Y10T 403/32532 Clamped members
- N Y10T 403/32541 . . . Rotatable members resiliently biased to one position
- N Y10T 403/32549 . . . including limit means
- N Y10T 403/32557 . . . for pivotal motion
- N Y10T 403/32565 Ball and socket with restricted movement about one axis

- N Y10T 403/32573 Ball stud passes through confining opening
- N Y10T 403/32581 Pin and slot
- N Y10T 403/32591 Opposed stops on one member
- N Y10T 403/32598 . . Threaded interface
- N Y10T 403/32606 . . Pivoted
- N Y10T 403/32614 . . . including circumferential biasing or damping means
- N Y10T 403/32622 . . . Rocking or rolling contact
- N Y10T 403/32631 . . . Universal ball and socket
- N Y10T 403/32639 including internal tie means
- N Y10T 403/32647 Plural concave surfaces with diverse curvature
- N Y10T 403/32655 Interposed concavo-convex component
- N Y10T 403/32663 Outer surfaces
- N Y10T 403/32672 Swiveled ball parts or seat
- N Y10T 403/32681 Composite ball
- N Y10T 403/32688 Spring biased segments
- N Y10T 403/32696 Nonmetallic part
- N Y10T 403/32704 Stud extends into ball
- N Y10T 403/32713 Elastomerically biased or backed components
- N Y10T 403/32721 Elastomeric seat
- N Y10T 403/32729 Externally packed
- N Y10T 403/32737 including liner, shim, or discrete seat
- N Y10T 403/32745 Spring acts through wedging surfaces
- N Y10T 403/32754 Variably preloaded
- N Y10T 403/32762 Spring-biased seat opposite ball stud
- N Y10T 403/32771 Porous
- N Y10T 403/32778 Completely spacing the members
- N Y10T 403/32786 Divided socket-type coupling
- N Y10T 403/32795 Bifurcated socket
- N Y10T 403/32803 Separable socket sections
- N Y10T 403/32811 Spring-biased
- N Y10T 403/32819 . . . including tension or take-up means
- N Y10T 403/32827 Interposed spring means coaxial with pivot
- N Y10T 403/32836 Acting through tapered surface on bearing component
- N Y10T 403/32844 Manually variable
- N Y10T 403/32852 External of bearing assembly, e.g., antirattler, etc.
- N Y10T 403/32861 . . . T-pivot, e.g., wrist pin, etc.
- N Y10T 403/32868 Floating pin
- N Y10T 403/32877 Pin is integral with or secured to inner member
- N Y10T 403/32885 Expanded pin or end
- N Y10T 403/32893 including distinct pin retainer
- N Y10T 403/32901 Unitary clip or plug
- N Y10T 403/32909 Threaded pin end
- N Y10T 403/32918 fork and tongue
- N Y10T 403/32926 with interposed antifriction means

- N Y10T 403/32934 *Oppositely laterally movable tines*
- N Y10T 403/32942 . . . *On oblique interface*
- N Y10T 403/32951 . . . *Transverse pin or stud*
- N Y10T 403/32959 *Traverses interposed facing component*
- N Y10T 403/32967 *Attached to or integral with one member*
- N Y10T 403/32975 . . *Rotatable*
- N Y10T 403/32983 . . . *Rod in socket*
- N Y10T 403/32991 . . *Axially spring-biased coaxial members*
- N Y10T 403/33 . . *Transverse rod to spaced plate surfaces*
- N Y10T 403/335 . . *Retainer utilizes or abuts plural plates*
- N Y10T 403/34 . . *Branched*
- N Y10T 403/341 . . *Three or more radiating members*
- N Y10T 403/342 . . . *Polyhedral*
- N Y10T 403/343 *Unilateral of plane*
- N Y10T 403/344 . . . *Plural pairs of axially aligned members*
- N Y10T 403/345 . . . *Coplanar*
- N Y10T 403/346 *Additional rod held by encompassing means*
- N Y10T 403/347 . . *Polyhedral*
- N Y10T 403/348 . . *Parallel rods*
- N Y10T 403/349 . . *Coplanar*
- N Y10T 403/35 . . *Diverse material coupling member*
- N Y10T 403/36 . . *Three or more serial joints, at least one diverse*
- N Y10T 403/362 . . *Nonaligned axes*
- N Y10T 403/364 . . *Separable intermediate joint*
- N Y10T 403/366 . . . *Axially acting connector*
- N Y10T 403/368 . . . *Screw or cam*
- N Y10T 403/37 . . *Joint involving plural layers of single rod*
- N Y10T 403/38 . . *Laterally related rods independently joined to transverse surface*
- N Y10T 403/39 . . *Rod to member to side, e.g. , plate, rod side, etc.*
- N Y10T 403/3906 . . *Rod side to member to side*
- N Y10T 403/3913 . . *Unilateral of side*
- N Y10T 403/3921 . . *Arcuate or multiplanar side*
- N Y10T 403/3926 . . . *Encompassed side*
- N Y10T 403/3933 . . *Intermediate member includes tubular part*
- N Y10T 403/3941 . . . *Side or tubular part deformed in situ*
- N Y10T 403/3946 . . . *Intermediate member extends through side*
- N Y10T 403/3953 *Split or divided tubular part and coacting compressor*
- N Y10T 403/3961 *Transverse clamp secures rod and tubular part*
- N Y10T 403/3966 *Rod also extends through side*
- N Y10T 403/3973 . . . *Oblique rod*
- N Y10T 403/3981 . . . *Intermediate member secured to side by radial flange*
- N Y10T 403/3986 . . . *Internally threaded tubular part*
- N Y10T 403/3993 . . *Intermediate member extends completely through side*
- N Y10T 403/40 . . *Radially spaced members joined by independent coupling*

- N Y10T 403/405 • • Flexible intermediate member
- N Y10T 403/41 • Coacting connection between inner member and plural parts of outer member
- N Y10T 403/42 • Rigid angle coupling, e.g. , elbow or u, etc.
- N Y10T 403/43 • Axially curved or bent portion of rod is joint component
- N Y10T 403/4309 • • Interfitted crossing rods
- N Y10T 403/4318 • • Joined to laterally related transverse surface at axially spaced points
- N Y10T 403/4327 • • Reversely bent portion
- N Y10T 403/4336 • • • Around eye-forming thimble
- N Y10T 403/4345 • • • with wedge clamp
- N Y10T 403/4354 • • • Held by crimped collar
- N Y10T 403/4363 • • • Open U
- N Y10T 403/4372 • • Intertwisted ends
- N Y10T 403/4381 • • End of rod is deflected laterally within connector
- N Y10T 403/4391 • • Plural rods distorted by single component
- N Y10T 403/44 • Three or more members connected at single locus
- N Y10T 403/443 • • All encompassed
- N Y10T 403/447 • • Mutually contacting
- N Y10T 403/45 • Flexibly connected rigid members
- N Y10T 403/451 • • Rigid sleeve encompasses flexible bushing
- N Y10T 403/452 • • • Longitudinally divided sleeve
- N Y10T 403/453 • • Flexible sleeve-type coupling
- N Y10T 403/454 • • Connecting pin traverses radially interposed elastomer
- N Y10T 403/455 • • Elastomer interposed between radially spaced members
- N Y10T 403/456 • • • Elastomer encompasses shoulder on inner member
- N Y10T 403/457 • • • including axially acting compressing means
- N Y10T 403/458 • • • Composite bushing with elastomeric component
- N Y10T 403/459 • • Helical spring type coupling
- N Y10T 403/46 • Rod end to transverse side of member
- N Y10T 403/4602 • • Corner joint
- N Y10T 403/4605 • • Stirrup
- N Y10T 403/4608 • • Structure attached to rod end encompasses side
- N Y10T 403/4611 • • • Clamped saddle
- N Y10T 403/4614 • • • Yoke or ring
- N Y10T 403/4617 • • • • having radial screw at bight
- N Y10T 403/4621 • • including saddle
- N Y10T 403/4622 • • Gland type
- N Y10T 403/4625 • • • Rod and side gripped simultaneously by single actuation
- N Y10T 403/4628 • • Rod clamped to hole edge
- N Y10T 403/4631 • • Rod to open edge of side, e.g., wrap-around connection
- N Y10T 403/4634 • • Rod and side deformingly interlocked
- N Y10T 403/4637 • • Radially interposed, side-engaging shim or bushing
- N Y10T 403/4641 • • Socket formed by shaping or deforming side
- N Y10T 403/4642 • • Integral transverse projection on side, e.g., necked, etc.
- N Y10T 403/4645 • • • From rod side

- N Y10T 403/4648 • • Utilizing opposite sides of member
- N Y10T 403/4651 • • • Rod is expanded by component inserted from distal side
- N Y10T 403/4654 • • • • Separate and deformable component
- N Y10T 403/4657 • • • • Plural contacting components
- N Y10T 403/4661 • • • • Barbed component
- N Y10T 403/4662 • • • Inserted, blind-side-engaging, retaining portion on rod
- N Y10T 403/4665 • • • Stepped or tapered recess in side
- N Y10T 403/4668 • • • • Terminal, rod-attached retainer engages distal side
- N Y10T 403/4671 • • • • • Inserted into rod
- N Y10T 403/4674 • • • Clamped member
- N Y10T 403/4677 • • • • Clamping component engages recessed side
- N Y10T 403/4681 • • • • Bolted to rod
- N Y10T 403/4682 • • • • Between rod shoulder and terminal nut
- N Y10T 403/4685 • • • • Bolted through member
- N Y10T 403/4688 • • • • Coaxial collar or shoulder or rod is clamp element
- N Y10T 403/4691 • • Flange on rod bolted to side
- N Y10T 403/4694 • • Rod received in recessed side, e.g., socket or tapered opening, etc.
- N Y10T 403/4697 • • Utilizing internal rod structure
- N Y10T 403/47 • Molded joint
- N Y10T 403/471 • • And independent connection
- N Y10T 403/472 • • including mechanical interlock
- N Y10T 403/473 • • Socket or open cup for bonding material
- N Y10T 403/475 • • Member cast in situ
- N Y10T 403/477 • • Fusion bond, e.g., weld, etc.
- N Y10T 403/478 • • • Metallic fusion material
- N Y10T 403/479 • • • • Added bonding material, e.g., solder, braze, etc.
- N Y10T 403/48 • Shrunk fit
- N Y10T 403/49 • Member deformed in situ
- N Y10T 403/4908 • • Separating element between strands of member
- N Y10T 403/4916 • • Interposed deforming element contacts socket bottom
- N Y10T 403/4924 • • Inner member is expanded by longitudinally inserted element
- N Y10T 403/4933 • • by separate, deformable element
- N Y10T 403/4941 • • Deformation occurs simultaneously with action of separate, diverse function, joint component
- N Y10T 403/4949 • • Deforming component is inserted section
- N Y10T 403/4958 • • Separate deforming means remains with joint assembly
- N Y10T 403/4966 • • Deformation occurs simultaneously with assembly
- N Y10T 403/4974 • • by piercing
- N Y10T 403/4983 • • Diverse resistance to lateral deforming force
- N Y10T 403/4991 • • Both members deformed
- N Y10T 403/50 • Bridged by diverse connector
- N Y10T 403/51 • including spaced, diverse connections
- N Y10T 403/52 • including distinct packing
- N Y10T 403/53 • Split end with laterally movable opposed portions

- N Y10T 403/535 • • *with separate force-applying means*
- N Y10T 403/54 • *Flexible member is joint component*
- N Y10T 403/55 • *Member ends joined by inserted section*
- N Y10T 403/551 • • *Externally bridged*
- N Y10T 403/553 • • *Laterally inserted section*
- N Y10T 403/555 • • *Angle section*
- N Y10T 403/556 • • *Section threaded to member*
- N Y10T 403/557 • • *Expansible section*
- N Y10T 403/559 • • *Fluted or splined section*
- N Y10T 403/56 • *Thread adaptor*
- N Y10T 403/57 • *Distinct end coupler*
- N Y10T 403/5706 • • *Diverse serial connections*
- N Y10T 403/5713 • • • *Axially cleft coupler*
- N Y10T 403/5721 • • *Single actuator for plural connections*
- N Y10T 403/5726 • • • *Axially biased end portions*
- N Y10T 403/5733 • • *Plural opposed sockets*
- N Y10T 403/5741 • • *Separate screw or pin-type connections*
- N Y10T 403/5746 • • *Continuous thread*
- N Y10T 403/5753 • • *having separable end caps or plugs*
- N Y10T 403/5761 • • *Interrupted periphery, e.g., split or segmental, etc.*
- N Y10T 403/5766 • • • *Axially divided segments*
- N Y10T 403/5773 • • • • *Interfitting*
- N Y10T 403/5781 • • • • *Bolted*
- N Y10T 403/5786 • • • *Split*
- N Y10T 403/5793 • • *including member wedging or camming means*
- N Y10T 403/58 • *including ancillary means blocking disconnection of joint*
- N Y10T 403/581 • • *Blocker for assembled joint retainer*
- N Y10T 403/583 • • • *Blocker keeper*
- N Y10T 403/585 • • • *Blocked key*
- N Y10T 403/587 • • *Blocker is catch or key*
- N Y10T 403/589 • • *Cam or thread lock*
- N Y10T 403/59 • *Manually releaseable latch type*
- N Y10T 403/591 • • *having operating mechanism*
- N Y10T 403/592 • • • *Ball detent*
- N Y10T 403/593 • • • *Remotely actuated*
- N Y10T 403/595 • • • *Lever*
- N Y10T 403/597 • • *Swiveled bolt*
- N Y10T 403/598 • • *Transversely sliding pin*
- N Y10T 403/599 • • *Spring biased manipulator*
- N Y10T 403/60 • *Biased catch or latch*
- N Y10T 403/602 • • *by separate spring*
- N Y10T 403/604 • • • *Radially sliding catch*
- N Y10T 403/606 • • *Leaf spring*
- N Y10T 403/608 • • *Pivoted*

- N Y10T 403/61 • Side slide: elongated co-linear members
- N Y10T 403/62 • Annular recess is joint component
- N Y10T 403/63 • Convergent interface
- N Y10T 403/635 • • Tapered
- N Y10T 403/64 • Interconnected flanges or shoulders
- N Y10T 403/642 • • Separate flange or shoulder
- N Y10T 403/645 • • Axially bolted or riveted
- N Y10T 403/648 • • Clamped
- N Y10T 403/65 • Scarf
- N Y10T 403/655 • • Mirror images
- N Y10T 403/66 • Interfitted members with external bridging piece
- N Y10T 403/67 • Thimble: screw or cam
- N Y10T 403/68 • Screw or cam
- N Y10T 403/69 • Axially split or separable member
- N Y10T 403/70 • Interfitted members
- N Y10T 403/7001 • • Crossed rods
- N Y10T 403/7003 • • • One rod is encompassed by the other
- N Y10T 403/7005 • • Lugged member, rotary engagement
- N Y10T 403/7007 • • • Bayonet joint
- N Y10T 403/7009 • • Rotary binding cam or wedge
- N Y10T 403/7011 • • • Radially interposed shim or bushing
- N Y10T 403/7013 • • • • Arcuate slip
- N Y10T 403/7015 • • Assembled by plural manipulations of member
- N Y10T 403/7016 • • Diametric end slot is joint component
- N Y10T 403/7018 • • including separably interposed key
- N Y10T 403/7021 • • • Axially extending
- N Y10T 403/7022 • • • • Resilient
- N Y10T 403/7024 • • • • Longitudinally stepped or tapered
- N Y10T 403/7026 • • Longitudinally splined or fluted rod
- N Y10T 403/7028 • • • Splayed or having a cam surface for anti-backlash
- N Y10T 403/7031 • • • Rod designed to be manipulable, e.g., twistable, within coupling for quick disconnect
- N Y10T 403/7032 • • • including a means, e.g., spring biased portion, for misalignment correction
- N Y10T 403/7033 • • • including a lock or retainer
- N Y10T 403/7035 • • • Specific angle or shape of rib, key, groove, or shoulder
- N Y10T 403/7037 • • Externally shouldered or headed rod
- N Y10T 403/7039 • • Socket
- N Y10T 403/7041 • • including set screw
- N Y10T 403/7043 • • Interfitted angle or channel bars
- N Y10T 403/7045 • • Interdigitated ends
- N Y10T 403/7047 • • Radially interposed shim or bushing
- N Y10T 403/7049 • • • Biased by distinct radially acting means
- N Y10T 403/7051 • • • Wedging or camming
- N Y10T 403/7052 • • • • Engaged by axial movement

- N Y10T 403/7054 *Plural, circumferentially related shims between members*
- N Y10T 403/7056 *Threaded actuator*
- N Y10T 403/7058 *Split or slotted bushing*
- N Y10T 403/7061 *Resilient*
- N Y10T 403/7062 *Clamped members*
- N Y10T 403/7064 *by wedge or cam*
- N Y10T 403/7066 *having actuator*
- N Y10T 403/7067 *Threaded actuator*
- N Y10T 403/7069 *Axially oriented*
- N Y10T 403/7071 *Lever actuator*
- N Y10T 403/7073 *Peripheral enlargement, depression, or slot on one member is joint component*
- N Y10T 403/7075 *including discrete retainer*
- N Y10T 403/7077 *for telescoping members*
- N Y10T 403/7079 *Transverse pin*
- N Y10T 403/7081 *Multiple retainers*
- N Y10T 403/7083 *having means to prevent removal of retainer*
- N Y10T 403/7084 *Bolt, rivet, or screw*
- N Y10T 403/7086 *Wedge pin*
- N Y10T 403/7088 *Sliding pin*
- N Y10T 403/7091 *Expansible retainer*
- N Y10T 403/7092 *for interfitted side faces*
- N Y10T 403/7094 *Enlarged head in complementary recess, e.g., dovetail, etc.*
- N Y10T 403/7096 *Rigid angle*
- N Y10T 403/7098 *Non-circular rod section is joint component*
- N Y10T 403/71 *Rod side to plate or side*
- N Y10T 403/7105 *Connected by double clamp*
- N Y10T 403/7111 *Shackle is integral with or independently attached to proximate side of plate or other side*
- N Y10T 403/7117 *Flanged or grooved rod*
- N Y10T 403/7123 *Traversed by connector*
- N Y10T 403/7129 *Laterally spaced rods*
- N Y10T 403/7135 *by separable shim or bushing in connector*
- N Y10T 403/7141 *Plural channels in connector*
- N Y10T 403/7147 *Connected by flexible tie*
- N Y10T 403/7152 *Lapped rod ends*
- N Y10T 403/7158 *Diagonal connector*
- N Y10T 403/7164 *One rod held between bight and other rod extending through aperture in leg of connector*
- N Y10T 403/7171 *Two rods encompassed by single connector*
- N Y10T 403/7176 *Resilient clip*
- N Y10T 403/7182 *Yoke or ring-type connector*
- N Y10T 403/7188 *Rod received in open channel*
- N Y10T 403/7194 *Crossed rods*
- N Y10T 403/72 *Miter joint*

- N Y10T 403/725 . . Connector bridges inner or outer periphery
- N Y10T 403/73 . Rigid angle
- N Y10T 403/74 . Particular configuration or material of member
- N Y10T 403/75 . having a joining piece extending through aligned openings in plural members
- N Y10T 403/76 . having a cam, wedge, or tapered portion
- N Y10T 403/77 . Miscellaneous
- N Y10T 407/00 -
Y10T 407/00** **Former US Class 407 Series**
- N Y10T 407/00** **Cutters, for shaping**
- N Y10T 407/10 . including noncutting work modifying means
- N Y10T 407/11 . including chip breaker, guide or deflector detachable from tool and tool holder
- N Y10T 407/112 . . Adjustable relative to cutting edge
- N Y10T 407/114 . . . including adjusting means
- N Y10T 407/116 . . Attached to or integral with tool clamping jaw
- N Y10T 407/118 . . Chip breaker
- N Y10T 407/12 . Freely movable cutting edge
- N Y10T 407/13 . Yieldable tool
- N Y10T 407/134 . . Resiliently mounted tool
- N Y10T 407/137 . . . including yield stress or flexure limit adjusting means
- N Y10T 407/14 . with means to apply fluid to cutting tool
- N Y10T 407/15 . Rotary broach
- N Y10T 407/16 . Rectilinear broach
- N Y10T 407/1614 . . Hollow tool for surrounding workpiece
- N Y10T 407/1628 . . including holder having seat for inserted tool
- N Y10T 407/1642 . . . Annular tool
- N Y10T 407/1657 . . . including single tooth
- N Y10T 407/1671 . . Plural tooth groups
- N Y10T 407/1685 . . including sequentially acting teeth of stepped cutting width
- N Y10T 407/17 . Gear cutting tool
- N Y10T 407/1705 . . Face mill gear cutting tool
- N Y10T 407/171 . . . Adjustable teeth
- N Y10T 407/1715 . . Hob
- N Y10T 407/172 . . . Thread cutting
- N Y10T 407/1725 . . . including holder having seat for inserted tool
- N Y10T 407/173 . . . for cutting involute gear tooth
- N Y10T 407/1735 . . Rotary, gear shaving cutting tool
- N Y10T 407/174 . . Gear generating, revolving shaper cutting tool
- N Y10T 407/1745 . . Rotary, tooth form cutting tool
- N Y10T 407/18 . File or rasp
- N Y10T 407/1805 . . Flexible blade or carrier therefor
- N Y10T 407/181 . . Tire rasp
- N Y10T 407/1815 . . Rotary file or round disc
- N Y10T 407/182 . . Composite, diverse sector, or assembled
- N Y10T 407/1825 . . Handle or holder, per se

- N Y10T 407/19 · Rotary cutting tool
- N Y10T 407/1902 · · Gang
- N Y10T 407/1904 · · Composite body of diverse material
- N Y10T 407/1906 · · including holder [i.e., head] having seat for inserted tool
- N Y10T 407/1908 · · · Face or end mill
- N Y10T 407/191 · · · · Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- N Y10T 407/1912 · · · · Tool adjustable relative to holder
- N Y10T 407/1914 · · · · · Radially
- N Y10T 407/1916 · · · · · And axially
- N Y10T 407/1918 · · · · · · Selectively
- N Y10T 407/192 · · · · with separate means to fasten tool to holder
- N Y10T 407/1922 · · · · · Wedge clamp element
- N Y10T 407/1924 · · · · · Specified tool shape
- N Y10T 407/1926 · · · Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- N Y10T 407/1928 · · · Tool adjustable relative to holder
- N Y10T 407/193 · · · · Radially
- N Y10T 407/1932 · · · with means to fasten tool seat to holder
- N Y10T 407/1934 · · · with separate means to fasten tool to holder
- N Y10T 407/1936 · · · · Apertured tool
- N Y10T 407/1938 · · · · Wedge clamp element
- N Y10T 407/194 · · · · · Resilient clamp jaw
- N Y10T 407/1942 · · · Peripherally spaced tools
- N Y10T 407/1944 · · · · Sectional support
- N Y10T 407/1946 · · Face or end mill
- N Y10T 407/1948 · · · with cutting edge entirely across end of tool [e.g., router bit, end mill, etc.]
- N Y10T 407/195 · · Compound tooth arrangement
- N Y10T 407/1952 · · Having peripherally spaced teeth
- N Y10T 407/1954 · · · Axially tapering tool
- N Y10T 407/1956 · · · Circumferentially staggered
- N Y10T 407/1958 · · · · Plural teeth spaced about a helix
- N Y10T 407/196 · · · Varying in cutting edge profile
- N Y10T 407/1962 · · · Specified tooth shape or spacing
- N Y10T 407/1964 · · · · Arcuate cutting edge
- N Y10T 407/1966 · · · · · Helical tooth
- N Y10T 407/20 · Profiled circular tool
- N Y10T 407/21 · Arc segment tool
- N Y10T 407/22 · including holder having seat for inserted tool
- N Y10T 407/2202 · · Plural spaced seats and common holder
- N Y10T 407/2204 · · · Relatively adjustable seats
- N Y10T 407/2206 · · · Simultaneously usable
- N Y10T 407/2208 · · Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
- N Y10T 407/221 · · · Adjustable tool

- N Y10T 407/2212 . . . with tool ejector
- N Y10T 407/2214 . . . with separate means to adjust tool to and fro relative to holder
- N Y10T 407/2216 with indicator
- N Y10T 407/2218 Plural provisions for adjustment
- N Y10T 407/222 by moving tool seat
- N Y10T 407/2222 . . . Tool adjustable relative to holder
- N Y10T 407/2224 with indicator
- N Y10T 407/2226 Plural provisions for adjustment
- N Y10T 407/2228 Plural interfering seats
- N Y10T 407/223 including pivotable seat or tool
- N Y10T 407/2232 with detent
- N Y10T 407/2234 Pivoted seat
- N Y10T 407/2236 And pivotable tool
- N Y10T 407/2238 by adjustable or replaceable stop
- N Y10T 407/224 Adjustable
- N Y10T 407/2242 Screw
- N Y10T 407/2244 by movement of seat relative to holder
- N Y10T 407/2246 Pivoted seat
- N Y10T 407/2248 Pivoted tool
- N Y10T 407/225 Resiliently biased tool clamping jaw
- N Y10T 407/2252 Rectilinearly
- N Y10T 407/2254 including rotatable cam clamp element
- N Y10T 407/2256 including wedge clamp element
- N Y10T 407/2258 And guide or detent
- N Y10T 407/226 including detent
- N Y10T 407/2262 Tool gripped directly by set screw
- N Y10T 407/2264 Slidable jaw
- N Y10T 407/2266 . . . Holder adapted for tools of different shape
- N Y10T 407/2268 . . . with chip breaker, guide or deflector
- N Y10T 407/227 . . . with separate means to fasten tool seat to holder
- N Y10T 407/2272 . . . with separate means to fasten tool to holder
- N Y10T 407/2274 Apertured tool
- N Y10T 407/2276 with means projecting through aperture to force tool laterally against reaction surface
- N Y10T 407/2278 Tilting clamp element and separate means to tilt same
- N Y10T 407/228 Rotatable cam clamp element
- N Y10T 407/2282 including tool holding clamp and clamp actuator
- N Y10T 407/2284 Wedge clamp element
- N Y10T 407/2286 Resiliently biased clamp jaw
- N Y10T 407/2288 Integral with holder
- N Y10T 407/229 Pivoted jaw
- N Y10T 407/2292 Slidable jaw
- N Y10T 407/23 . . . including tool having plural alternatively usable cutting edges
- N Y10T 407/235 . . . with integral chip breaker, guide or deflector

- N Y10T 407/24 · with chip breaker, guide or deflector
- N Y10T 407/245 · · comprising concave surface in cutting face of tool
- N Y10T 407/25 · including cut off tool
- N Y10T 407/26 · comprising cutting edge bonded to tool shank
- N Y10T 407/27 · comprising tool of specific chemical composition
- N Y10T 407/28 · Miscellaneous
- N Y10T 408/00 -
Y10T 408/00** **Former US Class 408 Series**
- N Y10T 408/00** **Cutting by use of rotating axially moving tool**
- N Y10T 408/03 · Processes
- N Y10T 408/04 · · Bit detachable
- N Y10T 408/05 · with means to weigh or test work or product
- N Y10T 408/08 · with means to regulate operation by use of templet, tape, card, or other replaceable information supply
- N Y10T 408/10 · with interlock between machine elements
- N Y10T 408/13 · with randomly-actuated stopping means
- N Y10T 408/14 · · Responsive to condition of Tool or tool-drive
- N Y10T 408/15 · · Responsive to condition of work or product
- N Y10T 408/16 · with control means energized in response to activator stimulated by condition sensor
- N Y10T 408/165 · · to control Tool rotation
- N Y10T 408/17 · · to control infeed
- N Y10T 408/172 · · · Responsive to Tool
- N Y10T 408/173 · · · Responsive to work
- N Y10T 408/175 · · to control relative positioning of Tool and work
- N Y10T 408/18 · with stopping upon completion of prescribed operation
- N Y10T 408/20 · · Responsive to condition of work or product
- N Y10T 408/21 · with signal, indicator, illuminator or optical means
- N Y10T 408/23 · including means to cause Tool to progressively vibrate toward work
- N Y10T 408/26 · with means to condition tool
- N Y10T 408/29 · with means to deForm work temporarily
- N Y10T 408/31 · Convertible cutting means
- N Y10T 408/33 · · Utilizing common cutting Tool
- N Y10T 408/34 · Combined cutting means
- N Y10T 408/344 · · including Tool operating on rotating work
- N Y10T 408/348 · · Plural other type cutting means
- N Y10T 408/35 · · · including plural rotating tools
- N Y10T 408/352 · · including rotating cutter other than rotating, axially moving Tool
- N Y10T 408/353 · · · Crystalline cutter
- N Y10T 408/355 · · · Utilized in cutting work or product to length
- N Y10T 408/3555 · · · · Adapted to cut entire thickness of work at one pass
- N Y10T 408/356 · · including plunging [single stroke] cutter
- N Y10T 408/36 · Machine including plural tools
- N Y10T 408/365 · · Axes of tools moving with work during operation

- N Y10T 408/367 . . . including means to infeed Tool and means to infeed work or including coaxial tools
- N Y10T 408/368 . . . Plural work stations
- N Y10T 408/37 . . Turret of tools
- N Y10T 408/375 . . Coaxial tools
- N Y10T 408/378 . . . Coaxial, opposed tools
- N Y10T 408/3784 with additional, converging Tool
- N Y10T 408/3788 Plural pairs of coaxial, opposed tools
- N Y10T 408/3792 with means to sequentially feed tools toward work
- N Y10T 408/3796 with interconnected means to simultaneously feed tools
- N Y10T 408/38 . . Plural, simultaneously operational tools
- N Y10T 408/3806 . . . with plural simultaneously operational work stations
- N Y10T 408/3809 Successively acting on workpiece
- N Y10T 408/381 Pivotaly mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis
- N Y10T 408/3811 . . . with provision for adjustment of relationship of axes
- N Y10T 408/3817 . . . at least one Tool driven by orbiting wrist plate
- N Y10T 408/3822 . . . at least one Tool including flexible drive connection
- N Y10T 408/3828 . . . with work-infeed
- N Y10T 408/3833 . . . with means to advance work relative to Tool
- N Y10T 408/3839 . . . with presser-foot
- N Y10T 408/3844 . . . with tool-opposing, work-engaging surface
- N Y10T 408/385 . . Rotatable about parallel axes
- N Y10T 408/39 . . with radially outer limit of cutting edge moving to define cylinder partially, but not entirely encircled by work
- N Y10T 408/42 . . Axis of Tool moving with work during operation
- N Y10T 408/44 . . with means to apply transient, fluent medium to work or product
- N Y10T 408/45 . . including Tool with duct
- N Y10T 408/453 . . . and means to move gaseous fluid by application of vacuum
- N Y10T 408/455 . . . Conducting channel extending to end of Tool
- N Y10T 408/458 . . . including nozzle
- N Y10T 408/46 . . including nozzle
- N Y10T 408/47 . . with work-infeed means
- N Y10T 408/476 . . Driven by fluid motor
- N Y10T 408/482 . . Driven by means having sliding engagement therewith
- N Y10T 408/488 . . Driven by lever or connecting link
- N Y10T 408/494 . . and gear to drive infeed means
- N Y10T 408/50 . . with product handling or receiving means
- N Y10T 408/51 . . Ejector
- N Y10T 408/52 . . with work advancing or guiding means
- N Y10T 408/54 . . Means to intermittently advance work
- N Y10T 408/545 . . . Rotary, work-supporting means
- N Y10T 408/55 . . with work-engaging structure other than Tool or tool-support
- N Y10T 408/551 . . with means actuated by work to release Tool from fixed position in Tool support

- N Y10T 408/552 . . . Adapted to engage work at tool-axis
- N Y10T 408/553 . . Centering means adapted to be replaced by Tool
- N Y10T 408/554 . . Magnetic or suction means
- N Y10T 408/556 . . Tool supporting wheel
- N Y10T 408/5565 . . . Wheel-axis parallel to tool-axis
- N Y10T 408/557 . . Frictionally engaging sides of opening in work
- N Y10T 408/558 . . . Opening coaxial with Tool
- N Y10T 408/5583 Engaging sides of opening being enlarged by Tool
- N Y10T 408/5584 Engaging surface axially advanced of tool-action
- N Y10T 408/5586 Engaging surface subsequent to tool-action on that surface
- N Y10T 408/5587 Valve fitting
- N Y10T 408/559 . . Funnel like work-engaging surface cooperating with protuberance on work
- N Y10T 408/56 . . Adapted to "form" recession in work
- N Y10T 408/5605 . . . Recession at tool-axis
- N Y10T 408/561 . . Having tool-opposing, work-engaging surface
- N Y10T 408/5612 . . . Tool having shiftable tool-axis
- N Y10T 408/5614 . . . Angularly adjustable surface
- N Y10T 408/5616 Adjustable about axis that is parallel to tool-axis
- N Y10T 408/5617 . . . Laterally adjustable surface
- N Y10T 408/5619 . . . Flexible or concatenated member
- N Y10T 408/5621 . . . Connected to Tool through opening being enlarged by Tool
- N Y10T 408/5622 Plural, coaxially opposing, work-engaging means
- N Y10T 408/5623 . . . with presser foot
- N Y10T 408/56238 Encompassed by Tool during cut
- N Y10T 408/56245 including tool-guide [or bushing]
- N Y10T 408/56253 Base supported machine
- N Y10T 408/5626 . . . with means to move Tool relative to other work-engaging structure along tool-axis
- N Y10T 408/5627 Having sliding engagement therewith
- N Y10T 408/56275 Screw coaxial with Tool
- N Y10T 408/5628 . . . Tool having screw-thread engaging frame to cause infeed
- N Y10T 408/563 . . Work-gripping clamp
- N Y10T 408/5633 . . . Adapted to coaxially grip round work
- N Y10T 408/56337 Oppositely moving lateral clamps
- N Y10T 408/5634 Three or more moving clamps
- N Y10T 408/56343 Base supported clamp
- N Y10T 408/5635 . . . Oppositely moving lateral clamps
- N Y10T 408/5638 . . . Adjustable relative to tool-axis
- N Y10T 408/564 . . Movable relative to Tool along tool-axis
- N Y10T 408/5647 . . . including means to move Tool
- N Y10T 408/5653 . . . with means to bias Tool away from work
- N Y10T 408/566 . . Axially fixed to Tool
- N Y10T 408/5665 . . . Work-engaging surface parallel to tool-axis
- N Y10T 408/567 . . Adjustable, tool-guiding jig

- N Y10T 408/568 . . . Guide bushing
- N Y10T 408/569 . . Bushing
- N Y10T 408/57 . Tool-support with means to receive tool-position indicator
- N Y10T 408/60 . Plural tool-assemblages
- N Y10T 408/62 . . Coaxial
- N Y10T 408/625 . . . Spring biased
- N Y10T 408/63 . Tool or tool-support with torque-applying ratchet
- N Y10T 408/637 . . with thrust applying means
- N Y10T 408/639 . . . Reversible ratchet
- N Y10T 408/641 . . . Double-acting ratchet
- N Y10T 408/643 . . Reversible ratchet
- N Y10T 408/65 . Means to drive tool
- N Y10T 408/655 . . with specific Tool structure
- N Y10T 408/66 . . Friction gearing
- N Y10T 408/665 . . Universal or flexible drive connection to rotate Tool
- N Y10T 408/67 . . Belt and pulley
- N Y10T 408/675 . . including means to move Tool along tool-axis
- N Y10T 408/6757 . . . Fluid means
- N Y10T 408/6764 . . . Laterally adjustable Tool
- N Y10T 408/6771 . . . with clutch means
- N Y10T 408/6774 including plural speed drive
- N Y10T 408/6776 Actuated by Tool movement
- N Y10T 408/6779 . . . Rack and pinion
- N Y10T 408/6786 . . . Manually moved lever
- N Y10T 408/6793 . . . Screw coaxial with Tool
- N Y10T 408/68 . Tool or tool-support with thrust-applying machine-engaging screw
- N Y10T 408/70 . Tool or tool-support with torque-applying clutch
- N Y10T 408/72 . . Friction clutch
- N Y10T 408/73 . Tool or tool-support with torque-applying spline
- N Y10T 408/75 . . Relative motion of splined shaft and tool-support causing release of Tool from operating position
- N Y10T 408/76 . Tool-carrier with vibration-damping means
- N Y10T 408/78 . Tool of specific diverse material
- N Y10T 408/81 . Tool having crystalline cutting edge
- N Y10T 408/83 . Tool-support with means to move Tool relative to tool-support
- N Y10T 408/85 . . to move radially
- N Y10T 408/852 . . . with Tool releasing trigger
- N Y10T 408/853 and separate Tool setting means
- N Y10T 408/854 . . . to move eccentrically mounted Tool
- N Y10T 408/855 Tool-support including plural, adjustable sections
- N Y10T 408/856 . . . Moving means including pinion engaging rack-like surface of Tool
- N Y10T 408/858 . . . Moving means including wedge, screw or cam
- N Y10T 408/8583 with resiliently urged Tool
- N Y10T 408/85837 with spring retainer

- N Y10T 408/85843 Resilient Tool or tool-support
- N Y10T 408/8585 including oppositely moving, diverging tools
- N Y10T 408/8588 Axially slidable moving-means
- N Y10T 408/85884 Tool pivotally mounted on support
- N Y10T 408/85888 Having axially spaced shoulders
- N Y10T 408/85892 Screw driven wedge or cam
- N Y10T 408/85893 Screw with axis radially spaced from tool-axis
- N Y10T 408/85894 Annular wedge-collar
- N Y10T 408/858945 Axially spaced tool-retaining collars
- N Y10T 408/858946 with travelling wedge
- N Y10T 408/858948 Tool having axially facing, collar-receiving groove
- N Y10T 408/858949 including two-piece collar
- N Y10T 408/85895 Traveling wedge
- N Y10T 408/858953 Interfitting, tool-retaining wedge
- N Y10T 408/858955 including separable interfitting element
- N Y10T 408/858957 Having externally threaded shank connected to tool-support
- N Y10T 408/85896 Annular wedge-collar
- N Y10T 408/859 Rotary cam
- N Y10T 408/8591 Scroll plate
- N Y10T 408/85913 Volute scroll
- N Y10T 408/85915 with means to rotate scroll
- N Y10T 408/85918 with adjustable means to limit scroll movement
- N Y10T 408/8592 Coaxial with tool-axis
- N Y10T 408/8593 Wedge moving perpendicular to tool-axis
- N Y10T 408/8595 Pivotal tool-support
- N Y10T 408/8598 Screw extending perpendicular to tool-axis
- N Y10T 408/85985 Plural tools moved by diametrically opposed screws
- N Y10T 408/85988 Screws mounted on common shaft
- N Y10T 408/8599 Tool having pitch-stabilizing ridge
- N Y10T 408/85995 with tool-holding clamp and clamp actuator
- N Y10T 408/86 Tool-support with means to permit positioning of the Tool relative to support
- N Y10T 408/865 Pivotal Tool
- N Y10T 408/868 with multiple cutting positions
- N Y10T 408/87 Tool having stepped cutting edges
- N Y10T 408/8713 including means to permit both radial and axial positioning of edge
- N Y10T 408/8725 including means to permit relative axial positioning of edges
- N Y10T 408/8729 with work-engaging structure other than cutting edge
- N Y10T 408/8734 including central Tool axially movable relative to support
- N Y10T 408/8738 including inverse cutting edge
- N Y10T 408/875 including means to "form" depression in work
- N Y10T 408/88 including central-lead
- N Y10T 408/885 including tool-holding clamp and clamp actuator
- N Y10T 408/888 Movable along tool-axis
- N Y10T 408/89 Tool or Tool with support

- N Y10T 408/892 · · *with work-engaging structure detachable from cutting edge*
- N Y10T 408/8923 · · · *Removable central lead*
- N Y10T 408/8925 · · · *Depth-limiting member*
- N Y10T 408/8928 · · · *Adjustable*
- N Y10T 408/893 · · *Hollow milling Tool*
- N Y10T 408/895 · · *Having axial, core-receiving central portion*
- N Y10T 408/8953 · · · *with lateral outlet*
- N Y10T 408/8957 · · · *and having stepped cutting edges*
- N Y10T 408/896 · · *Having product-receiving chamber*
- N Y10T 408/8967 · · · *and central lead-screw*
- N Y10T 408/8973 · · · *and central lead*
- N Y10T 408/898 · · *Helical ribbon Tool*
- N Y10T 408/899 · · *Having inversely angled cutting edge*
- N Y10T 408/90 · · · *and axially extending peripheral cutting spur*
- N Y10T 408/901 · · *Having axially extending peripheral cutting spur*
- N Y10T 408/902 · · *Having central lead-screw*
- N Y10T 408/904 · · *with pitch-stabilizing ridge*
- N Y10T 408/9042 · · · *and radially spaced cutting edge*
- N Y10T 408/9044 · · · *including cutting teeth of different width*
- N Y10T 408/9045 · · · · *and different root circles*
- N Y10T 408/9046 · · · *including tapered section*
- N Y10T 408/90467 · · · · *and relieved cutting edge*
- N Y10T 408/90473 · · · · *including work-embracing cutting edges*
- N Y10T 408/9048 · · · *Extending outwardly from tool-axis*
- N Y10T 408/905 · · *Having stepped cutting edges*
- N Y10T 408/906 · · · *Axially spaced*
- N Y10T 408/9065 · · · · *with central lead*
- N Y10T 408/907 · · *including detailed shank*
- N Y10T 408/909 · · *Having peripherally spaced cutting edges*
- N Y10T 408/9093 · · · *Each formed by a pair of axially facing facets*
- N Y10T 408/9095 · · · *with axially extending relief channel*
- N Y10T 408/9097 · · · · *Spiral channel*
- N Y10T 408/9098 · · · *with means to retain Tool to support*
- N Y10T 408/90987 · · · · *Wedge means*
- N Y10T 408/90993 · · · · *Screw driven means*
- N Y10T 408/91 · · *Machine frame*
- N Y10T 408/92 · · *with counterweight mechanism*
- N Y10T 408/93 · · *including pivotally mounted tool-carrier*
- N Y10T 408/935 · · · *including laterally movable tool-carrier*
- N Y10T 408/94 · · *Tool-support*
- N Y10T 408/95 · · *with tool-retaining means*
- N Y10T 408/953 · · · *Clamping jaws*
- N Y10T 408/957 · · · *Tool adapter*
- N Y10T 408/96 · · *Miscellaneous*

- N Y10T 408/97 . . Drill bushings
- N Y10T 408/98 . . Drill guide
- N Y10T 408/99 . . Adjustable stop
- N Y10T 409/00 - Y10T 409/00** **Former US Class 409 Series**
- N Y10T 409/00** **Gear cutting, milling, or planing**
- N Y10T 409/10 . Gear cutting
- N Y10T 409/100159 . . with regulation of operation by use of templet, card, or other replaceable information supply
- N Y10T 409/100318 . . . including follower for templet
- N Y10T 409/100477 . . and burnishing simultaneously
- N Y10T 409/100636 . . with compensation for backlash in drive means
- N Y10T 409/100795 . . with work or product advancing
- N Y10T 409/100954 . . . Utilizing transfer arm
- N Y10T 409/101113 . . Gear chamfering or deburring
- N Y10T 409/101272 . . . Using relatively reciprocating or oscillating cutter
- N Y10T 409/101431 . . Gear tooth shape generating
- N Y10T 409/10159 . . . Hobbing
- N Y10T 409/101749 Process
- N Y10T 409/101908 Generating tooth for bevel gear
- N Y10T 409/102067 including means to shift hob between cutting passes
- N Y10T 409/102226 with control means energized in response to activator stimulated by condition sensor
- N Y10T 409/102385 Plural hobs
- N Y10T 409/102544 including infeed means
- N Y10T 409/102703 to infeed along axis of work rotation
- N Y10T 409/102862 Infeed of cutter
- N Y10T 409/103021 and infeed radially of axis of work rotation
- N Y10T 409/10318 Vertically
- N Y10T 409/103339 to infeed radially of axis of work rotation
- N Y10T 409/103498 Infeed of cutter
- N Y10T 409/103657 and infeed tangentially of work axis
- N Y10T 409/103816 . . . Milling with radial faced tool
- N Y10T 409/103975 Process
- N Y10T 409/104134 Adapted to cut bevel gear
- N Y10T 409/104293 with means to continuously rotate work and means to co-form all teeth of gear
- N Y10T 409/104452 Bevel gear having nonparallel opposing tooth flanks
- N Y10T 409/104611 including rotary cutter cradle
- N Y10T 409/10477 . . . by relative axial movement between synchronously indexing or rotating work and cutter
- N Y10T 409/104929 Crowning
- N Y10T 409/105088 Displacing cutter axially relative to work [e.g., gear shaving, etc.]
- N Y10T 409/105247 Using gear shaper-cutter
- N Y10T 409/105406 Plural distinct cutting edges

- N Y10T 409/105565 Cutting rotating work, the axis of which lies in a plane intersecting the cutter axis
- N Y10T 409/105724 . . . Gear shaving
- N Y10T 409/105883 . . . Using rotary cutter
- N Y10T 409/106042 having axially directed cutting edge
- N Y10T 409/106201 Plural rotary cutters
- N Y10T 409/10636 On reciprocating carriage
- N Y10T 409/106519 . . . Using reciprocating or oscillating cutter
- N Y10T 409/106678 Bevel gear cutting
- N Y10T 409/106837 Dual cutters
- N Y10T 409/106996 Double acting cutter
- N Y10T 409/107155 Rectilinearly reciprocating cutter
- N Y10T 409/107314 Cutter comprising a rack
- N Y10T 409/107473 . . . Making a noncircular gear, worm, rotor, or a planar-faced gear
- N Y10T 409/107632 . . Gear shaving
- N Y10T 409/107791 . . Using rotary cutter
- N Y10T 409/10795 . . . Process
- N Y10T 409/108109 . . . End mill
- N Y10T 409/108268 Radially faced
- N Y10T 409/108427 Using plural, selectively usable tools
- N Y10T 409/108586 . . . Plural rotary cutters
- N Y10T 409/108745 . . . Cutting action along work axis
- N Y10T 409/108904 Cutting action intersecting work axis
- N Y10T 409/109063 . . Using reciprocating or oscillating cutter
- N Y10T 409/109222 . . . Broach
- N Y10T 409/109381 . . . including circumferentially disposed cutting edges
- N Y10T 409/10954 . . Work dividing or checking of work position or division
- N Y10T 409/109699 . . with work clamping
- N Y10T 409/20 . . with furbishing of cutter
- N Y10T 409/30 . . Milling
- N Y10T 409/300056 . . Thread or helix generating
- N Y10T 409/300112 . . . Process
- N Y10T 409/300168 . . . with means to regulate operation by use of templet, card, or other replaceable information supply
- N Y10T 409/300224 Complete cycle
- N Y10T 409/30028 to regulate cutting depth [e.g., relief, taper, etc.]
- N Y10T 409/300336 to regulate rate of motion [e.g., stopping, etc.]
- N Y10T 409/300392 . . . with nonthread or nonhelix generating, milling cutter
- N Y10T 409/300448 . . . with means to advance work or product
- N Y10T 409/300504 . . . Plural cutters or work holders
- N Y10T 409/30056 . . . with planetary cutter
- N Y10T 409/300616 . . . Work means to move work axially and means to interrelate work movement with cutter rotation
- N Y10T 409/300672 . . . with means to rotate work and means to interrelatedly infeed the work relative to the cutter

- N Y10T 409/300728 Means to infeed the cutter
- N Y10T 409/300784 . . . with means to circumferentially adjust the position of the cutter with respect to the work
- N Y10T 409/30084 . . with regulation of operation by templet, card, or other replaceable information supply
- N Y10T 409/300896 . . . with sensing of numerical information and regulation without mechanical connection between sensing means and regulated means [i.e., numerical control]
- N Y10T 409/300952 . . . to cut lock key
- N Y10T 409/301008 Using templet other than a key
- N Y10T 409/301064 Complete cycle
- N Y10T 409/30112 . . . Process
- N Y10T 409/301176 . . . Reproducing means
- N Y10T 409/301232 including pantograph cutter-carrier
- N Y10T 409/301288 and means to move work at work station
- N Y10T 409/301344 About work axis
- N Y10T 409/3014 Pivotaly supported for vertical movement
- N Y10T 409/301456 and means to counterbalance carrier
- N Y10T 409/301512 including plural cutters
- N Y10T 409/301568 by use of pivotaly supported tracer
- N Y10T 409/301624 Duplicating means
- N Y10T 409/30168 with means for operation without manual intervention
- N Y10T 409/301736 to make a double curvature foil
- N Y10T 409/301792 including means to sense optical or magnetic image
- N Y10T 409/301848 with means to support templet above or under work
- N Y10T 409/301904 including tracer adapted to trigger electrical energy
- N Y10T 409/30196 to actuate electrically driven work or tool moving means
- N Y10T 409/302016 to actuate fluid driven work or tool moving means
- N Y10T 409/302072 including tracer adapted to trigger fluid energy
- N Y10T 409/302128 to actuate fluid driven work or tool moving means
- N Y10T 409/302184 including cutter and tracer fixed to move laterally together
- N Y10T 409/30224 and provision for circumferential relative movement of cutter and work
- N Y10T 409/302296 including plural cutters
- N Y10T 409/302352 including plural cutters
- N Y10T 409/302408 including cross-slide tool carrier
- N Y10T 409/302464 including plural cutters
- N Y10T 409/30252 including cross-slide tool carrier
- N Y10T 409/302576 with means to support templet above or under work
- N Y10T 409/302632 with provision for circumferential relative movement of cutter and work
- N Y10T 409/302688 with provision for circumferential relative movement of cutter and work
- N Y10T 409/302744 and means for operation without manual intervention
- N Y10T 409/3028 including tracer adapted to trigger electrical or fluid energy
- N Y10T 409/302856 For using planar templet in cutting profile [e.g., contour map from planar map, etc.]
- N Y10T 409/302912 including means for operation without manual intervention

- N Y10T 409/302968 . . . including means for operation without manual intervention
- N Y10T 409/303024 including simultaneously usable plural tracers or including tracer adapted to simultaneously use plural templets
- N Y10T 409/30308 to make a double curvature foil
- N Y10T 409/303136 to make a double curvature foil
- N Y10T 409/303192 including cutter and tracer fixed to move together
- N Y10T 409/303248 with provision for circumferential relative movement of cutter and work
- N Y10T 409/303304 and provision for circumferential relative movement of cutter and work
- N Y10T 409/303336 . . . including cutter and tracer fixed to move together
- N Y10T 409/303416 . . . Templet, tracer, or cutter
- N Y10T 409/303472 Tracer
- N Y10T 409/303528 Adapted to trigger electrical energy
- N Y10T 409/303584 Photocell
- N Y10T 409/30364 Adapted to trigger fluid energy
- N Y10T 409/303696 Templet
- N Y10T 409/303752 . . . Process
- N Y10T 409/303808 including infeeding
- N Y10T 409/303864 . . . with means to weigh or test work or product
- N Y10T 409/30392 . . . with means to protect operative or machine [e.g., guard, safety device, etc.]
- N Y10T 409/303976 . . . with means to control temperature or lubricate
- N Y10T 409/304032 Cutter or work
- N Y10T 409/304088 . . . with means to remove chip
- N Y10T 409/304144 . . . Means to trim edge
- N Y10T 409/3042 . . . Means to remove scale or raised surface imperfection
- N Y10T 409/304256 Means to remove flash or burr
- N Y10T 409/304312 . . . with means to dampen vibration
- N Y10T 409/304368 . . . Means to mill epitrochoidal shape
- N Y10T 409/304424 . . . Means for internal milling
- N Y10T 409/30448 . . . with detachable or auxiliary cutter support to convert cutting action
- N Y10T 409/304536 . . . including means to infeed work to cutter
- N Y10T 409/304592 with compensation for backlash in drive means
- N Y10T 409/304648 with control means energized in response to activator stimulated by condition sensor
- N Y10T 409/304704 In response to cutter or cutter carriage
- N Y10T 409/30476 In response to work or work carriage
- N Y10T 409/304816 to control rate of infeed or return
- N Y10T 409/304872 to control limit of infeed
- N Y10T 409/304928 Adapted to hydraulically or pneumatically stimulate control
- N Y10T 409/304984 Adapted to electrically stimulate control
- N Y10T 409/30504 to control rate of infeed or return
- N Y10T 409/305096 to effect stopping of infeed
- N Y10T 409/305152 with means to change rate of infeed
- N Y10T 409/305208 Means to mill indeterminate length work
- N Y10T 409/305264 Multiple work stations
- N Y10T 409/30532 with means to advance work or product

- N Y10T 409/305376 Vertically
- N Y10T 409/305432 Endless or orbital work or product advancing means
- N Y10T 409/305488 to reciprocate or oscillate work
- N Y10T 409/305544 with work holder
- N Y10T 409/3056 and means to selectively position work
- N Y10T 409/305656 including means to support work for rotation during operation
- N Y10T 409/305712 and including means to infeed cutter toward work axis
- N Y10T 409/305768 with linear movement of work
- N Y10T 409/305824 with angular movement of work
- N Y10T 409/30588 including friction gearing drive
- N Y10T 409/305936 including fluid drive
- N Y10T 409/305992 . . . with means to effect stopping upon completion of operation
- N Y10T 409/306048 . . . with means to advance work or product
- N Y10T 409/306104 Endless or orbital work or product advancing means
- N Y10T 409/30616 . . . with means to precisely reposition work
- N Y10T 409/306216 . . . Randomly manipulated, work supported, or work following device
- N Y10T 409/306272 For machining commutator
- N Y10T 409/306328 For cutting longitudinal groove in shaft [e.g., keyway, etc.]
- N Y10T 409/306384 with work supported guide means
- N Y10T 409/30644 to guide tool to move in arcuate path
- N Y10T 409/306496 with work follower
- N Y10T 409/306552 Randomly manipulated
- N Y10T 409/306608 End mill [e.g., router, etc.]
- N Y10T 409/306664 . . . including means to infeed rotary cutter toward work
- N Y10T 409/30672 with means to limit penetration into work
- N Y10T 409/306776 Axially
- N Y10T 409/306832 with infeed control means energized in response to activator stimulated by condition sensor
- N Y10T 409/306888 In response to cutter condition
- N Y10T 409/306944 In response to work condition
- N Y10T 409/307 with work holder
- N Y10T 409/307056 and laterally
- N Y10T 409/307112 Simultaneously
- N Y10T 409/307168 Plural cutters
- N Y10T 409/307224 with infeed control means energized in response to activator stimulated by condition sensor
- N Y10T 409/30728 In response to cutter condition
- N Y10T 409/307336 In response to work condition
- N Y10T 409/307392 with means to change rate of infeed
- N Y10T 409/307448 with work holder
- N Y10T 409/307504 Indexable
- N Y10T 409/30756 Machining arcuate surface
- N Y10T 409/307616 with means to move cutter eccentrically
- N Y10T 409/307672 Angularly adjustable cutter head
- N Y10T 409/307728 including gantry-type cutter-carrier

- N Y10T 409/307784 . . . Plural cutters
- N Y10T 409/30784 . . including means to adjustably position cutter
- N Y10T 409/307896 . . . with work holder or guide
- N Y10T 409/307952 . . . Linear adjustment
- N Y10T 409/308008 with control for adjustment means responsive to activator stimulated by condition sensor
- N Y10T 409/308064 Responsive to position of cutter
- N Y10T 409/30812 and means to clamp cutter support in adjusted position
- N Y10T 409/308176 with position indicator or limit means
- N Y10T 409/308232 and angular adjustment
- N Y10T 409/308288 including gantry-type cutter-carrier
- N Y10T 409/308344 Plural cutters
- N Y10T 409/3084 . . . with position indicator or limit means
- N Y10T 409/308456 . . . with right angle cutter drive
- N Y10T 409/308512 . . . Compound angular adjustment
- N Y10T 409/308568 . . . Plural cutters
- N Y10T 409/308624 . . with limit means to aid in positioning of cutter bit or work [e.g., gauge, stop, etc.]
- N Y10T 409/30868 . . Work support
- N Y10T 409/308736 . . . with position indicator or stop
- N Y10T 409/308792 . . . Indexable
- N Y10T 409/308848 including dividing head
- N Y10T 409/308904 Multiple row dividing head
- N Y10T 409/30896 . . . with angular adjustment
- N Y10T 409/309016 . . . with work holder or guide
- N Y10T 409/309072 including cutter limited to rotary motion
- N Y10T 409/309128 . . . with means to adjust work support vertically
- N Y10T 409/309184 . . including cutter limited to rotary motion
- N Y10T 409/30924 . . . Cutter turning about vertical axis
- N Y10T 409/309296 . . Detachable or repositionable tool head
- N Y10T 409/309352 . . Cutter spindle or spindle support
- N Y10T 409/309408 . . . with cutter holder
- N Y10T 409/309464 and draw bar
- N Y10T 409/30952 . . with cutter holder
- N Y10T 409/309576 . . Machine frame
- N Y10T 409/309632 . . . Overarm harness structure
- N Y10T 409/309688 . . . including counterbalancing means
- N Y10T 409/309744 . . . including means to compensate for deformation
- N Y10T 409/3098 Deflection of cutter spindle
- N Y10T 409/309856 . . . Convertible from lathe
- N Y10T 409/309912 . . . including relatively movable components and means to relatively immobilize these components
- N Y10T 409/309968 . . Tailstock
- N Y10T 409/40 . . Broaching
- N Y10T 409/400175 . . Process

- N Y10T 409/40035 . . with control means energized in response to activator stimulated by condition sensor
- N Y10T 409/400525 . . . Responsive to condition of work or product
- N Y10T 409/4007 . . with means to distribute cutter infeed force
- N Y10T 409/400875 . . with means to select cutter or to select or modify cutter drive
- N Y10T 409/40105 . . with means to clean, lubricate, or modify temperature of work or cutter
- N Y10T 409/401225 . . with product handling means
- N Y10T 409/4014 . . . Between plural broaching stations
- N Y10T 409/401575 . . . Means to eject broached product
- N Y10T 409/40175 . . . Chip removal means
- N Y10T 409/401925 . . with means to protect operative or machine [e.g., guard, safety device, etc.]
- N Y10T 409/4021 . . . with safety means for overload or safety interlock
- N Y10T 409/402275 . . with work immobilizer and means to activate work immobilizer interrelated with cutter infeed, work infeed, or work advance
- N Y10T 409/40245 . . with work infeed or advancing means and means to clamp the work thereto, which clamping means is interrelated with work or cutter infeed
- N Y10T 409/402625 . . Means to remove flash or burr
- N Y10T 409/4028 . . Means for cutting groove
- N Y10T 409/402975 . . . Arcuate groove in cylindrical surface
- N Y10T 409/40315 Rifling
- N Y10T 409/403325 . . Orbital carrier for cutter
- N Y10T 409/4035 . . Orbital carrier for work
- N Y10T 409/403675 . . with means to cyclically manipulate cutter or cutter support
- N Y10T 409/40385 . . . to reorient, introduce, or remove cutter
- N Y10T 409/404025 . . . Cutter released to interim support at termination of cutting stroke
- N Y10T 409/4042 . . . to remove and return cutter to cutter support
- N Y10T 409/404375 . . with plural cutters
- N Y10T 409/40455 . . with means to advance, infeed, or manipulate work
- N Y10T 409/404725 . . . Interrelated with cutter infeed
- N Y10T 409/4049 including means supporting work and additional means opposing infeed force
- N Y10T 409/405075 including work indexing means for sequential cutting of different surfaces of a single workpiece
- N Y10T 409/40525 including work indexing means for sequential cutting of surfaces of different workpieces
- N Y10T 409/405425 with means to retract work from path of tool's idle return stroke
- N Y10T 409/4056 . . . to infeed work past cutter
- N Y10T 409/405775 . . with means to hold work during cutting
- N Y10T 409/40595 . . . including work clamping means
- N Y10T 409/406125 . . . with means to adjust or facilitate adjustment of work or work holder
- N Y10T 409/4063 . . . with means on work or work holder to guide cutter during infeed
- N Y10T 409/406475 . . Cutter infeed means
- N Y10T 409/40665 . . . Imparting rectilinear motion to cutter
- N Y10T 409/406825 and rotary motion to cutter
- N Y10T 409/407 Fluid powered means
- N Y10T 409/407175 Rack means

- N Y10T 409/40735 Screw means
- N Y10T 409/407525 . . Machine frame
- N Y10T 409/4077 . . Cutter support or guide
- N Y10T 409/50 . . Planing
- N Y10T 409/500164 . . with regulation of operation by templet, card, or other replaceable information supply
- N Y10T 409/500328 . . . including use of tracer adapted to trigger electrical or fluid energy
- N Y10T 409/500492 including provision for circumferential relative movement of cutter and work
- N Y10T 409/500656 . . . including provision for circumferential relative movement of cutter and work
- N Y10T 409/50082 . . Process
- N Y10T 409/500984 . . with means to lubricate
- N Y10T 409/501148 . . with product handling means
- N Y10T 409/501312 . . Randomly manipulated, work supported, or work following device
- N Y10T 409/501476 . . Means to remove flash or burr
- N Y10T 409/50164 . . . Elongated work
- N Y10T 409/501804 Flash or burr inside hollow work
- N Y10T 409/501968 Transverse burr
- N Y10T 409/502132 . . . Flat work
- N Y10T 409/502296 . . of commutator
- N Y10T 409/50246 . . Means for trimming edge [e.g., chamfering, scarfing, etc.]
- N Y10T 409/502624 . . Means for cutting groove
- N Y10T 409/502788 . . . Arcuate groove
- N Y10T 409/502952 For rifling
- N Y10T 409/503116 . . . Inside hollow work
- N Y10T 409/50328 . . Means for shaving by blade spanning work surface
- N Y10T 409/503444 . . . Concave work surface [e.g., bearing, stereotype printing plate, etc.]
- N Y10T 409/503608 . . . Circumferential surface
- N Y10T 409/503772 . . . including rack driven infeed means
- N Y10T 409/503936 . . . including roller infeed means
- N Y10T 409/5041 . . Means for cutting arcuate surface
- N Y10T 409/504264 . . . Cycloidal surface
- N Y10T 409/504428 . . . with work infeed and means to arcuately reposition the cutter
- N Y10T 409/504592 . . . with work infeed and means to arcuately reposition the work
- N Y10T 409/504756 . . with means to relatively infeed cutter and work
- N Y10T 409/50492 . . . and means to rotate work and cutter at same rate about converging axes
- N Y10T 409/505084 . . . with plural sequentially acting cutters or with double acting cutter
- N Y10T 409/505248 . . . and means to vary rate of infeed
- N Y10T 409/505412 . . . Reciprocating work infeed means
- N Y10T 409/505576 with fluid-driven bed
- N Y10T 409/50574 with rack-driven bed
- N Y10T 409/505904 with screw-driven bed
- N Y10T 409/506068 and means to permit repositioning of cutter laterally
- N Y10T 409/506232 . . . Reciprocating cutter infeed means
- N Y10T 409/506396 Reciprocating cutter horizontally

- N Y10T 409/50656 with work support and lead screw to reposition work support
- N Y10T 409/506724 with fluid-powered means to drive cutter
- N Y10T 409/506888 with pivoting link to drive cutter
- N Y10T 409/507052 Link driven by crank
- N Y10T 409/507216 with rack to drive cutter
- N Y10T 409/50738 with screw to drive cutter
- N Y10T 409/507544 with link or cam to drive cutter
- N Y10T 409/507708 with rack to drive cutter
- N Y10T 409/507872 . . . including means causing return stroke
- N Y10T 409/508036 . . Machine frame
- N Y10T 409/5082 . . . Means to permit repositioning of cutter
- N Y10T 409/508364 Laterally
- N Y10T 409/508528 Plural independently positioned cutters
- N Y10T 409/508692 including clutch
- N Y10T 409/508856 including repositioning means and means to effect stopping thereof
- N Y10T 409/50902 . . . including relatively movable components and means to relatively immobilize these components
- N Y10T 409/509184 . . . Work table
- N Y10T 409/509348 . . Tool head
- N Y10T 409/509512 . . . with selectively usable cutting edges
- N Y10T 409/509676 . . . with means to permit repositioning of cutting for idle return stroke
- N Y10T 409/50984 comprising pivotable cutter or cutter support
- N Y10T 428/00 - Former US Class 428 Series**
- N Y10T 428/00 Stock material or miscellaneous articles**
- N Y10T 428/10 . . Liquid crystal optical display having layer of specified composition
- N Y10T 428/1005 . . Alignment layer of specified composition
- N Y10T 428/1009 . . . Alignment layer is inorganic
- N Y10T 428/1014 . . . Silicon compound [i.e., organosilicon]
- N Y10T 428/1018 . . . Polyamide
- N Y10T 428/1023 . . . Polyimide
- N Y10T 428/1027 Polyimidfluoride
- N Y10T 428/1032 Polyimidmetalo
- N Y10T 428/1036 . . with viewing layer of specified composition
- N Y10T 428/1041 . . . Polarizer or dye containing viewing layer
- N Y10T 428/1045 . . . Silicon compound [e.g., glass, organosilicon, etc.]
- N Y10T 428/105 . . . Ester [e.g., polycarbonate, polyacrylate, etc.]
- N Y10T 428/1055 . . with charge transferring layer of specified composition
- N Y10T 428/1059 . . with bonding or intermediate layer of specified composition [e.g., sealant, space, etc.]
- N Y10T 428/1064 . . . Inorganic layer
- N Y10T 428/1068 . . . Silicon compound [i.e., organosilicon]
- N Y10T 428/1073 . . . Epoxy
- N Y10T 428/1077 . . . Ester
- N Y10T 428/1082 . . . Unsaturated aliphatic polymer [e.g., vinyl, etc.]

- N Y10T 428/1086 . . with substrate layer of specified composition
- N Y10T 428/1091 . . . Releasable substrate layer to expose adhesive
- N Y10T 428/1095 . . . Inorganic substrate layer [e.g., ceramic, metallic, glass, etc.]
- N Y10T 428/11 . . Magnetic recording head
- N Y10T 428/1107 . . Magnetoresistive
- N Y10T 428/1114 . . . having tunnel junction effect
- N Y10T 428/1121 . . . Multilayer
- N Y10T 428/1129 Super lattice [e.g., giant magneto resistance [GMR] or colossal magneto resistance [CMR], etc.]
- N Y10T 428/1136 . . . Single film
- N Y10T 428/1143 . . . with defined structural feature
- N Y10T 428/115 . . Magnetic layer composition
- N Y10T 428/1157 . . Substrate composition
- N Y10T 428/1164 . . with protective film
- N Y10T 428/1171 . . with defined laminate structural detail
- N Y10T 428/1179 . . . Head with slider structure
- N Y10T 428/1186 . . . with head pole component
- N Y10T 428/1193 . . with interlaminar component [e.g., adhesion layer, etc.]
- N Y10T 428/12 . . All metal or with adjacent metals
- N Y10T 428/12007 . . Component of composite having metal continuous phase interengaged with nonmetal continuous phase
- N Y10T 428/12014 . . having metal particles
- N Y10T 428/12021 . . . having composition or density gradient or differential porosity
- N Y10T 428/12028 . . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, etc.]
- N Y10T 428/12035 Fiber, asbestos, or cellulose in or next to particulate component
- N Y10T 428/12042 Porous component
- N Y10T 428/12049 Nonmetal component
- N Y10T 428/12056 Entirely inorganic
- N Y10T 428/12063 Nonparticulate metal component
- N Y10T 428/12069 Plural nonparticulate metal components
- N Y10T 428/12076 Next to each other
- N Y10T 428/12083 Nonmetal in particulate component
- N Y10T 428/1209 Plural particulate metal components
- N Y10T 428/12097 Nonparticulate component encloses particles
- N Y10T 428/12104 Particles discontinuous
- N Y10T 428/12111 Separated by nonmetal matrix or binder [e.g., welding electrode, etc.]
- N Y10T 428/12118 Nonparticulate component has Ni-, Cu-, or Zn-base
- N Y10T 428/12125 Nonparticulate component has Fe-base
- N Y10T 428/12132 Next to Fe-containing particles
- N Y10T 428/12139 Nonmetal particles in particulate component
- N Y10T 428/12146 Nonmetal particles in a component
- N Y10T 428/12153 . . . Interconnected void structure [e.g., permeable, etc.]
- N Y10T 428/1216 . . . Continuous interengaged phases of plural metals, or oriented fiber containing

- N Y10T 428/12167 Nonmetal containing
- N Y10T 428/12174 Mo or W containing
- N Y10T 428/12181 . . Composite powder [e.g., coated, etc.]
- N Y10T 428/12188 . . having marginal feature for indexing or weakened portion for severing
- N Y10T 428/12194 . . . For severing perpendicular to longitudinal dimension
- N Y10T 428/12201 . . Width or thickness variation or marginal cuts repeating longitudinally
- N Y10T 428/12208 . . . Variation in both width and thickness
- N Y10T 428/12215 . . . Marginal slots [i.e., deeper than wide]
- N Y10T 428/12222 . . Shaped configuration for melting [e.g., package, etc.]
- N Y10T 428/12229 . . Intermediate article [e.g., blank, etc.]
- N Y10T 428/12236 . . . Panel having nonrectangular perimeter
- N Y10T 428/12243 Disk
- N Y10T 428/1225 Symmetrical
- N Y10T 428/12257 Only one plane of symmetry
- N Y10T 428/12264 . . . having outward flange, gripping means or interlocking feature
- N Y10T 428/12271 . . . having discrete fastener, marginal fastening, taper, or end structure
- N Y10T 428/12278 Same structure at both ends of plural taper
- N Y10T 428/12285 Single taper [e.g., ingot, etc.]
- N Y10T 428/12292 . . Workpiece with longitudinal passageway or stopweld material [e.g., for tubular stock, etc.]
- N Y10T 428/12299 . . Workpiece mimicking finished stock having nonrectangular or noncircular cross section
- N Y10T 428/12306 . . Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]
- N Y10T 428/12313 . . . Arranged to avoid lateral displacement
- N Y10T 428/12319 . . . Composite
- N Y10T 428/12326 . . with provision for limited relative movement between components
- N Y10T 428/12333 . . Helical or with helical component
- N Y10T 428/1234 . . Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, intersecting, etc.]
- N Y10T 428/12347 . . Plural layers discontinuously bonded [e.g., spot-weld, mechanical fastener, etc.]
- N Y10T 428/12354 . . Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]
- N Y10T 428/12361 . . having aperture or cut
- N Y10T 428/12368 . . . Struck-out portion type
- N Y10T 428/12375 . . having member which crosses the plane of another member [e.g., T or X cross section, etc.]
- N Y10T 428/12382 . . Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]
- N Y10T 428/12389 . . having variation in thickness
- N Y10T 428/12396 . . . Discontinuous surface component
- N Y10T 428/12403 . . . Longitudinally smooth and symmetrical
- N Y10T 428/1241 . . Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]
- N Y10T 428/12417 . . . Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]

- N Y10T 428/12424 . . Mass of only fibers
- N Y10T 428/12431 . . Foil or filament smaller than 6 mils
- N Y10T 428/12438 . . . Composite
- N Y10T 428/12444 . . Embodying fibers interengaged or between layers [e.g., paper, etc.]
- N Y10T 428/12451 . . Macroscopically anomalous interface between layers
- N Y10T 428/12458 . . having composition, density, or hardness gradient
- N Y10T 428/12465 . . having magnetic properties, or preformed fiber orientation coordinate with shape
- N Y10T 428/12472 . . Microscopic interfacial wave or roughness
- N Y10T 428/12479 . . Porous [e.g., foamed, spongy, cracked, etc.]
- N Y10T 428/12486 . . Laterally noncoextensive components [e.g., embedded, etc.]
- N Y10T 428/12493 . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, joint, etc.]
- N Y10T 428/125 . . . Deflectable by temperature change [e.g., thermostat element]
- N Y10T 428/12507 More than two components
- N Y10T 428/12514 One component Cu-based
- N Y10T 428/12521 Both components Fe-based with more than 10% Ni
- N Y10T 428/12528 . . . Semiconductor component
- N Y10T 428/12535 . . . with additional, spatially distinct nonmetal component
- N Y10T 428/12542 More than one such component
- N Y10T 428/12549 Adjacent to each other
- N Y10T 428/12556 Organic component
- N Y10T 428/12562 Elastomer
- N Y10T 428/12569 Synthetic resin
- N Y10T 428/12576 Boride, carbide or nitride component
- N Y10T 428/12583 Component contains compound of adjacent metal
- N Y10T 428/1259 Oxide
- N Y10T 428/12597 Noncrystalline silica or noncrystalline plural-oxide component [e.g., glass, etc.]
- N Y10T 428/12604 Film [e.g., glaze, etc.]
- N Y10T 428/12611 Oxide-containing component
- N Y10T 428/12618 Plural oxides
- N Y10T 428/12625 Free carbon containing component
- N Y10T 428/12632 . . . Four or more distinct components with alternate recurrence of each type component
- N Y10T 428/12639 . . . Adjacent, identical composition, components
- N Y10T 428/12646 Group VIII or IB metal-base
- N Y10T 428/12653 Fe, containing 0.01-1.7% carbon [i.e., steel]
- N Y10T 428/1266 O, S, or organic compound in metal component
- N Y10T 428/12667 Oxide of transition metal or Al
- N Y10T 428/12674 Ge- or Si-base component
- N Y10T 428/12681 Ga-, In-, Tl- or Group VA metal-base component
- N Y10T 428/12687 Pb- and Sn-base components: alternative to or next to each other
- N Y10T 428/12694 and next to Cu- or Fe-base component
- N Y10T 428/12701 Pb-base component

- N Y10T 428/12708 . . . Sn-base component
- N Y10T 428/12715 Next to Group IB metal-base component
- N Y10T 428/12722 Next to Group VIII metal-base component
- N Y10T 428/12729 . . . Group IIA metal-base component
- N Y10T 428/12736 . . . Al-base component
- N Y10T 428/12743 Next to refractory [Group IVB, VB, or VIB] metal-base component
- N Y10T 428/1275 Next to Group VIII or IB metal-base component
- N Y10T 428/12757 Fe
- N Y10T 428/12764 Next to Al-base component
- N Y10T 428/12771 . . . Transition metal-base component
- N Y10T 428/12778 Alternative base metals from diverse categories
- N Y10T 428/12785 Group IIB metal-base component
- N Y10T 428/12792 Zn-base component
- N Y10T 428/12799 Next to Fe-base component [e.g., galvanized]
- N Y10T 428/12806 Refractory [Group IVB, VB, or VIB] metal-base component
- N Y10T 428/12812 Diverse refractory group metal-base components: alternative to or next to each other
- N Y10T 428/12819 Group VB metal-base component
- N Y10T 428/12826 Group VIB metal-base component
- N Y10T 428/12833 Alternative to or next to each other
- N Y10T 428/1284 W-base component
- N Y10T 428/12847 Cr-base component
- N Y10T 428/12854 Next to Co-, Fe-, or Ni-base component
- N Y10T 428/12861 Group VIII or IB metal-base component
- N Y10T 428/12868 Group IB metal-base component alternative to platinum group metal-base component [e.g., precious metal, etc.]
- N Y10T 428/12875 Platinum group metal-base component
- N Y10T 428/12882 Cu-base component alternative to Ag-, Au-, or Ni-base component
- N Y10T 428/12889 Au-base component
- N Y10T 428/12896 Ag-base component
- N Y10T 428/12903 Cu-base component
- N Y10T 428/1291 Next to Co-, Cu-, or Ni-base component
- N Y10T 428/12917 Next to Fe-base component
- N Y10T 428/12924 Fe-base has 0.01-1.7% carbon [i.e., steel]
- N Y10T 428/12931 Co-, Fe-, or Ni-base components, alternative to each other
- N Y10T 428/12937 Co- or Ni-base component next to Fe-base component
- N Y10T 428/12944 Ni-base component
- N Y10T 428/12951 Fe-base component
- N Y10T 428/12958 Next to Fe-base component
- N Y10T 428/12965 Both containing 0.01-1.7% carbon [i.e., steel]
- N Y10T 428/12972 Containing 0.01-1.7% carbon [i.e., steel]
- N Y10T 428/12979 Containing more than 10% nonferrous elements [e.g., high alloy, stainless]
- N Y10T 428/12986 . . . Adjacent functionally defined components
- N Y10T 428/12993 . . Surface feature [e.g., rough, mirror]

- N Y10T 428/13 • *Hollow or container type article [e.g., tube, vase, etc.]*
- N Y10T 428/1303 • • *Paper containing [e.g., paperboard, cardboard, fiberboard, etc.]*
- N Y10T 428/1307 • • • *Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]*
- N Y10T 428/131 • • *Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]*
- N Y10T 428/1314 • • • *Contains fabric, fiber particle, or filament made of glass, ceramic, or sintered, fused, fired, or calcined metal oxide, or metal carbide or other inorganic compound [e.g., fiber glass, mineral fiber, sand, etc.]*
- N Y10T 428/1317 • • • *Multilayer [continuous layer]*
- N Y10T 428/1321 • • • • *Polymer or resin containing [i.e., natural or synthetic]*
- N Y10T 428/1324 • • *Flexible food casing [e.g., sausage type, etc.]*
- N Y10T 428/1328 • • *Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]*
- N Y10T 428/1331 • • • *Single layer [continuous layer]*
- N Y10T 428/1334 • • *Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]*
- N Y10T 428/1338 • • • *Elemental metal containing*
- N Y10T 428/1341 • • • *Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit*
- N Y10T 428/1345 • • • *Single layer [continuous layer]*
- N Y10T 428/1348 • • *Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]*
- N Y10T 428/1352 • • *Polymer or resin containing [i.e., natural or synthetic]*
- N Y10T 428/1355 • • • *Elemental metal containing [e.g., substrate, foil, film, coating, etc.]*
- N Y10T 428/1359 • • • • *Three or more layers [continuous layer]*
- N Y10T 428/1362 • • • *Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]*
- N Y10T 428/1366 • • • • *Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer*
- N Y10T 428/1369 • • • *Fiber or fibers wound around each other or into a self-sustaining shape [e.g., yarn, braid, fibers shaped around a core, etc.]*
- N Y10T 428/1372 • • • *Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes*
- N Y10T 428/1376 • • • *Foam or porous material containing*
- N Y10T 428/1379 • • • *Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit*
- N Y10T 428/1383 • • • • *Vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit is sandwiched between layers [continuous layer]*
- N Y10T 428/1386 • • • *Natural or synthetic rubber or rubber-like compound containing*
- N Y10T 428/139 • • • *Open-ended, self-supporting conduit, cylinder, or tube-type article*
- N Y10T 428/1393 • • • • *Multilayer [continuous layer]*
- N Y10T 428/1397 • • • *Single layer [continuous layer]*
- N Y10T 428/14 • *Layer or component removable to expose adhesive*
- N Y10T 428/1405 • • *Capsule or particulate matter containing [e.g., sphere, flake, microballoon, etc.]*
- N Y10T 428/141 • • *Bituminous*
- N Y10T 428/1414 • • *Ceramic, glass, glasslike, vitreous*
- N Y10T 428/1419 • • *Wax containing*

- N Y10T 428/1424 · · Halogen containing compound
- N Y10T 428/1429 · · · Fluorine
- N Y10T 428/1433 · · · Coloring agent containing
- N Y10T 428/1438 · · Metal containing
- N Y10T 428/1443 · · · Aluminum
- N Y10T 428/1448 · · · Coloring agent containing
- N Y10T 428/1452 · · Polymer derived only from ethylenically unsaturated monomer
- N Y10T 428/1457 · · · Silicon
- N Y10T 428/1462 · · Polymer derived from material having at least one acrylic or alkacrylic group
or the nitrile or amide derivative thereof [e.g., acrylamide, acrylate ester, etc.]
- N Y10T 428/1467 · · Coloring agent
- N Y10T 428/1471 · · Protective layer
- N Y10T 428/1476 · · Release layer
- N Y10T 428/1481 · · Dissimilar adhesives
- N Y10T 428/1486 · · Ornamental, decorative, pattern, or indicia
- N Y10T 428/149 · · Sectional layer removable
- N Y10T 428/1495 · · · Adhesive is on removable layer
- N Y10T 428/15 · Sheet, web, or layer weakened to permit separation through thickness
- N Y10T 428/16 · Two dimensionally sectional layer
- N Y10T 428/161 · · with frame, casing, or perimeter structure
- N Y10T 428/162 · · Transparent or translucent layer or section
- N Y10T 428/163 · · Next to unitary web or sheet of equal or greater extent
- N Y10T 428/164 · · · Continuous two dimensionally sectional layer
- N Y10T 428/166 · · · · Glass, ceramic, or metal sections [e.g., floor or wall tile, etc.]
- N Y10T 428/167 · · · · Cellulosic sections [e.g., parquet floor, etc.]
- N Y10T 428/168 · · · Nonrectangular
- N Y10T 428/169 · · Sections connected flexibly with external fastener
- N Y10T 428/17 · Three or more coplanar interfitted sections with securing means
- N Y10T 428/18 · Longitudinally sectional layer of three or more sections
- N Y10T 428/183 · · Next to unitary sheet of equal or greater extent
- N Y10T 428/187 · · · Continuous sectional layer
- N Y10T 428/19 · Sheets or webs edge spliced or joined
- N Y10T 428/192 · · Sheets or webs coplanar
- N Y10T 428/193 · · · Double faced corrugated sheets or webs connected
- N Y10T 428/195 · · · Beveled, stepped, or skived in thickness
- N Y10T 428/197 · · · with noncoplanar reinforcement
- N Y10T 428/198 · · · · Pile or nap surface sheets connected
- N Y10T 428/20 · Patched hole or depression
- N Y10T 428/21 · Circular sheet or circular blank
- N Y10T 428/211 · · Gear
- N Y10T 428/213 · · Frictional
- N Y10T 428/214 · · End closure
- N Y10T 428/215 · · Seal, gasket, or packing
- N Y10T 428/216 · · Ornamental, decorative, pattern, or indicia

- N Y10T 428/218 . . Aperture containing
- N Y10T 428/219 . . Edge structure
- N Y10T 428/22 . . Nonparticulate element embedded or inlaid in substrate and visible
- N Y10T 428/23 . . Sheet including cover or casing
- N Y10T 428/231 . . Filled with gas other than air; or under vacuum
- N Y10T 428/232 . . Encased layer derived from inorganic settable ingredient
- N Y10T 428/233 . . Foamed or expanded material encased
- N Y10T 428/234 . . including elements cooperating to form cells
- N Y10T 428/236 . . . Honeycomb type cells extend perpendicularly to nonthickness layer
- N Y10T 428/237 . . Noninterengaged fibered material encased [e.g., mat, batt, etc.]
- N Y10T 428/238 . . . Metal cover or casing
- N Y10T 428/239 . . Complete cover or casing
- N Y10T 428/24 . . Structurally defined web or sheet [e.g., overall dimension, etc.]
- N Y10T 428/24008 . . including fastener for attaching to external surface
- N Y10T 428/24017 . . . Hook or barb
- N Y10T 428/24025 . . Superposed movable attached layers or components
- N Y10T 428/24033 . . including stitching and discrete fastener[s], coating or bond
- N Y10T 428/24041 . . . Discontinuous or differential coating, impregnation, or bond
- N Y10T 428/2405 Coating, impregnation, or bond in stitching zone only
- N Y10T 428/24058 . . including grain, strips, or filamentary elements in respective layers or components in angular relation
- N Y10T 428/24066 . . . Wood grain
- N Y10T 428/24074 . . . Strand or strand-portions
- N Y10T 428/24083 Nonlinear strands or strand-portions
- N Y10T 428/24091 with additional layer[s]
- N Y10T 428/24099 On each side of strands or strand-portions
- N Y10T 428/24107 including mechanically interengaged strands, strand-portions or strand-like strips
- N Y10T 428/24116 Oblique to direction of web
- N Y10T 428/24124 . . . Fibers
- N Y10T 428/24132 . . including grain, strips, or filamentary elements in different layers or components parallel
- N Y10T 428/2414 . . including fringe
- N Y10T 428/24149 . . Honeycomb-like
- N Y10T 428/24157 . . . Filled honeycomb cells [e.g., solid substance in cavities, etc.]
- N Y10T 428/24165 . . . Hexagonally shaped cavities
- N Y10T 428/24174 . . including sheet or component perpendicular to plane of web or sheet
- N Y10T 428/24182 . . . Inward from edge of web or sheet
- N Y10T 428/2419 . . Fold at edge
- N Y10T 428/24198 . . . Channel-shaped edge component [e.g., binding, etc.]
- N Y10T 428/24207 . . . with strand[s] or strand-portion[s] between layers [e.g., upholstery trim, etc.]
- N Y10T 428/24215 . . . Acute or reverse fold of exterior component
- N Y10T 428/24223 Embedded in body of web
- N Y10T 428/24231 At opposed marginal edges
- N Y10T 428/2424 Annular cover

- N Y10T 428/24248 One piece
- N Y10T 428/24256 Abutted or lapped seam
- N Y10T 428/24264 . . . Particular fold structure [e.g., beveled, etc.]
- N Y10T 428/24273 . . including aperture
- N Y10T 428/24281 . . . Struck out portion type
- N Y10T 428/24289 Embedded or interlocked
- N Y10T 428/24298 . . . Noncircular aperture [e.g., slit, diamond, rectangular, etc.]
- N Y10T 428/24306 Diamond or hexagonal
- N Y10T 428/24314 Slit or elongated
- N Y10T 428/24322 . . . Composite web or sheet
- N Y10T 428/24331 including nonapertured component
- N Y10T 428/24339 Keyed
- N Y10T 428/24347 From both sides
- N Y10T 428/24355 . . Continuous and nonuniform or irregular surface on layer or component [e.g., roofing, etc.]
- N Y10T 428/24364 . . . with transparent or protective coating
- N Y10T 428/24372 . . . Particulate matter
- N Y10T 428/2438 Coated
- N Y10T 428/24388 Silicon containing coating
- N Y10T 428/24397 Carbohydrate
- N Y10T 428/24405 Polymer or resin [e.g., natural or synthetic rubber, etc.]
- N Y10T 428/24413 Metal or metal compound
- N Y10T 428/24421 Silicon containing
- N Y10T 428/2443 Sand, clay, or crushed rock or slate
- N Y10T 428/24438 . . . Artificial wood or leather grain surface
- N Y10T 428/24446 . . . Wrinkled, creased, crinkled or creped
- N Y10T 428/24455 Paper
- N Y10T 428/24463 Plural paper components
- N Y10T 428/24471 . . . Crackled, crazed or slit
- N Y10T 428/24479 . . including variation in thickness
- N Y10T 428/24488 . . . Differential nonuniformity at margin
- N Y10T 428/24496 . . . Foamed or cellular component
- N Y10T 428/24504 Component comprises a polymer [e.g., rubber, etc.]
- N Y10T 428/24512 Polyurethane
- N Y10T 428/24521 . . . with component conforming to contour of nonplanar surface
- N Y10T 428/24529 and conforming component on an opposite nonplanar surface
- N Y10T 428/24537 Parallel ribs and/or grooves
- N Y10T 428/24545 Containing metal or metal compound
- N Y10T 428/24554 including cellulosic or natural rubber component
- N Y10T 428/24562 . . . Interlaminar spaces
- N Y10T 428/2457 . . . Parallel ribs and/or grooves
- N Y10T 428/24579 with particulate matter
- N Y10T 428/24587 Oblique to longitudinal axis of web or sheet
- N Y10T 428/24595 . . . and varying density

- N Y10T 428/24603 Fiber containing component
- N Y10T 428/24612 . . . Composite web or sheet
- N Y10T 428/2462 with partial filling of valleys on outer surface
- N Y10T 428/24628 . . Nonplanar uniform thickness material
- N Y10T 428/24636 . . . Embodiment mechanically interengaged strand[s], strand-portion[s] or strand-like strip[s] [e.g., weave, knit, etc.]
- N Y10T 428/24645 with folds in parallel planes
- N Y10T 428/24653 . . . Differential nonplanarity at margin
- N Y10T 428/24661 . . . Forming, or cooperating to form cells
- N Y10T 428/24669 . . . Aligned or parallel nonplanarities
- N Y10T 428/24678 Waffle-form
- N Y10T 428/24686 Pleats or otherwise parallel adjacent folds
- N Y10T 428/24694 Parallel corrugations
- N Y10T 428/24702 with locally deformed crests or intersecting series of corrugations
- N Y10T 428/24711 Plural corrugated components
- N Y10T 428/24719 with corrugations of respective components intersecting in plane projection
- N Y10T 428/24727 with planar component
- N Y10T 428/24736 . . . Ornamental design or indicia
- N Y10T 428/24744 . . Longitudinal or transverse tubular cavity or cell
- N Y10T 428/24752 . . Laterally noncoextensive components
- N Y10T 428/2476 . . . Fabric, cloth or textile component
- N Y10T 428/24769 . . . Cellulosic
- N Y10T 428/24777 . . Edge feature
- N Y10T 428/24785 . . . including layer embodying mechanically interengaged strands, strand portions or strand-like strips [e.g., weave, knit, etc.]
- N Y10T 428/24793 . . . Comprising discontinuous or differential impregnation or bond
- N Y10T 428/24802 . . Discontinuous or differential coating, impregnation or bond [e.g., artwork, printing, retouched photograph, etc.]
- N Y10T 428/2481 . . . including layer of mechanically interengaged strands, strand-portions or strand-like strips
- N Y10T 428/24818 Knitted, with particular or differential bond sites or intersections
- N Y10T 428/24826 . . . Spot bonds connect components
- N Y10T 428/24835 . . . including developable image or soluble portion in coating or impregnation [e.g., safety paper, etc.]
- N Y10T 428/24843 . . . with heat sealable or heat releasable adhesive layer
- N Y10T 428/24851 . . . Intermediate layer is discontinuous or differential
- N Y10T 428/2486 with outer strippable or release layer
- N Y10T 428/24868 Translucent outer layer
- N Y10T 428/24876 Intermediate layer contains particulate material [e.g., pigment, etc.]
- N Y10T 428/24884 Translucent layer comprises natural oil, wax, resin, gum, glue, gelatin
- N Y10T 428/24893 . . . including particulate material
- N Y10T 428/24901 including coloring matter
- N Y10T 428/24909 Free metal or mineral containing
- N Y10T 428/24917 . . . including metal layer
- N Y10T 428/24926 . . . including ceramic, glass, porcelain or quartz layer

- N Y10T 428/24934 . . . including paper layer
- N Y10T 428/24942 . . including components having same physical characteristic in differing degree
- N Y10T 428/2495 . . . Thickness [relative or absolute]
- N Y10T 428/24959 of adhesive layers
- N Y10T 428/24967 Absolute thicknesses specified
- N Y10T 428/24975 No layer or component greater than 5 mils thick
- N Y10T 428/24983 . . . Hardness
- N Y10T 428/24992 . . . Density or compression of components
- N Y10T 428/25 . Web or sheet containing structurally defined element or component and including a second component containing structurally defined particles
- N Y10T 428/251 . . Mica
- N Y10T 428/252 . . Glass or ceramic [i.e., fired or glazed clay, cement, etc.] [porcelain, quartz, etc.]
- N Y10T 428/253 . . Cellulosic [e.g., wood, paper, cork, rayon, etc.]
- N Y10T 428/254 . . Polymeric or resinous material
- N Y10T 428/256 . . Heavy metal or aluminum or compound thereof
- N Y10T 428/257 . . . Iron oxide or aluminum oxide
- N Y10T 428/258 . . Alkali metal or alkaline earth metal or compound thereof
- N Y10T 428/259 . . Silicic material
- N Y10T 428/26 . Web or sheet containing structurally defined element or component, the element or component having a specified physical dimension
- N Y10T 428/261 . . In terms of molecular thickness or light wave length
- N Y10T 428/263 . . Coating layer not in excess of 5 mils thick or equivalent
- N Y10T 428/264 . . . Up to 3 mils
- N Y10T 428/265 1 mil or less
- N Y10T 428/266 . . of base or substrate
- N Y10T 428/268 . . Monolayer with structurally defined element
- N Y10T 428/269 . . including synthetic resin or polymer layer or component
- N Y10T 428/27 . Web or sheet containing structurally defined element or component, the element or component having a specified weight per unit area [e.g., gms/sq cm, lbs/sq ft, etc.]
- N Y10T 428/273 . . of coating
- N Y10T 428/277 . . . Cellulosic substrate
- N Y10T 428/28 . Web or sheet containing structurally defined element or component and having an adhesive outermost layer
- N Y10T 428/2804 . . Next to metal
- N Y10T 428/2809 . . including irradiated or wave energy treated component
- N Y10T 428/2813 . . Heat or solvent activated or sealable
- N Y10T 428/2817 . . . Heat sealable
- N Y10T 428/2822 Wax containing
- N Y10T 428/2826 Synthetic resin or polymer
- N Y10T 428/283 . . . Water activated
- N Y10T 428/2835 . . including moisture or waterproof component
- N Y10T 428/2839 . . with release or antistick coating
- N Y10T 428/2843 . . including a primer layer
- N Y10T 428/2848 . . Three or more layers

- N Y10T 428/2852 • • Adhesive compositions
- N Y10T 428/2857 • • • including metal or compound thereof or natural rubber
- N Y10T 428/2861 • • • having readily strippable combined with readily readhearable properties [e.g., stick-ons, etc.]
- N Y10T 428/2865 • • • including monomer or polymer of carbohydrate [e.g., starch, dextrin, etc.] Or protein [e.g., casein, animal protein, etc.] Or derivative thereof
- N Y10T 428/287 • • • including epoxy group or epoxy polymer
- N Y10T 428/2874 • • • including aldehyde or ketone condensation polymer [e.g., urea formaldehyde polymer, melamine formaldehyde polymer, etc.]
- N Y10T 428/2878 • • • including addition polymer from unsaturated monomer
- N Y10T 428/2883 • • • • including addition polymer of diene monomer [e.g., SBR, SIS, etc.]
- N Y10T 428/2887 • • • • including nitrogen containing polymer [e.g., polyacrylonitrile, polymethacrylonitrile, etc.]
- N Y10T 428/2891 • • • • including addition polymer from alpha-beta unsaturated carboxylic acid [e.g., acrylic acid, methacrylic acid, etc.] Or derivative thereof
- N Y10T 428/2896 • • • including nitrogen containing condensation polymer [e.g., polyurethane, polyisocyanate, etc.]
- N Y10T 428/29 • Coated or structually defined flake, particle, cell, strand, strand portion, rod, filament, macroscopic fiber or mass thereof
- N Y10T 428/2902 • • Channel shape
- N Y10T 428/2904 • • Staple length fiber
- N Y10T 428/2905 • • • Plural and with bonded intersections only
- N Y10T 428/2907 • • • with coating or impregnation
- N Y10T 428/2909 • • • Nonlinear [e.g., crimped, coiled, etc.]
- N Y10T 428/2911 • • Mica flake
- N Y10T 428/2913 • • Rod, strand, filament or fiber
- N Y10T 428/2915 • • • including textile, cloth or fabric
- N Y10T 428/2916 • • • including boron or compound thereof [not as steel]
- N Y10T 428/2918 • • • including free carbon or carbide or therewith [not as steel]
- N Y10T 428/292 • • • • In coating or impregnation
- N Y10T 428/2922 • • • Nonlinear [e.g., crimped, coiled, etc.]
- N Y10T 428/2924 • • • • Composite
- N Y10T 428/2925 • • • • Helical or coiled
- N Y10T 428/2927 • • • including structurally defined particulate matter
- N Y10T 428/2929 • • • Bicomponent, conjugate, composite or collateral fibers or filaments [i.e., coextruded sheath-core or side-by-side type]
- N Y10T 428/2931 • • • • Fibers or filaments nonconcentric [e.g., side-by-side or eccentric, etc.]
- N Y10T 428/2933 • • • Coated or with bond, impregnation or core
- N Y10T 428/2935 • • • • Discontinuous or tubular or cellular core
- N Y10T 428/2936 • • • • Wound or wrapped core or coating [i.e., spiral or helical]
- N Y10T 428/2938 • • • • Coating on discrete and individual rods, strands or filaments
- N Y10T 428/294 • • • • including metal or compound thereof [excluding glass, ceramic and asbestos]
- N Y10T 428/2942 • • • • • Plural coatings
- N Y10T 428/2944 • • • • • Free metal in coating
- N Y10T 428/2945 • • • • • Natural rubber in coating

- N Y10T 428/2947 Synthetic resin or polymer in plural coatings, each of different type
 - N Y10T 428/2949 Glass, ceramic or metal oxide in coating
 - N Y10T 428/2951 Metal with weld modifying or stabilizing coating [e.g., flux, slag, producer, etc.]
 - N Y10T 428/2953 Titanium compound in coating
 - N Y10T 428/2955 Silicic material in coating
 - N Y10T 428/2956 Glass or silicic fiber or filament with metal coating
 - N Y10T 428/2958 Metal or metal compound in coating
 - N Y10T 428/296 Rubber, cellulosic or silicic material in coating
 - N Y10T 428/2962 Silane, silicone or siloxane in coating
 - N Y10T 428/2964 Artificial fiber or filament
 - N Y10T 428/2965 Cellulosic
 - N Y10T 428/2967 Synthetic resin or polymer
 - N Y10T 428/2969 Polyamide, polyimide or polyester
 - N Y10T 428/2971 Impregnation
 - N Y10T 428/2973 Particular cross section
 - N Y10T 428/2975 Tubular or cellular
 - N Y10T 428/2976 Longitudinally varying
 - N Y10T 428/2978 Surface characteristic
 - N Y10T 428/298 Physical dimension
 - N Y10T 428/2982 Particulate matter [e.g., sphere, flake, etc.]
 - N Y10T 428/2984 Microcapsule with fluid core [includes liposome]
 - N Y10T 428/2985 Solid-walled microcapsule from synthetic polymer
 - N Y10T 428/2987 Addition polymer from unsaturated monomers only
 - N Y10T 428/2989 Microcapsule with solid core [includes liposome]
 - N Y10T 428/2991 Coated
 - N Y10T 428/2993 Silicic or refractory material containing [e.g., tungsten oxide, glass, cement, etc.]
 - N Y10T 428/2995 Silane, siloxane or silicone coating
 - N Y10T 428/2996 Glass particles or spheres
 - N Y10T 428/2998 including synthetic resin or polymer
 - N Y10T 428/30 Self-sustaining carbon mass or layer with impregnant or other layer
 - N Y10T 428/31 Surface property or characteristic of web, sheet or block
 - N Y10T 428/315 Surface modified glass [e.g., tempered, strengthened, etc.]
 - N Y10T 428/32 Composite [nonstructural laminate] of inorganic material having metal-compound-containing layer and having defined magnetic layer
 - N Y10T 428/325 Magnetic layer next to second metal compound-containing layer
- N Y10T 436/00 - Y10T 436/00** **Former US Class 436 Series**
- N Y10T 436/00** **Chemistry: analytical and immunological testing**
- N Y10T 436/10 Composition for standardization, calibration, simulation, stabilization, preparation or preservation; processes of use in preparation for chemical testing
 - N Y10T 436/100833 Simulative of a gaseous composition
 - N Y10T 436/101666 Particle count or volume standard or control [e.g., platelet count standards, etc.]

- N Y10T 436/102499 • • *Blood gas standard or control*
- N Y10T 436/103332 • • *Bilirubin or uric acid standard or control*
- N Y10T 436/104165 • • *Lipid, cholesterol, or triglyceride standard or control*
- N Y10T 436/104998 • • *Glucose, ketone, nitrate standard or control*
- N Y10T 436/105831 • • *Protein or peptide standard or control [e.g., hemoglobin, etc.]*
- N Y10T 436/106664 • • *Blood serum or blood plasma standard or control*
- N Y10T 436/107497 • • *Preparation composition [e.g., lysing or precipitation, etc.]*
- N Y10T 436/108331 • • *Preservative, buffer, anticoagulant or diluent*
- N Y10T 436/109163 • • *Inorganic standards or controls*
- N Y10T 436/11 • *Automated chemical analysis*
- N Y10T 436/110833 • • *Utilizing a moving indicator strip or tape*
- N Y10T 436/111666 • • *Utilizing a centrifuge or compartmented rotor*
- N Y10T 436/112499 • • *with sample on test slide*
- N Y10T 436/113332 • • *with conveyance of sample along a test line in a container or rack*
- N Y10T 436/114165 • • • *with step of insertion or removal from test line*
- N Y10T 436/114998 • • • *with treatment or replacement of aspirator element [e.g., cleaning, etc.]*
- N Y10T 436/115831 • • *Condition or time responsive*
- N Y10T 436/116664 • • • *with automated titrator*
- N Y10T 436/117497 • • *with a continuously flowing sample or carrier stream*
- N Y10T 436/118339 • • • *with formation of a segmented stream*
- N Y10T 436/119163 • • *with aspirator of claimed structure*
- N Y10T 436/12 • *Condition responsive control*
- N Y10T 436/13 • *Tracers or tags*
- N Y10T 436/14 • *Heterocyclic carbon compound [i.e. , O, S, N, Se, Te, as only ring hetero atom]*
- N Y10T 436/141111 • • *Diverse hetero atoms in same or different rings [e.g., alkaloids, opiates, etc.]*
- N Y10T 436/142222 • • *Hetero-O [e.g., ascorbic acid, etc.]*
- N Y10T 436/143333 • • • *Saccharide [e.g., DNA, etc.]*
- N Y10T 436/144444 • • • • *Glucose*
- N Y10T 436/145555 • • *Hetero-N*
- N Y10T 436/146666 • • • *Bile pigment*
- N Y10T 436/147777 • • • *Plural nitrogen in the same ring [e.g., barbituates, creatinine, etc.]*
- N Y10T 436/148888 • • • • *Uric acid*
- N Y10T 436/15 • *Inorganic acid or base [e.g. , hcl, sulfuric acid, etc.]*
- N Y10T 436/153333 • • *Halogen containing*
- N Y10T 436/156666 • • *Sulfur containing*
- N Y10T 436/16 • *Phosphorus containing*
- N Y10T 436/163333 • • *Organic [e.g., chemical warfare agents, insecticides, etc.]*
- N Y10T 436/166666 • • *of inorganic phosphorus compound in body fluid*
- N Y10T 436/17 • *Nitrogen containing*
- N Y10T 436/170769 • • *N-Nitroso containing [e.g., nitrosamine, etc.]*
- N Y10T 436/171538 • • *Urea or blood urea nitrogen*
- N Y10T 436/172307 • • *Cyanide or isocyanide*
- N Y10T 436/173076 • • *Nitrite or nitrate*
- N Y10T 436/173845 • • *Amine and quaternary ammonium*

- N Y10T 436/174614 . . . Tertiary amine
- N Y10T 436/175383 . . . Ammonia
- N Y10T 436/176152 . . Total nitrogen determined
- N Y10T 436/176921 . . . As part of an elemental analysis
- N Y10T 436/177692 . . Oxides of nitrogen
- N Y10T 436/178459 . . . Only nitrogen dioxide
- N Y10T 436/179228 . . . Both nitrogen oxide and dioxide
- N Y10T 436/18 . Sulfur containing
- N Y10T 436/182 . . Organic or sulfhydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]
- N Y10T 436/184 . . . Only hydrogen sulfide
- N Y10T 436/186 . . Sulfur dioxide
- N Y10T 436/188 . . Total or elemental sulfur
- N Y10T 436/19 . Halogen containing
- N Y10T 436/193333 . . In aqueous solution
- N Y10T 436/196666 . . Carbon containing compound [e.g., vinylchloride, etc.]
- N Y10T 436/20 . Oxygen containing
- N Y10T 436/200833 . . Carbonyl, ether, aldehyde or ketone containing
- N Y10T 436/201666 . . . Carboxylic acid
- N Y10T 436/202499 . . . Formaldehyde or acetone
- N Y10T 436/203332 . . Hydroxyl containing
- N Y10T 436/204165 . . . Ethanol
- N Y10T 436/204998 . . Inorganic carbon compounds
- N Y10T 436/205831 . . . Carbon monoxide only
- N Y10T 436/206664 . . Ozone or peroxide
- N Y10T 436/207497 . . Molecular oxygen
- N Y10T 436/208339 . . . Fuel/air mixture or exhaust gas analysis
- N Y10T 436/209163 . . . Dissolved or trace oxygen or oxygen content of a sealed environment
- N Y10T 436/21 . Hydrocarbon
- N Y10T 436/212 . . Aromatic
- N Y10T 436/214 . . Acyclic [e.g., methane, octane, isoparaffin, etc.]
- N Y10T 436/216 . . . Unsaturated [e.g., ethylene, diene, etc.]
- N Y10T 436/218 . . Total hydrocarbon, flammability, combustibility [e.g., air-fuel mixture, etc.]
- N Y10T 436/22 . Hydrogen, per se
- N Y10T 436/23 . Carbon containing
- N Y10T 436/235 . . In an aqueous solution [e.g., TOC, etc.]
- N Y10T 436/24 . Nuclear magnetic resonance, electron spin resonance or other spin effects or mass spectrometry
- N Y10T 436/25 . including sample preparation
- N Y10T 436/25125 . . Digestion or removing interfering materials
- N Y10T 436/2525 . . Stabilizing or preserving
- N Y10T 436/25375 . . Liberation or purification of sample or separation of material from a sample [e.g., filtering, centrifuging, etc.]
- N Y10T 436/255 . . . including use of a solid sorbent, semipermeable membrane, or liquid extraction
- N Y10T 436/25625 . . Dilution

- N Y10T 436/2575 · · Volumetric liquid transfer
- N Y10T 436/25875 · · Gaseous sample or with change of physical state
- N Y10T 464/00 -
Y10T 464/00** **Former US Class 464 Series**
- N Y10T 464/00** **Rotary shafts, gudgeons, housings, and flexible couplings for rotary shafts**
- N Y10T 464/10 · having heating or cooling means
- N Y10T 464/20 · with auxilliary indicator or alarm
- N Y10T 464/30 · Electrical or magnetic coupling
- N Y10T 464/40 · Coupling accommodates drive between members having misaligned or angularly related axes, transmits torque via radially directed pin, and has particular balancing means
- N Y10T 464/50 · Shafting having particular vibration dampening or balancing structure
- N Y10T 477/00 -
Y10T 477/00** **Former US Class 477 Series**
- N Y10T 477/00** **Interrelated power delivery controls, including engine control**
- N Y10T 477/10 · Steering by driving
- N Y10T 477/20 · Plural engines
- N Y10T 477/23 · · Electric engine
- N Y10T 477/24 · · · with brake control
- N Y10T 477/26 · · · with clutch control
- N Y10T 477/27 · · with clutch control
- N Y10T 477/30 · Electric engine
- N Y10T 477/32 · · with clutch control
- N Y10T 477/322 · · · with brake control
- N Y10T 477/3225 · · · · Stopped at end of cycle
- N Y10T 477/323 · · · Engine stopped at end of cycle
- N Y10T 477/325 · · · Common controller
- N Y10T 477/327 · · · Electric clutch
- N Y10T 477/328 · · · Speed responsive
- N Y10T 477/33 · · with transmission control
- N Y10T 477/333 · · · Load motion limit control
- N Y10T 477/337 · · · Transmission change by moving engine
- N Y10T 477/34 · · · Reversible engine
- N Y10T 477/343 · · · Engine starting interlock
- N Y10T 477/347 · · · Condition responsive engine control
- N Y10T 477/35 · · Brake engaged when engine energy deactivated, brake disengaged when engine energy activated
- N Y10T 477/357 · · · Cam actuated brake
- N Y10T 477/363 · · · Electrically actuated brake
- N Y10T 477/37 · · Brake actuation opens switch to engine
- N Y10T 477/373 · · · Electrically actuated brake
- N Y10T 477/377 · · · Fluid actuated brake
- N Y10T 477/38 · · Control means selectively operates engine energy input and brake
- N Y10T 477/387 · · · Fluid actuated brake
- N Y10T 477/393 · · · Electrically actuated brake

N	Y10T 477/40	· Gas turbine engine
N	Y10T 477/45	· · Continuously variable transmission
N	Y10T 477/50	· with supercharger
N	Y10T 477/55	· · Manifold pressure control
N	Y10T 477/60	· Transmission control
N	Y10T 477/606	· · Differential transmission
N	Y10T 477/613	· · Plural outputs
N	Y10T 477/619	· · Continuously variable friction transmission
N	Y10T 477/6197	· · · with fluid drive
N	Y10T 477/6203	· · · with clutch control
N	Y10T 477/621	· · · with brake control
N	Y10T 477/6217	· · · Interrelated control of diverse transmissions
N	Y10T 477/6223	· · · Constant speed output
N	Y10T 477/623	· · · Controlled by engine map
N	Y10T 477/6237	· · · Belt-type
N	Y10T 477/624	· · · · Fluid pressure control
N	Y10T 477/6242	· · · · · Ratio change controlled
N	Y10T 477/62423	· · · · · Engine coast braking
N	Y10T 477/62427	· · · · · with electric valve control
N	Y10T 477/62429	· · · · · · Duty ratio control
N	Y10T 477/6243	· · · Fluid pressure control
N	Y10T 477/625	· · Fluid resistance inhibits rotation of planetary transmission element
N	Y10T 477/631	· · including fluid drive
N	Y10T 477/633	· · · Impeller-turbine-type
N	Y10T 477/6333	· · · · Engine controlled
N	Y10T 477/6337	· · · · with countershaft gearing
N	Y10T 477/63378	· · · · · and turbine shaft brake
N	Y10T 477/63385	· · · · · and clutch control
N	Y10T 477/63393	· · · · · Control of or by fluid drive
N	Y10T 477/634	· · · · with hydrodynamic braking
N	Y10T 477/6343	· · · · with nonratio brake
N	Y10T 477/6347	· · · · Control responsive to fluid drive
N	Y10T 477/635	· · · · with clutch control
N	Y10T 477/6351	· · · · · Disengaged during shift
N	Y10T 477/6352	· · · · · Speed responsive
N	Y10T 477/63525	· · · · · Electrical
N	Y10T 477/6353	· · · · with fluid unit vane control
N	Y10T 477/6357	· · · · Fill and empty-type fluid units
N	Y10T 477/636	· · · Ratio control
N	Y10T 477/637	· · · · with planetary transmission control
N	Y10T 477/638	· · with clutch control
N	Y10T 477/6388	· · · and brake control
N	Y10T 477/6389	· · · · Temperature responsive control
N	Y10T 477/639	· · · · Engine controlled

N	Y10T 477/6392	. . . . Clutch controlled
N	Y10T 477/6394	. . . . Gearing controlled
N	Y10T 477/6395	. . . Temperature responsive control
N	Y10T 477/6403	. . . Clutch, engine, and transmission controlled
N	Y10T 477/6407	. . . . Electronic digital control
N	Y10T 477/641	. . . Clutch and transmission controlled
N	Y10T 477/6414	. . . . Speed responsive control
N	Y10T 477/6415	. . . . . with manual override
N	Y10T 477/6417	. . . . . Vacuum actuated clutch
N	Y10T 477/6418	. . . Clutch and engine controlled
N	Y10T 477/6422	. . . . Speed responsive control
N	Y10T 477/6424	. . . . . Plural speed signals
N	Y10T 477/6425	. . . Clutch controlled
N	Y10T 477/6428	. . . . Electric clutch
N	Y10T 477/643	. . . . Vacuum actuated clutch
N	Y10T 477/6432	. . . . . Electric control
N	Y10T 477/6433	. . . Engine controlled
N	Y10T 477/6437	. . . . Speed responsive
N	Y10T 477/644	. . with brake control
N	Y10T 477/646	. . . Anti-creep
N	Y10T 477/647	. . . Brake controls transmission
N	Y10T 477/648	. . . . Pressure controlled
N	Y10T 477/649	. . . One control blocks another
N	Y10T 477/65	. . Control by sensed ambient condition, pattern indicia, external signal, or temperature
N	Y10T 477/653	. . . Temperature control
N	Y10T 477/656	. . Engine starting interlock
N	Y10T 477/663	. . Exhaust emission control
N	Y10T 477/669	. . Engine ignition control for transmission change
N	Y10T 477/67	. . . Ignition advanced or retarded
N	Y10T 477/671	. . . Ignition intermitting and safety means limiting duration of intermission
N	Y10T 477/673	. . . Ignition intermitting controlled by manifold pressure
N	Y10T 477/674	. . . Ignition intermitting initiated by positioning accelerator
N	Y10T 477/6745	. . . . Initiation inhibited by sensed condition
N	Y10T 477/675	. . Engine controlled by transmission
N	Y10T 477/676	. . . Constant output shaft speed
N	Y10T 477/677	. . . Diminution during transmission change
N	Y10T 477/679	. . . Responsive to transmission output condition
N	Y10T 477/68	. . . Transmission setting contingent
N	Y10T 477/6805	. . . . Change to neutral idles engine
N	Y10T 477/6808	. . . . . Engine input variable in neutral
N	Y10T 477/681	. . Anticreep
N	Y10T 477/688	. . Transmission controlled by engine
N	Y10T 477/689	. . . Shift from neutral shock control

N	Y10T 477/6895	. . . . Pressure controlled
N	Y10T 477/69	. . . Engine [coast] braking
N	Y10T 477/691	. . . . Electric valve control
N	Y10T 477/692	. . . by acceleration
N	Y10T 477/693	. . . by input manifold pressure or engine fuel control
N	Y10T 477/6931	. . . . Selector-type
N	Y10T 477/6933	. . . . with positive shift means
N	Y10T 477/69335	. . . . . with synchronization
N	Y10T 477/6934	. . . . Prevents unsafe or unintentional shift
N	Y10T 477/6935	. . . . . Reverse inhibitor
N	Y10T 477/6936	. . . . Shift valve control
N	Y10T 477/69362	. . . . . Hysteresis
N	Y10T 477/693625	. . . . . . Electric control
N	Y10T 477/69363	. . . . . Plural shift valves
N	Y10T 477/693635	. . . . . . Electric control
N	Y10T 477/693636	. . . . . . . Downshift control
N	Y10T 477/693637	. . . . . . . Kickdown
N	Y10T 477/693638	. . . . . . . Selector valve overrule
N	Y10T 477/69364	. . . . . . Downshift control
N	Y10T 477/693643	. . . . . . . Kickdown
N	Y10T 477/693645	. . . . . . . Selector valve overrule
N	Y10T 477/69365	. . . . . Electric control
N	Y10T 477/69366	. . . . . . Downshift control
N	Y10T 477/69367	. . . . . Downshift control
N	Y10T 477/693675	. . . . . . Kickdown
N	Y10T 477/69368	. . . . . Selector valve overrule
N	Y10T 477/6937	. . . . Servo motor timing
N	Y10T 477/69373	. . . . . Downshift
N	Y10T 477/693738	. . . . . . with fluid accumulator
N	Y10T 477/693742	. . . . . . . Electric valve control
N	Y10T 477/693746	. . . . . . . Double acting servo
N	Y10T 477/693754	. . . . . . . Speed responsive control
N	Y10T 477/693762	. . . . . . . Electric valve control
N	Y10T 477/69377	. . . . . . with fluid accumulator
N	Y10T 477/69378	. . . . . . . Engine parameter controls back pressure
N	Y10T 477/69379	. . . . . . . Electric valve control
N	Y10T 477/6938	. . . . . Double acting servo
N	Y10T 477/69383	. . . . . Speed responsive control
N	Y10T 477/69387	. . . . . Electric valve control
N	Y10T 477/6939	. . . . Transmission pressure controlled
N	Y10T 477/69393	. . . . . Variable capacity pump
N	Y10T 477/69395	. . . . . Line pressure controlled
N	Y10T 477/693958	. . . . . . Responsive to speed
N	Y10T 477/693962	. . . . . . . Electric valve control

N	Y10T 477/693964	. . . . . Duty ratio control
N	Y10T 477/693965	. . . . . Transmission setting contingent
N	Y10T 477/693973	. . . . . Electric valve control
N	Y10T 477/69398	. . . . . Electric valve control
N	Y10T 477/694	. . Engine control linkage mounted on manual gearshift lever
N	Y10T 477/70	. Clutch control
N	Y10T 477/71	. . with starter
N	Y10T 477/73	. . with fluid drive
N	Y10T 477/735	. . . Speed responsive control
N	Y10T 477/74	. . with brake control
N	Y10T 477/743	. . . Clutch controlled
N	Y10T 477/745	. . . . and brake controlled
N	Y10T 477/747	. . . Engine controlled
N	Y10T 477/75	. . Condition responsive control
N	Y10T 477/753	. . . Speed responsive
N	Y10T 477/755	. . . . Slip rate control
N	Y10T 477/757	. . . Overload release
N	Y10T 477/759	. . . . Engine shut off
N	Y10T 477/76	. . Electric clutch
N	Y10T 477/78	. . Regulated clutch engagement
N	Y10T 477/79	. . Engine controlled by clutch control
N	Y10T 477/80	. Brake control
N	Y10T 477/81	. . Sensed condition responsive control of engine or brake
N	Y10T 477/813	. . . Brake
N	Y10T 477/814	. . . . and engine
N	Y10T 477/816	. . . . Speed or acceleration responsive
N	Y10T 477/817	. . . Speed or acceleration responsive
N	Y10T 477/82	. . Plural diverse brake means
N	Y10T 477/83	. . Engine energy control having adjusting and holding device, with means on brake control to override holding device
N	Y10T 477/833	. . . Holding device engaged by electric means
N	Y10T 477/835	. . . . Magnetic holding device
N	Y10T 477/837	. . . . Mechanical holding device engaged by mechanical means
N	Y10T 477/839	. . . . Device or means including a threaded shaft, rack or ratchet
N	Y10T 477/84	. . Brake control having holding device, with means on engine control to override holding device
N	Y10T 477/847	. . . Holding device responsive to motion, speed or acceleration
N	Y10T 477/85	. . . . Holding device comprising brake valve operated by solenoid
N	Y10T 477/853	. . . . Holding device engaged by electric means
N	Y10T 477/857	. . . . Holding device comprising brake valve operated by solenoid
N	Y10T 477/86	. . Brake engaged when engine energy deactivated, brake disengaged when engine energy is activated
N	Y10T 477/865	. . . Internal combustion engine
N	Y10T 477/868	. . . . Controls brake valve
N	Y10T 477/869	. . . . . Vacuum actuated brake

- N Y10T 477/87 · · Brake condition change modifies engine condition
- N Y10T 477/873 · · · Brake actuation interrupts ignition circuit of fluid engine
- N Y10T 477/877 · · · Brake actuation decreases or eliminates fluid energy input to engine
- N Y10T 477/878 · · · · by closing throttle valve
- N Y10T 477/879 · · · · by preventing increasing operation of engine energy control
- N Y10T 477/88 · · Decreasing fluid energy input to engine actuates brake
- N Y10T 477/89 · · Control means selectively operates engine energy input and brake
- N Y10T 477/893 · · · Foot operated control means
- N Y10T 477/8936 · · · · Engine and brake control including interconnected elements
- N Y10T 477/8941 · · · · Pivots and translates
- N Y10T 477/8944 · · · · · Pivots about intermediate fulcrum
- N Y10T 477/8947 · · · · Pivots about two fulcrums
- N Y10T 477/8953 · · · · Pivots about intermediate fulcrum
- N Y10T 477/8959 · · · · Lever reciprocates on moveable supports at both ends
- N Y10T 477/8964 · · · · Pivots for sequential operation
- N Y10T 477/897 · · · Control means including fluid passage

**N Y10T 483/00 -
Y10T 483/00**

Former US Class 483 Series

N Y10T 483/00

Tool changing

- N Y10T 483/10 · Process
- N Y10T 483/11 · with safety means
- N Y10T 483/115 · · Guard
- N Y10T 483/12 · with means to regulate operation by means of replaceable information supply
[e.g. , templet, tape, card, etc.]
- N Y10T 483/123 · · Replaceable information comprising tool location
- N Y10T 483/127 · · · including determining optimum tool access path
- N Y10T 483/13 · with control means energized in response to activator stimulated by condition
sensor
- N Y10T 483/132 · · Responsive to tool identifying information
- N Y10T 483/134 · · · Identifying information on tool or tool holder
- N Y10T 483/136 · · Responsive to tool
- N Y10T 483/138 · · · including means to monitor and control, i.e., adaptive machining
- N Y10T 483/14 · with signal or indicator
- N Y10T 483/15 · with means to condition or adjust tool or tool support
- N Y10T 483/16 · with means to transfer work
- N Y10T 483/165 · · Plural machine tools, e.g., flexible manufacturing
- N Y10T 483/17 · including machine tool or component
- N Y10T 483/1702 · · Rotating work machine tool [e.g., screw machine, lathe, etc.]
- N Y10T 483/1705 · · · Tool support comprises rotary spindle
- N Y10T 483/1707 · · · Tool having specific mounting or work treating feature
- N Y10T 483/171 · · · · Workpiece holder [e.g., chuck or chuck jaw, collet, etc.]
- N Y10T 483/1712 · · · · Turning tool insert changer
- N Y10T 483/1714 · · · Tool changer between tool support and matrix
- N Y10T 483/1717 · · · · Plural matrices
- N Y10T 483/1719 · · · · Tool support comprises turret

- N Y10T 483/1721 Linearly moveable tool changer
- N Y10T 483/1724 Linearly moveable tool changer
- N Y10T 483/1726 . . . Direct tool exchange between tool support and matrix
- N Y10T 483/1729 . . Reciprocating tool machine tool [e.g., broaching machine, shaping machine, etc.]
- N Y10T 483/1731 . . . including matrix
- N Y10T 483/1733 . . Rotary spindle machine tool [e.g., milling machine, boring machine, grinding machine, etc.]
- N Y10T 483/1736 . . . Tool having specific mounting or work treating feature
- N Y10T 483/1738 Tool head
- N Y10T 483/174 Abrading wheel
- N Y10T 483/1743 including means for angularly orienting tool and spindle
- N Y10T 483/1745 Spindle angularly oriented to align with tool
- N Y10T 483/1748 . . . Tool changer between spindle and matrix
- N Y10T 483/175 Plural matrices
- N Y10T 483/1752 including tool holder pivotable about axis
- N Y10T 483/1755 Plural tool holders pivotable about common axis
- N Y10T 483/1757 including intermediate tool changer
- N Y10T 483/176 Intermediate tool changer includes tool holder pivotable about axis
- N Y10T 483/1762 Tool holders pivotable with respect to each other
- N Y10T 483/1764 Tool holders pivotable about plural nonparallel axes
- N Y10T 483/1767 Linearly movable tool holders
- N Y10T 483/1769 Extensible tool holders
- N Y10T 483/1771 Translatable axis
- N Y10T 483/1774 Distinct tool changer for each tool
- N Y10T 483/1776 including intermediate tool changer
- N Y10T 483/1779 Linearly movable tool holder
- N Y10T 483/1781 Tool holder pivotable about plural nonparallel axes
- N Y10T 483/1783 including linearly translatable tool changer [e.g., shuttle, ram, etc.]
- N Y10T 483/1786 Plural tool holders
- N Y10T 483/1788 Orthogonally translatable
- N Y10T 483/179 . . . Direct tool exchange between spindle and matrix
- N Y10T 483/1793 Spindle comprises tool changer
- N Y10T 483/1795 Matrix indexes selected tool to transfer position
- N Y10T 483/1798 including means to project tool from matrix
- N Y10T 483/18 . . Tool transfer to or from matrix
- N Y10T 483/1809 . . Matrix including means to latch tool
- N Y10T 483/1818 . . Matrix including means to project tool for transfer
- N Y10T 483/1827 . . . Rectilinear
- N Y10T 483/1836 . . . Pivoting
- N Y10T 483/1845 . . Plural matrices
- N Y10T 483/1855 . . . including tool replenishing
- N Y10T 483/1864 . . including tool pot or adapter
- N Y10T 483/1873 . . Indexing matrix
- N Y10T 483/1882 . . . Rotary disc

- N Y10T 483/1891 · · · Chain or belt
- N Y10T 483/19 · Miscellaneous